GLENN COUNTY
Planning & Public Works Agency

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STAFF REPORT

MEETING DATE: September 20, 2017

TO: Glenn County Planning Commission

FROM: Andy Popper, Associate Planner

SUBJECT: Conditional Use Permit 2017-002, Crop Production Services
State Clearinghouse: #20170322022

Attachments:

1. Mitigation Measures and Conditions of Approval
2. Mitigated Negative Declaration and Initial Study
3. Application and Ancillary Documents

1 PROJECT SUMMARY

According to the application, Conditional Use Permit 2017-002, Crop Production Services, Inc. (CPS) proposes an agricultural crop protection chemical/fertilizer storage facility for retail to local farmers. The property was formerly operated as a Sugar Beet Plant and contains several existing buildings. The application site plans show proposed new construction and demolition of five buildings. Crop Production Services (CPS) plans to remodel; the A-frame Structure called the Mixing Building (39,000 sq. ft.), concrete masonry unit building called the Package Warehouse (16,170 sq. ft.), Front Office (2,290 sq. ft.) and East Scale House (120 sq. ft.). The owners have decided to preserve the historic aspects of the site, which include the Holly Sugar plant sign at the entrance and the two (2) 300' concrete silos and the North face of the Package Warehouse.

At the outset of operations, CPS anticipates selling roughly 12,000 tons of dry fertilizer, 15,000 tons of liquid fertilizer, 30,000 gallons crop protection products, and 2,000 to 3,000 bags of seed annually. The volumes could increase by as much as 150-200% over the initial five years of operations. In terms of total planned available storage space, CPS intends to renovate and improve an existing warehouse on the site that, when complete, is estimated to provide roughly 13,000 square feet of storage for packaged inputs such as seeds, nutritional products and crop protection products. CPS also intends to renovate and utilize the existing A-frame building on the site to hold roughly 6,000 tons of dry fertilizer. CPS will use various sizes of tanks capable of holding a total of 600,000 gallons of liquid fertilizer and 10,000-15,000 gallons of bulk crop protection products. CPS also intends to utilize rail if possible for incoming shipments of product from suppliers. Please refer to the attached application, project narrative, and site plans for more information.

The General Plan land use designation is “Industrial” and the zoning designation is “M” (Industrial Zone). The proposed project is a permitted use with a conditional use permit in the “M” zone. Detailed project information is included in the Mitigated Negative Declaration and Initial Study attached to this report.

Location:

The project site is located at 555 West 1ST Street, Hamilton City, CA, 95951. This site is located on the south side of 1st Street, east of State Highway 45, east of County Road Y, Hamilton City, in Glenn County, California. Also identified as Assessor’s Parcel Number (APN) 032-260-006, at Latitude 39.737, and Longitude -122.008 Decimal Degrees.

1.1 RECOMMENDATIONS

That the Planning Commission adopt the Mitigated Negative Declaration for Conditional Use Permit 2017-002 with the Findings as presented in the Staff Report.

Also that the Planning Commission approve Conditional Use Permit 2017-002 with the Findings as presented in the Staff Report and the corresponding Mitigation Measures and Conditions of Approval.

2 ANALYSIS

This area of Glenn County has been a productive industrial area. The project site was formerly occupied by Wilbur-Ellis and Holly Sugar. The proposed project is directly related to agriculture as its purpose is for the storage and handling of crop protection agricultural chemicals and fertilizer.

2.1 ENVIRONMENTAL DETERMINATION

A copy of the proposed Mitigated Negative Declaration and Initial Study is attached. The Initial Study is a detailed discussion of the project and a discussion of the project's potential environmental impacts as required by the California Environmental Quality Act (CEQA). The Initial Study concludes that this project will result in no Potentially Significant Impacts to the environment with implementation of appropriate mitigation measures, conditions of approval, adopted best management practices, and applicable Federal, State, and local laws and regulations. Therefore, a Mitigated Negative Declaration has been prepared for adoption by the Planning Commission.

2.2 GLENN COUNTY UNIFIED DEVELOPMENT CODE (TITLE 15)

2.2.1 "M" Industrial Zone (Glenn County Code Chapter 15.440)

Purpose (Glenn County Code §15.440.010)

This zoning classification is established for the following purposes:

A. To reserve appropriately located areas for industrial plants and related activities;
B. To protect areas appropriate for industrial use from intrusion by residential dwellings and other conflicting uses;
C. To protect residential and commercial properties and nuisance-free, nonhazardous industrial uses from noise, odor, dust, dirt, smoke, vibration, heat, glare, fire, explosion, noxious fumes, radiation, and other hazards and objectionable influence incidental to certain industrial uses;
D. To promote the most desirable use of land and development in accordance with the general plan of Glenn County.

This project as proposed will conform to the purposes provided for in the Industrial zoning designation.

Uses Permitted With a Conditional Use Permit (Glenn County Code §15.440.030)

Glenn County Code §15.440.030.A3: Chemicals including but not limited to basic chemicals, cleaning agents, cosmetics, explosives, fertilizers, gases, medicinal and botanical products, paints, pesticides, pharmaceuticals, plastics and synthetic fibers. The applicant has applied for a conditional use permit for the proposed crop protection agricultural chemical and fertilizer storage facility.

Site Area and Configuration (Glenn County Code §15.440.050)

The minimum parcel size for the industrial zone is one acre if served by well and septic system. The project site consists of the following two parcels (APN): 032-260-006 (51± acres). The parcels meet the minimum parcel size for the "M" zone and the project site is adequate in size and shape to accommodate the proposed project.

Minimum Yard Requirements (Glenn County Code §15.440.060)

There are no required yard setbacks as the parcel is not located within the same block as a residential district.

Maximum Building Height (Glenn County Code §15.440.070)

No building or structure in this zone shall exceed seventy-five feet in height, except as otherwise permitted with a conditional use permit. The existing A-Frame Mixing Building which is proposed be renovated is listed as 72 feet tall on the site plan. The proposed package warehouse is to be located within an existing 37 feet tall building, which is also to be renovated. The proposed 52-foot diameter steel tank will be 32 feet tall. Therefore, the proposed structures will not exceed the maximum height of 75 feet.

Walls and Fences (Glenn County Code §15.440.080)

A. A solid wall, solid fence, or landscaping shall be required for all conditional uses. The proposed landscaping for this site is consistent with the Landscaping Standards. The project site plan proposes using existing as well as new landscaping, generally along the northern portion of the project site.

Site Plan Review (Glenn County Code §15.440.090)

Prior to or concurrent with the application for a building permit, the applicant shall submit to the agency a complete site plan and all necessary supporting documentation for review by the agency to ensure compliance with all the requirements of the Glenn County Code. A conditional use permit has been applied for the proposed project, which includes review of the Site Plan.

2.2.2 Conditional Use Permit (Glenn County Code Chapter 15.220)

Conditional Use Permit (Glenn County Code §15.220.010)

The planning commission may grant a conditional use permit for the uses listed in Division 3: Development Districts after notice and hearing as provided in Chapter 15.040 and after making findings as required in section 15.220.020.

Findings (Glenn County Code §15.220.020)

The approving authority, prior to recommending approval of a development permit shall find as follows:

A. That the proposed use at the particular location is necessary or desirable in providing a service or facility, which will contribute to the general well-being of the public;

There is a public interest in supporting business and resource operations in the County. Agriculture remains the primary source of Glenn County's economy. The facility will provide crop protection agricultural chemicals and fertilizers, which will supply the local demand by the agricultural industry. The project will bring additional tax revenues to the County. Wilbur Ellis and Holly Sugar formerly occupied the existing facility. Granting of the project will allow a viable use of the property. The location is desirable because the site is located near major transportation routes and the project will utilize existing buildings. Therefore, it concluded that this project would contribute to the general well-being of the public within Glenn County.

B. That such use will not, under the circumstances of the particular case, be detrimental to the health, safety or general welfare of persons residing or working in the vicinity, or injurious to property or improvements in the vicinity;

This project will not be subjected to hazardous conditions due to flooding, adverse geologic conditions, proximity to airports, fire hazards, or topography. Impacts from hazards on the project are further discussed in the Initial Study. The analysis in the Initial Study concludes that this project will not be detrimental to the health, safety, or general welfare of persons or property in the vicinity of the project.

C. That the site for the proposed use is adequate in size and shape to accommodate said use and to accommodate all of the yards, setbacks, walls or fences, and other features required herein or by the planning commission;

The project site is approximately 51 acres in size. The parcel is adequate in size and shape to accommodate the proposed project. There is adequate space for on-site parking and unloading/loading, and proposed buildings.

D. Except in the case of the expansion of a nonconforming use, that the granting of the permit will not adversely affect the general plan or any area plan of the county.

The proposed project is consistent with the Land Use Designation of "Industrial" and the zoning of "M" (Industrial Zone). The proposed project will meet the land use and zoning requirements of the General Plan and the Zoning Code.

2.2.3 Performance Standards (Glenn County Code Chapter 15.560)

The performance standards contained in the following subsections are only an excerpt of the required minimum. They shall not be construed as preventing the review authority, as part of any approval, to require more restrictive standards as deemed necessary; including the

operator/applicant's requirement to meet the corresponding performance standards that may not be specifically reviewed in this report.

Air Quality (Glenn County Code §15.560.040)

All uses shall comply with applicable local, state, and federal laws and regulations regarding contaminants and pollutants. This requirement includes, but is not limited to, emissions of suspended particles, carbon monoxide, hydrocarbons, odors, toxic or obnoxious gases and fumes. The Glenn County Air Pollution Control District (GCAPCD) is responsible for the planning and maintenance/attainment of these standards at the local level. Air quality impacts are further discussed in the Initial Study for the project.

Erosion Control (Glenn County Code §15.560.060)

The following erosion control standards shall apply to all development projects in commercial or industrial zoning districts:

A. The smallest area practical of land shall be exposed at any one time during development;
B. When land is exposed during development, the exposure shall be kept to the shortest practical period of time;
C. Natural features such as trees, groves, natural terrain, waterways and other similar resources shall be preserved where feasible;
D. Temporary vegetation and/or mulching shall be used to protect critical areas exposed during development;
E. The permanent final vegetation and structures shall be installed as soon as practical in the development;
F. Wherever feasible the development shall be fitted to the topography and soils to create the least erosion potential;
G. Provisions shall be made to effectively accommodate the increased runoff caused by changed soil and surface conditions during and after development;
H. Sediment basins (debris basins, desalting basins, or silt traps) shall be installed and maintained to remove sediment from runoff waters from land undergoing development where needed.

The proposed construction site is relatively flat. There are no natural features or critical areas that would become exposed as a result of this project. The project shall comply with each of the erosion control standards. Erosion impacts are discussed in the Initial Study for the project.

Fire and Explosion Hazards (Glenn County Code §15.560.070)

All uses involving the use or storage of combustible, explosive, caustic or otherwise hazardous materials shall comply with all applicable local, state and federal safety standards and shall be provided with adequate safety devices against the hazard of fire and explosion, and adequate fire-fighting and fire suppression equipment. All of the fire protection regulations of the Hamilton City Fire Protection District shall be complied with. Hazards are further discussed in the Initial Study for the project.

Glare and Heat (Glenn County Code §15.560.080)

A. All exterior lighting accessory to any use shall be hooded, shielded, or opaque. No unobstructed beam of light shall be directed beyond any exterior lot line. Buildings and structures under construction are exempt from this provision.
B. No use shall generate heat so that increased ambient air temperature or radiant heat is measurable at any exterior lot line.

Any exterior lighting at the site shall comply with the glare and heat standards.

Liquid, Solid, and Hazardous Wastes (Glenn County Code §15.560.090)

A. All uses are prohibited from discharging liquid, solid, toxic or hazardous wastes onto or into the ground and into streams, lakes or rivers. Discharge into a public or private waste disposal system in compliance with applicable local, state and federal laws and regulations is permitted.
B. Wastes detrimental to a public sewer system or a sewage treatment plant shall not be discharged to a public sewer system unless they have been pretreated to the degree required by the authority having jurisdiction over the sewer system.
C. The handling and storage of hazardous materials the discharge of hazardous materials into the air and water and disposal of hazardous waste in connection with all uses shall be in conformance with all applicable local, state and federal regulations.
D. All burning of waste materials accessory to any use shall be in compliance with the county air pollution control district rules and regulations.
E. The disposal or dumping of solid wastes accessory to any use including, but not limited to, slag, paper and fiber wastes or other industrial wastes shall be in compliance with applicable local, state, and federal laws and regulations.

The Glenn County Air Pollution Control District (GCAPCD) is the Administering Agency and the Certified Unified Program Agency (CUPA) for Glenn County with responsibility for regulating hazardous materials handlers, hazardous waste generators, underground storage tank facilities, above ground storage tanks, and stationary sources handling regulated substances. The storage and handling of hazardous materials are closely monitored by the GCAPCD.

The project will be subject to the conditions and regulations of the Central Valley Regional Water Quality Control Board, Glenn County Environmental Health Department, and Glenn County Air Pollution Control District. Liquid, solid, and hazardous wastes are further discussed in the Initial Study for the project.

Noise (Glenn County Code §15.560.100)

There may be an increase in ambient noise levels during the construction of the facility. These impacts would be for short durations and would not exceed ambient noise levels. All construction site sounds between 7:00 a.m. and 8:00 p.m. are exempt from local noise standards provided reasonable practices are being followed (Glenn County Code §15.560.100.F.5).

Maximum one-hour equivalent sound pressure levels are 65 dBA from 7 a.m. to 10:00 p.m. and 60 dBA from 10:00 p.m. to 7:00 a.m. (Glenn County Code §15.560.100.A). The applicant shall operate the businesses in a manner that meet this requirement. Noise related impacts are further discussed in the Initial Study for the project.

Open and Outdoor Storage, Sales and Display (Glenn County Code §15.560.110)

Glenn County Code §15.560.110(A): General. Outdoor storage in any district shall be maintained in an orderly manner and shall not create a fire, safety, health or sanitary hazard.

Glenn County Code §15.560.110(C): Standards for Uses Permitted in Any Commercial and Manufacturing District.

1. *No outdoor storage of materials or equipment shall be permitted in the following areas: required front yards, off-street parking and loading areas, driveways, landscaped areas or street right-of-ways.*
5. *Exterior trash and storage areas, service yards and electrical utility boxes shall be screened from view of all nearby streets and adjacent structures in a manner that is compatible with the building design.*

The project does not depict open and outdoor sales or storage, and materials will be located within proposed buildings and structures. If outdoor storage is to occur, such storage shall meet the Open and Outdoor Storage, Sales and Display standards.

2.2.4 Landscaping Standards (Glenn County Code Chapter 15.570)

The proposed landscaping for this site is consistent with the Landscaping Standards. The project site plan proposes using existing, as well as, new landscaping generally along the northern portion of the project site.

2.2.5 Off-Street Parking and Loading Facilities (Glenn County Code Chapter 15.610)

Purpose (Glenn County Code §15.610.010):

A. *In order to prevent traffic congestion, off-street parking facilities shall be provided incidental to any new building or structure and major alterations and enlargements of existing uses. Off-street parking spaces or areas required shall be in proportion to the need for such facilities created by the particular type of land use. Off-street parking facilities shall also be laid out in such a manner that the facilities will protect the public safety and insulate surrounding land uses from their impact.*

B. *All uses permitted in this title shall comply with all applicable standards of this chapter as set forth herein, except as provided in Division 4.*

Parking Space Requirements (Glenn County Code §15.610.020):

Glenn County Code §15.610.020(F17): For a use not specified in this section, the same number of off-street parking spaces shall be provided as are required for the most similar specified use. Open uses, commercial and industrial uses requires one parking space for each employee on the maximum shift.

Standards of Off-Street Parking Facilities (Glenn County Code §15.610.030):

A. Surfacing and marking.
1. The parking area shall be maintained in good condition at all times and shall be surfaced in a manner to be consistent with the type and level of use so as to provide safe and convenient use.

The parcel has an existing driveway and entrance off 1st Street. The parcel has adequate space for employee, customer, and equipment parking. The parking areas are paved or compacted gravel, which is suitable for parking needs at the facility. According to the site plan, the parcel includes thirteen 22-foot long spaces & one Americans with Disabilities Act (ADA) space west of the front office, five 20-foot long spaces and one 20-foot long spaces and one ADA space at North East corner of Mixing Building.

CPS anticipates this facility will grow over time. Initially, CPS plans to employ approximately 10 individuals at the location, with that number potentially growing to 25-30 over five years. The existing access road will serve the project. There is additional overflow parking and loading areas at the 51 acre site. The project is consistent with the off-street parking standards.

2.2.6 Sign Standards (Glenn County Code Chapter 15.620)

Permitted Appurtenant Signs and Sign Area (Glenn County Code §15.620.060):

C. Signs identifying a permitted or conditionally permitted commercial or industrial establishment shall be permitted subject to the following development standards:

1. The maximum total aggregate sign area for a commercial establishment shall be one square foot per foot of building site frontage occupied by the business, to a maximum of two hundred fifty square feet;
2. The maximum total aggregate sign area for an industrial establishment shall be two square feet per foot of building site frontage occupied by the business, to a maximum of five hundred square feet;
3. Signs may be erected in the form of a monument sign, wall sign or freestanding pole sign;
4. All wall signs shall be mounted flat against the wall of the building and not projecting above the cornice or roofline of the building;
5. All freestanding pole signs shall not exceed fifty feet in height;
6. Lighting of signs shall be arranged so as not to produce a glare on other properties in the vicinity and the source of light shall not be visible from adjacent property or a public street.

The applicant has proposed to remove and replace the facility entrance sign of the project site as shown on the site plan. The plans depict a 3 foot by 8 foot illuminated sign. The proposed signs will conform with the requirements of Glenn County Code §15.620.060.

3 OTHER REQUIREMENTS

There is a ten (10) calendar day appeal period following Planning Commission action on this conditional use permit (Glenn County Code §15.050.020).

The appeal made to the Glenn County Board of Supervisors must be made in accordance with Section 15.050.020 of the Glenn County Code. The Board of Supervisors will hear the appeal as outlined by this code. The decision of the Board of Supervisors may then be challenged in court.

An approved conditional use permit expires one (1) year from the date of granting unless substantial physical construction and/or use of the property in reliance on the permit has commenced prior to its expiration. An approved conditional use permit may be extended by the director for an additional sixty (60) calendar days provided that the applicant/owner submits a written request for extension to the director at least twenty-one (21) calendar days prior to the expiration date. Only one (1) extension shall be allowed for each permit (Glenn County Code §15.090.100.A).

The necessary permits shall be secured in all affected federal, state, and local agencies. It is the responsibility of the applicant/operator to make certain all requirements are met and permits are obtained from all other agencies.

In addition to the Conditions of Approval, the applicant's and his/her technical or project management representative's attention is directed to the project comments from other agencies reviewing the application. The items noted are a guide to assist the applicant in meeting the requirements of applicable government codes. Project comments may also note any unusual circumstances that need special attention. The items listed are a guide and not intended to be a comprehensive summary of all codified requirements or site-specific requirements.

4 FINDINGS

4.1 FINDINGS FOR MITIGATED NEGATIVE DECLARATION

The Initial Study prepared for the project documents reasons to support the following Findings.

Finding 1 (Aesthetics)

The project will not have a significant impact on aesthetics. Adopted standards for lighting and construction will minimize impacts from development. The project is compatible with existing industrial uses in the area. Impacts are considered less than significant.

Finding 2 (Agricultural and Forest Resources)

The project will not have a significant impact on agriculture or forest resources. Agricultural activities within the vicinity will not be adversely impacted by this project. There are no forest resources located within the vicinity of the project. Impacts are considered less than significant.

Finding 3 (Air Quality)

The project will not have a significant impact on air quality because the project will not violate air quality standards or contribute substantially to an existing air quality violation. Federal, state, and local standards and codes reduce potential impacts to less than significant. Impacts are considered less than significant.

Finding 4 (Biological Resources)

The project will not have a significant impact on biological resources. The sensitive habitats or natural communities as defined by the Department of Fish and Wildlife or the U.S. Fish and Wildlife Service will not be adversely impacted by this project. Impacts are considered less than significant.

Finding 5 (Cultural Resources)

The project will not have significant impact on cultural resources. The project will be located at a developed industrial site. State laws are in place in case of accidental discoveries made during future ground disturbing activities. Impacts are considered less than significant.

Finding 6 (Geology and Soils)

The project will not have a significant impact on geology and soils because geologic hazards in the area are minimal and the building codes will require new construction to meet standards for soil conditions. Impacts are considered less than significant.

Finding 7 (Greenhouse Gas Emissions)

The project will not have a significant impact on global climate change as a result of greenhouse gas emissions. The project is not in conflict with existing guidelines or standards. The project will not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. The project will not create significant changes in GHG emissions. Impacts are considered less than significant.

Finding 8 (Hazards and Hazardous Materials)

Hazards and hazardous materials will not have a significant impact on the environment as a result of the proposed project. The project will not interfere with an adopted emergency response plan nor expose people to risk of loss, injury, or death. Impacts are considered less than significant.

Finding 9 (Hydrology/Water Quality)

The project will not have a significant impact on hydrology and water quality. All new construction shall comply with regulations of the Central Valley Regional Water Quality Control Board. The project will not significantly alter the drainage pattern of the area. The project does not significantly interfere with groundwater recharge in the area. The project will not substantially deplete groundwater supplies or expose people or structures to a significant risk of loss, injury, or death involving flooding. Impacts are considered less than significant.

Finding 10 (Land Use and Planning)

The project will not have a significant impact on land use and planning because the project would not physically divide an established community. The project site is designated "Industrial" in the General Plan and is zoned "M" (Industrial). The proposed use meets the requirements of the Glenn County Code and General Plan with an approved Conditional Use Permit. The project will not conflict with any existing habitat conservation plan or natural community conservation plan. No impacts are anticipated.

Finding 11 (Mineral Resources)

The project will not have a significant impact on mineral resources. The project would not have a significant impact on aggregate or natural gas resources. Impacts are considered less than significant.

Finding 12 (Noise)

The project will not have a significant impact on people residing or working in the area from excessive noise levels. Noise generating activities are required to meet the established standards prescribed by the County Code. The project site is not within an airport land use plan and not in the vicinity of a private airstrip. The project will not expose people to excessive ground borne vibration. Impacts are considered less than significant.

Finding 13 (Population and Housing)

The project will not have a significant impact on population and housing because the project will not displace people or housing. The project would not substantially increase population in the area. This project would not induce substantial population growth directly or indirectly. Impacts are considered less than significant.

Finding 14 (Public Services)

The project will not have a significant impact on public services. The services of fire protection, police protection, schools, parks, and other public facilities are sufficient to accommodate the proposed project. Impacts are considered less than significant.

Finding 15 (Recreation)

The project will not have a significant impact on recreation because it would not substantially increase the use of existing recreational facilities nor does the project include such facilities. No impacts are anticipated.

Finding 16 (Transportation/Traffic)

The project will not have a significant impact on transportation/circulation because it will not significantly increase traffic volumes on existing roads. The project will not change air traffic patterns. There will be adequate access to the site. Access roads will provide adequate emergency access to the project site. Alternative transportation plans will not be impacted. Impacts are considered less than significant.

Finding 17 (Tribal Cultural Resources)

The project will not have significant impact on cultural resources. State laws are in place in case of discoveries made during future ground disturbing activities. Impacts are considered less than significant.

Finding 18 (Utilities and Service Systems)

The project will not have a significant impact on utilities and service systems. The project can be served by existing and proposed utilities and service systems facility. Impacts are considered less than significant.

Finding 19 (Mandatory Findings of Significance)

There is no substantial evidence in light of the whole record that the project may have a significant impact on the environment either cumulatively or individually. Impacts are considered less than significant.

4.2 FINDINGS FOR CONDITIONAL USE PERMIT

According to Glenn County Code Sections 15.220.010 and 15.220.030, the following Findings listed in Glenn County Code Section 15.220.020 shall be made prior to recommending approval of a conditional use permit:

Finding 1

That the proposed use at the particular location is necessary or desirable in providing a service or facility, which will contribute to the general well-being of the public. The site is in an area of existing industrial and agricultural uses and the project will bring additional taxes to the County. Agriculture remains the primary source of Glenn County's economy. The facility will provide crop

protection agricultural chemicals and fertilizers, which will supply the local demand by the agricultural industry. The location is desirable because the site is located near major transportation routes and the project will generally utilize existing buildings.

Finding 2

That such use will not, under the circumstances of the particular case, be detrimental to the health, safety, or general welfare of persons residing or working on the vicinity, or injurious to property or improvements in the vicinity. The proposed project will not have adverse effects on nearby residents, uses, or the public in general.

Finding 3

That the site for the proposed use is adequate in size and shape to accommodate said use and to accommodate all of the yards, setbacks, walls or fences, and other features required herein or by the Planning Commission.

Finding 4

That granting the permit will not adversely affect the General Plan or any area plan of the County because the proposed project conforms to the General Plan and County Code.

5 SAMPLE MOTIONS:

Environmental Determination

I move that the Planning Commission adopt the Mitigated Negative Declaration for Conditional Use Permit 2017-002 with the Findings as presented in the Staff Report.

Conditional Use Permit

I (further) move that the Planning Commission approve Conditional Use Permit 2017-002 with the Findings as presented in the Staff Report and the Mitigation Measures and Conditions of Approval as attached.

GLENN COUNTY PLANNING AND PUBLIC WORKS AGENCY

MITIGATION MONITORING PROGRAM AND CONDITIONS OF APPROVAL

Crop Production Services, Inc.
Crop Protection Chemical/Fertilizer Storage Facility
555 West 1ST Street, Hamilton City, CA, 95951
APN: 032-260-006

Conditional Use Permit 2017-002, for Crop Production Services, Inc., is subject to the Mitigations and Conditions of Approval as set forth herein. Pending approval by the Glenn County Planning Commission, the applicant shall file a signed copy of the Mitigations Measures and Conditions of Approval with the Planning & Public Works Agency.

MITIGATIONS MEASURES AND MONITORING:

Mitigation Measure CR-1 (Cultural/Tribal Resources):

In the event that any prehistoric or historic subsurface cultural (including Tribal) resources are discovered during ground disturbing activities, all work within 100 feet of the resources shall be halted and the applicant/operator shall consult with the County and a qualified archaeologist (as approved by the County) and corresponding tribal representative to assess the significance of the find per CEQA Guidelines Section 15064.5. The qualified archaeologist shall determine the nature of the find, evaluate its significance, and, if necessary, suggest preservation or mitigation measures. Appropriate mitigation measures, based on recommendations listed in the archaeological survey report and tribal representative, will be determined by the Glenn County Planning & Public Works Agency Director. Work may proceed on other parts of the project site while mitigation for historical resources, unique archaeological resources, and/or tribal resources is carried out. All significant cultural materials recovered shall be, at the discretion of the consulting archaeologist, subject to scientific analysis, professional museum curation, tribal representative, and documented according to current professional standards.

Timing/Implementation:	During Construction/Excavation Activities
Enforcement/Monitoring:	Glenn County Planning & Public Works Agency

Mitigation Measure TR-1 (Transportation):

Truck traffic travelling northbound on State Route (SR) 45 can make a right turn onto 1st Street to access the site. Trucks will not be directed to southbound SR 45, as there is no existing turn lane to remove the trucks from through traffic when turning.

Timing/Implementation:	In Perpetuity
Enforcement/Monitoring:	Glenn County Planning & Public Works Agency

Mitigation Measure TR-2 (Transportation):

Truck traffic travelling along SR 32 will use Walsh Avenue to access the site. Existing facilities on SR 32 are adequate for the increase in truck traffic.

Timing/Implementation:	In Perpetuity
Enforcement/Monitoring:	Glenn County Planning & Public Works Agency

CONDITIONS OF APPROVAL:

Condition of Approval 1:
All unpaved roads must be watered to the point that Particulate Matter emissions are prevented from leaving the property boundary.

Condition of Approval 2:
All disturbed surfaces must have the soil stabilized to the point that fugitive dust emissions are prevented from leaving the property boundary.

Condition of Approval 3:
All vehicle traffic on unpaved roads are limited to 15 mph. Any grading or demolition activities shall be suspended when winds are sustained above 15 mph.

Condition of Approval 4:
If any odor complaints are generated from this operation. The owner/operator shall be required to submit and maintain a District approved Odor Management Program. A copy of the approved plan shall be provided to the Planning Division.

Condition of Approval 5:
If any complaints are received regarding dust leaving the premise of the facility. The facility shall be required to submit and maintain a District approved Dust Management Program. A copy of the approved plan shall be provided to the Planning Division.

Condition of Approval 6:
The owner/operator is required to apply for an Authorization to Construct (ATC) and subsequent Permit to Operate (PTO) if the facility utilizes equipment subject to District Regulations such as diesel generators, boilers, screens, conveyors, shredders, separators, crushers, flares, etc. A copy of the said permits shall be provided to the Planning Division.

Condition of Approval 7:
At no time shall the facility store or sell straight ammonium nitrate.

Condition of Approval 8:
A Risk Management Plan must be completed and submitted by the date on which the regulated substance is first present in a process, above the threshold quantity as described in the Glenn County CUPA comments regarding the proposal. If it is determined that such plan is not required, written evidence from CUPA shall be provided. In either case copies of the documentation shall be provide to the Planning Division.

Condition of Approval 9:
Prior to Planning Division building permit approval/zoning clearance (i.e. development of the property) the applicant shall provide written evidence regarding the current disposition of the PCC material, including but not limited to removal, transportation, and disposal approved by the Central Valley Water Board, and that proposed development will not affect PCC material (if any remains).

Condition of Approval 10:
The applicant shall at all times comply with Regional Water Quality Control Board regulations. Prior to ground disturbance, the applicant shall meet all application and permitting requirements required by the Central Valley Water Board and provide written evidence of compliance to the Glenn County Planning Division.

Condition of Approval 11:
That no off-site parking associated with this development shall be allowed on First Street. That all truck traffic shall use designated truck routes only.

Condition of Approval 12:
That the applicant/operator shall pay money into a road maintenance fund (paid to the Glenn County Planning & Pubic Works Agency) to be paid on an annual basis to maintain County roadways. The payment shall be equal to $0.00002351 (July 1, 2017 to June 30, 2018) per pound (approx. $4.70 per 100 tons). The fee is based on the weight of the product exported from the site. The payment described above shall be amended on an annual basis, based on the All-Urban Consumers, Consumer Price Index (computed by the U.S. Department of Labor, Bureau of Labor Statistics).

Condition of Approval 13:
That the applicant shall pay an annual nonrefundable fee of $250.00 for the purpose of Condition of Approval and Mitigation compliance monitoring. The first deposit shall be made within 30 days of approval, and each year thereafter.

Condition of Approval 14:
Prior to receiving a building permit approval/zone clearance from the Glenn County Planning Division, the applicant shall confer with the HCCSD prior to the installation of any new/updated septic systems regarding the proposal. Evidence of concurrence from the HCCSD shall include written documentation from HCCSD that the proposed septic system is either allowable under HCCSD regulations, out of their jurisdiction or requirement for annexation, or acceptable to HCCSD.

Indemnification:

That the Applicant(s) and/or successor(s) in interest shall defend, hold harmless and indemnify Glenn County from any claim, action, or proceeding against Glenn County and/or its agents, officers, and employees, to attack, set aside, void or annul the approval(s) granted by Glenn County concerning this proposal/project or any action relating to or arising out of such approval. The Applicant(s) and/or successor(s) in interest shall further indemnify Glenn County and/or its agents, officers and employees from liability for any award, damages, costs, and fees, including but not limited to legal fees and costs, incurred by the County and/or awarded to any plaintiff in any action challenging the validity of this permit or any environmental or other documentation related to approval of this permit. Applicant(s) and/or successor(s) in interest further agree to provide a defense for the County in any such action.

Acknowledgment:

I hereby declare under penalty of perjury that I have read the foregoing conditions, which are in fact the conditions that were imposed upon the granting of the Conditional Use Permit, and that I agree to abide fully by said conditions. Additionally, I have read the Staff Report and I am aware of codified county, state, and/or federal standards and regulations that shall be met with the granting of this permit. I have the proper legal authority to, and am signing on the behalf of, those with interest in Crop Production Services, Inc. (or Ginno Construction Inc.).

Date: _____ _____

LANDOWNER: G. Rey Reinhardt, Crop Production Services, Inc.

Date: _____ _____

APPLICANT: Bryan Ginno, Ginno Construction Inc.

Print Form

Appendix C

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH # 20170322022

Project Title: Conditional Use Permit 2017-002, Crop Production Services

Lead Agency: Glenn County Planning & Public Works Agency
Contact Person: Andy Popper, Associate Planner
Mailing Address: 777 North Colusa Street
Phone: (530) 934-6540
City: Willows, CA
Zip: 95988
County: Glenn

Project Location: County: Glenn
City/Nearest Community: Hamilton City
Cross Streets: 1st Street and County Road Y
Zip Code: 95951
Longitude/Latitude (degrees, minutes and seconds): 39 ° 44 ′ 13.2 ″ N / 122 ° 00 ′ 28.8 ″ W
Total Acres: 51 ± acres (property)
Assessor's Parcel No.: 032-260-006
Section: ____ Twp.: ____ Range: ____ Base: ____
Within 2 Miles: State Hwy #: 45 and 32
Waterways: Stony Creek, Sacramento River
Airports: None
Railways: Cal Northern Railroad
Schools: Hamilton City

Document Type:

CEQA:
- ☐ NOP
- ☐ Early Cons
- ☐ Neg Dec
- ☒ Mit Neg Dec
- ☐ Draft EIR
- ☐ Supplement/Subsequent EIR (Prior SCH No.) ____
- Other: ____

NEPA:
- ☐ NOI
- ☐ EA
- ☐ Draft EIS
- ☐ FONSI

Other:
- ☐ Joint Document
- ☐ Final Document
- ☐ Other: ____

Local Action Type:

- ☐ General Plan Update
- ☐ General Plan Amendment
- ☐ General Plan Element
- ☐ Community Plan
- ☐ Specific Plan
- ☐ Master Plan
- ☐ Planned Unit Development
- ☐ Site Plan
- ☐ Rezone
- ☐ Prezone
- ☒ Use Permit
- ☐ Land Division (Subdivision, etc.)
- ☐ Annexation
- ☐ Redevelopment
- ☐ Coastal Permit
- ☐ Other: ____

Development Type:

- ☐ Residential: Units ____ Acres ____
- ☐ Office: Sq.ft. ____ Acres ____ Employees ____
- ☐ Commercial: Sq.ft. ____ Acres ____ Employees ____
- ☒ Industrial: Sq.ft. 157k Acres 51 Employees 10-30
- ☐ Educational: ____
- ☐ Recreational: ____
- ☐ Water Facilities: Type ____ MGD ____
- ☐ Transportation: Type ____
- ☐ Mining: Mineral ____
- ☐ Power: Type ____ MW ____
- ☐ Waste Treatment: Type ____ MGD ____
- ☐ Hazardous Waste: Type ____
- ☒ Other: Crop Production Services

Project Issues Discussed in Document:

- ☒ Aesthetic/Visual
- ☒ Agricultural Land
- ☒ Air Quality
- ☒ Archeological/Historical
- ☒ Biological Resources
- ☐ Coastal Zone
- ☒ Drainage/Absorption
- ☐ Economic/Jobs
- ☐ Fiscal
- ☒ Flood Plain/Flooding
- ☒ Forest Land/Fire Hazard
- ☒ Geologic/Seismic
- ☒ Minerals
- ☒ Noise
- ☒ Population/Housing Balance
- ☒ Public Services/Facilities
- ☒ Recreation/Parks
- ☒ Schools/Universities
- ☒ Septic Systems
- ☒ Sewer Capacity
- ☒ Soil Erosion/Compaction/Grading
- ☒ Solid Waste
- ☒ Toxic/Hazardous
- ☒ Traffic/Circulation
- ☒ Vegetation
- ☒ Water Quality
- ☒ Water Supply/Groundwater
- ☒ Wetland/Riparian
- ☒ Growth Inducement
- ☒ Land Use
- ☒ Cumulative Effects
- ☐ Other: ____

Present Land Use/Zoning/General Plan Designation:

Prior Sugar Beet Plant / M (Industrial Zone) / Industrial

Project Description: *(please use a separate page if necessary)*

Conditional Use Permit 2017-002, Crop Production Services for a proposed retail agriculture facility offering crop nutrients, crop protection products, seeds and application services. Additional project desciption/information/documentation has been included.

*See summary form for Project Description.

Note: The State Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft document) please fill in.

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with and "**X**".
If you have already sent your document to the agency please denote that with an "**S**".

X	Air Resources Board	X	Office of Historic Preservation
	Boating & Waterways, Department of		Office of Public School Construction
	California Emergency Management Agency		Parks & Recreation, Department of
	California Highway Patrol	X	Pesticide Regulation, Department of
X	Caltrans District # 3		Public Utilities Commission
	Caltrans Division of Aeronautics	X	Regional WQCB # 5
	Caltrans Planning		Resources Agency
	Central Valley Flood Protection Board		Resources Recycling and Recovery, Department of
	Coachella Valley Mtns. Conservancy		S.F. Bay Conservation & Development Comm.
	Coastal Commission		San Gabriel & Lower L.A. Rivers & Mtns. Conservancy
	Colorado River Board		San Joaquin River Conservancy
	Conservation, Department of		Santa Monica Mtns. Conservancy
	Corrections, Department of		State Lands Commission
	Delta Protection Commission		SWRCB: Clean Water Grants
	Education, Department of		SWRCB: Water Quality
	Energy Commission		SWRCB: Water Rights
X	Fish & Game Region # 2		Tahoe Regional Planning Agency
X	Food & Agriculture, Department of	X	Toxic Substances Control, Department of
	Forestry and Fire Protection, Department of	X	Water Resources, Department of
	General Services, Department of		
X	Health Services, Department of		Other:
	Housing & Community Development		Other:
	Native American Heritage Commission		

Local Public Review Period (to be filled in by lead agency)

Starting Date Monday, August 21, 2017 Ending Date Tuesday, September 19, 2017

Lead Agency (Complete if applicable):

Consulting Firm:
Address:
City/State/Zip:
Contact:
Phone:

Applicant: Ginno Construction/Crop Production Services
Address: 297 Convair Ave., Ste 2
City/State/Zip: Chico, CA 95973
Phone: 530-894-6859

Signature of Lead Agency Representative: **Date:** 08/18/2017

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

Print Form

Summary Form for Electronic Document Submittal

Form F

Lead agencies may include 15 hardcopies of this document when submitting electronic copies of Environmental Impact Reports, Negative Declarations, Mitigated Negative Declarations, or Notices of Preparation to the State Clearinghouse (SCH). The SCH also accepts other summaries, such as EIR Executive Summaries prepared pursuant to CEQA Guidelines Section 15123. Please include one copy of the Notice of Completion Form (NOC) with your submission and attach the summary to each electronic copy of the document.

SCH #: 20170322022

Project Title: Conditional Use Permit 2017-002, Crop Production Services

Lead Agency: Glenn County Planning & Public Works Agency

Contact Name: Andy Popper, Associate Planner

Email: apopper@countyofglenn.net Phone Number: (530) 934-6540

Project Location: Hamilton City, Glenn County

City *County*

Project Decription (Proposed actions, location, and/or consequences).

Crop Production Services, Inc. (CPS) proposes an agricultural crop protection chemical/fertilizer storage facility for retail to local farmers. The property was formerly operated as a Sugar Beet Plant and contains several existing buildings. The application site plans show proposed new construction and demolition of five buildings. Crop Production Services (CPS) plans to remodel; the A-frame Structure called the Mixing Building (39,000 sq. ft.), concrete masonry unit building called the Package Warehouse (16,170 sq. ft.), Front Office (2,290 sq. ft.) and East Scale House (120 sq. ft.). The owners have decided to preserve the historic aspects of the site, which include the Holly Sugar plant sign at the entrance and the two (2) 300' concrete silos and the North face of the Package Warehouse. At the outset of operations, CPS anticipates selling roughly 12,000 tons of dry fertilizer, 15,000 tons of liquid fertilizer, 30,000 gallons crop protection products, and 2,000 to 3,000 bags of seed annually. The volumes could increase by as much as 150-200% over the initial five years of operations. In terms of total planned available storage space, CPS intends to renovate and improve an existing warehouse on the site that is estimated to provide roughly 13,000 square feet of storage for packaged inputs such as seeds, nutritional products and crop protection products. CPS also intends to renovate and utilize the existing A-frame building on the site to hold roughly 6,000 tons of dry fertilizer. CPS will use various sizes of tanks capable of holding a total of 600,000 gallons of liquid fertilizer and 10,000-15,000 gallons of bulk crop protection products. CPS also intends to utilize rail if possible for incoming shipment.

Identify the project's significant or potentially significant effects and briefly describe any proposed mitigation measures that would reduce or avoid that effect.

Mitigation Measure CR-1 (Cultural Resources):
In the event that any prehistoric or historic subsurface cultural (including Tribal) resources are discovered during ground disturbing activities, all work within 100 feet of the resources shall be halted and the applicant/operator shall consult with the County and a qualified archaeologist (as approved by the County) and corresponding tribal representative to assess the significance of the find per CEQA Guidelines Section 15064.5.

Mitigation Measure TR-1 (Transportation):
Truck traffic travelling northbound on State Route (SR) 45 can make a right turn onto 1st Street to access the site. Trucks will not be directed to southbound SR 45, as there is no existing turn lane to remove the trucks from through traffic when turning.

Mitigation Measure TR-2 (Transportation):
Truck traffic travelling along SR 32 will use Walsh Avenue to access the site. Existing facilities on SR 32 are adequate for the increase in truck traffic.

If applicable, describe any of the project's areas of controversy known to the Lead Agency, including issues raised by agencies and the public.

See Agency Comments as included. Primarily Traffic, Dust, Noise, Chemicals.

Provide a list of the responsible or trustee agencies for the project.

The following are responsible or trustee state agencies for the project.

Regional Water Quality Control Board, Central Valley Region
California Department of Fish and Wildlife
California Department of Transportation

NOTICE OF PUBLIC HEARING AND INTENT TO ADOPT MITIGATED NEGATIVE DECLARATION BY THE GLENN COUNTY PLANNING COMMISSION

NOTICE IS HEREBY GIVEN that the Planning Commission of the County of Glenn, State of California, as lead agency, will consider an environmental determination and hold a public hearing as provided in this notice. Based on project analysis, staff finds that the Planning Commission may adopt a mitigated negative declaration for the project. A mitigated negative declaration states that the project will not result in a significant adverse effect on the environment with implementation of mitigation measures. A Public Hearing will be held at the Glenn County Board of Supervisors' Chambers, 2nd Floor Willows Memorial Hall, 525 West Sycamore Street, Willows, California, on Wednesday, September 20, 2017, at 9:00 A.M., or as soon thereafter as the business of the Commission will allow.

Project: **Conditional Use Permit 2017-002, Crop Production Services, Inc.**

State Clearinghouse No. 20170322022

Landowner: Crop Production Services, Inc.

Applicant: Ginno Construction Inc. Engineer: Rolls Anderson & Rolls

Project Description: According to the application, Conditional Use Permit 2017-002, Crop Production Services, Inc. (CPS) proposes an agricultural crop protection chemical/fertilizer storage facility for retail to local farmers. The property was formerly operated as a Sugar Beet Plant and contains several existing buildings. The application site plans show proposed new construction and demolition of five buildings. Crop Production Services (CPS) plans to remodel; the A-frame Structure called the Mixing Building (39,000 sq. ft.), concrete masonry unit building called the Package Warehouse (16,170 sq. ft.), Front Office (2,290 sq. ft.) and East Scale House (120 sq. ft.). The owners have decided to preserve the historic aspects of the site, which include the Holly Sugar plant sign at the entrance and the two (2) 300' concrete silos and the North face of the Package Warehouse. At the outset of operations, CPS anticipates selling roughly 12,000 tons of dry fertilizer, 15,000 tons of liquid fertilizer, 30,000 gallons crop protection products, and 2,000 to 3,000 bags of seed annually. The volumes could increase by as much as 150-200% over the initial five years of operations. In terms of total planned available storage space, CPS intends to renovate and improve an existing warehouse on the site that, when complete, is estimated to provide roughly 13,000 square feet of storage for packaged inputs such as seeds, nutritional products and crop protection products. CPS also intends to renovate and utilize the existing A-frame building on the site to hold roughly 6,000 tons of dry fertilizer. CPS will use various sizes of tanks capable of holding a total of 600,000 gallons of liquid fertilizer and 10,000-15,000 gallons of bulk crop protection products. CPS also intends to utilize rail if possible for incoming shipments of product from suppliers.

Location: The project site is located at 555 West 1ST Street, Hamilton City, CA, 95951. This site is located on the south side of 1st Street, east of State Highway 45, east of County Road Y, Hamilton City, in Glenn County, California. APNs: 032-260-006 Latitude 39.737, Longitude -122.008 Dec. Degrees

Zoning: "M" (Industrial Zone) General Plan: "Industrial"

The Planning Commission may approve, deny, or continue the:

(1) Mitigated Negative Declaration, (2) Conditional Use Permit

All interested parties may submit comments regarding the proposed project by Wednesday, September 20, 2017, at 9:00 A.M., or appear and present oral and/or written testimony at the Public Hearing. Please note that if you challenge the proposed action(s) in court, you may be limited to raising only those issues you or someone else raised at the public hearing described in this notice, or in written correspondence at, or prior to, the public hearing. All environmental information and project documentation is available for review at the Planning & Public Works Agency, 777 North Colusa Street, Willows, CA 95988. Contact Andy Popper, Associate Planner by phone (530) 934-6540, fax 934-6533, or email planning@countyofglenn.net.

GLENN COUNTY
Planning & Public Works Agency

P.O. Box 1070 / 777 N. Colusa Street
Willows, CA 95988
530.934.6530 Fax 530.934.6533
www.countyofglenn.net

MITIGATED NEGATIVE DECLARATION

DRAFT INITIAL STUDY

CONDITIONAL USE PERMIT 2017-002

CROP PROTECTION SERVICES, INC.

Retail agriculture facility offering crop nutrients,
crop protection products, seeds and application services

555 West 1ST Street, Hamilton City, CA, 95951
APN: 032-260-006

August 2017

Lead Agency:
Glenn County Planning & Public Works Agency

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MITIGATED NEGATIVE DECLARATION

Meeting Date: September 20, 2017

Project Title: **Conditional Use Permit 2017-002, Crop Production Services, Inc.**

State Clearinghouse: #20170322022

Lead Agency: Glenn County Planning & Public Works Agency
777 North Colusa Street
Willows, CA 95988

Contact Person: Andy Popper, Associate Planner, apopper@countyofglenn.net

Project Location: The project site is located at 555 West 1ST Street, Hamilton City, CA, 95951. This site is located on the south side of 1st Street, east of State Highway 45, east of County Road Y, Hamilton City, in Glenn County, California. Latitude 39.737, Longitude -122.008 Decimal Degrees

APNs: 032-260-006

Applicant: Ginno Construction Inc., Bryan Ginno
297 Convair Ave., Ste 2
Chico, CA 95973
Business: 530-894-6859
Fax: 530-894-6061
E-mail: bryan@ginnoconstruction.net

Landowner: Crop Production Services, Inc.
3005 Rocky Mountain Ave.
Loveland, CO 80538
Phone: (Business) 970-685-3300
E-mail: g.rey.reinhardt@cpsagu.com

Engineer: Rolls Anderson & Rolls, Keith Doglio
115 Yellowstone Drive
Chico, CA 95973
Phone: 530-895-1422
Fax: 530-895-1409
E-mail: kdoglio@rarcivil.com

Project Summary:

Conditional Use Permit 2017-002: According to the application, Conditional Use Permit 2017-002, Crop Production Services, Inc. (CPS) proposes an agricultural crop protection chemical/fertilizer storage facility for retail to local farmers. The property was formerly operated as a Sugar Beet Plant and contains several existing buildings. The application site plans show proposed new construction and demolition of five buildings. Crop Production Services (CPS) plans to remodel; the A-frame Structure called the Mixing Building (39,000 sq. ft.), concrete masonry unit building called the Package Warehouse (16,170 sq. ft.), Front Office (2,290 sq. ft.) and East Scale House (120 sq. ft.). The owners have decided to preserve the historic aspects of the site, which include the Holly Sugar plant sign at the entrance and the two (2) 300' concrete silos and the North face of the Package Warehouse. At the outset of operations, CPS anticipates selling roughly 12,000 tons of dry fertilizer, 15,000 tons of liquid fertilizer, 30,000 gallons crop protection products, and 2,000 to 3,000 bags of seed annually. The volumes could increase by as much as 150-200% over the initial five years of operations. In terms of total planned available storage space, CPS intends to renovate and improve an existing warehouse on the site that, when complete, is estimated to provide roughly 13,000 square feet of storage for packaged inputs such as seeds, nutritional products and crop protection products. CPS also intends to renovate and utilize the existing A-frame building on the site to hold roughly 6,000 tons of dry fertilizer. CPS will use various sizes of tanks capable of holding a total of 600,000 gallons of liquid fertilizer and 10,000-15,000 gallons of bulk crop protection products. CPS also intends to utilize rail if possible for incoming shipments of product from suppliers. Please refer to the attached application, project narrative, and site plans for more information.

The General Plan land use designation is “Industrial” and the zoning designation is “M” (Industrial Zone). The proposed project is a permitted use with am approved conditional use permit in the “M” zone. The project is described in more detail in Section 2.1 below.

Surrounding Land Uses and Setting:

The project is located in northeastern Glenn County, south of the community of Hamilton City. It is located within an industrial zone, which is located south of West 1ST Street and east of State Highway 45. The site is located approximately one mile west of the mainstem of the Sacramento River. Elevation in the project area is approximately 145 feet above sea level. The topography is generally flat with a southeastern slope. Surrounding land uses and setting is further described in Section 2.2 below.

Other Public Agencies who’s Approval is Required (e.g. permits, financing approval, or participation agreement.):

Other agencies may require permits that were not specifically listed or have yet to be recognized through the Initial Study and Glenn County permitting process. It is the responsibility of the applicant/agent to recognize and acquire any/all necessary permit approvals.

FINDINGS FOR MITIGATED NEGATIVE DECLARATION

An Initial Study has been prepared by the Glenn County Planning & Public Works Agency. Based on this study, it is determined that the proposed project will not have a significant effect on the environment. The following Findings are made based on the Initial Study to support a Mitigated Negative Declaration:

Finding 1 (Aesthetics)

The project will not have a significant impact on aesthetics. Adopted standards for lighting and construction will minimize impacts from development. The project is compatible with existing industrial uses in the area. Impacts are considered less than significant.

Finding 2 (Agricultural and Forest Resources)

The project will not have a significant impact on agriculture or forest resources. Agricultural activities within the vicinity will not be adversely impacted by this project. There are no forest resources located within the vicinity of the project. Impacts are considered less than significant.

Finding 3 (Air Quality)

The project will not have a significant impact on air quality because the project will not violate air quality standards or contribute substantially to an existing air quality violation. Federal, state, and local standards and codes reduce potential impacts to less than significant.

Finding 4 (Biological Resources)

The project will not have a significant impact on biological resources. The sensitive habitats or natural communities as defined by the Department of Fish and Wildlife or the U.S. Fish and Wildlife Service will not be adversely impacted by this project. Impacts are considered less than significant.

Finding 5 (Cultural Resources)

The project will not have significant impact on cultural resources. The project will be located at a developed industrial site. State laws and mitigation measures are in place in case of accidental discoveries made during future ground disturbing activities. Impacts are considered less than significant.

Finding 6 (Geology and Soils)

The project will not have a significant impact on geology and soils because geologic hazards in the area are minimal and the building codes will require new (and renovated) construction to meet standards for soil conditions. Impacts are considered less than significant.

Finding 7 (Greenhouse Gas Emissions)

The project will not have a significant impact on global climate change as a result of greenhouse gas (GHG) emissions. The project is not in conflict with existing guidelines or standards. The project will not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. The project will not create significant changes in GHG emissions. Impacts are considered less than significant.

Finding 8 (Hazards and Hazardous Materials)

Hazards and hazardous materials will not have a significant impact on the environment as a result of the proposed project. The project will not interfere with an adopted emergency response plan nor expose people to risk of loss, injury, or death. Impacts are considered less than significant.

Finding 9 (Hydrology/Water Quality)

The project will not have a significant impact on hydrology and water quality. All new construction shall comply with regulations of the Central Valley Regional Water Quality Control Board. The project will not significantly alter the drainage pattern of the area. The project does not significantly interfere with groundwater recharge in the area. The project will not substantially deplete groundwater supplies or expose people or structures to a significant risk of loss, injury, or death involving flooding. Impacts are considered less than significant.

Finding 10 (Land Use and Planning)

The project will not have a significant impact on land use and planning because the project would not physically divide an established community. The project site is designated "Industrial" in the General Plan and is zoned "M" (Industrial). The proposed use meets the requirements of the Glenn County Code and General Plan with an approved Conditional Use Permit. The project will not conflict with any existing habitat conservation plan or natural community conservation plan. No impacts are anticipated.

Finding 11 (Mineral Resources)

The project will not have a significant impact on mineral resources. The project would not have a significant impact on aggregate or natural gas resources. Impacts are considered less than significant.

Finding 12 (Noise)

The project will not have a significant impact on people residing or working in the area from excessive noise levels. Noise generating activities are required to meet the established standards prescribed by the County Code. Employees will be required to wear protective gear to reduce noise exposure during construction. The project site is not within an airport land use plan and not in the vicinity of a private airstrip which would expose people in the area to unacceptable noise levels. Additionally, this project will not expose people to excessive ground borne vibration. Impacts are considered less than significant.

Finding 13 (Population and Housing)

The project will not have a significant impact on population and housing because the project will not displace people or housing. The project would not substantially increase population in the area. This project would not induce substantial population growth directly or indirectly. Impacts are considered less than significant.

Finding 14 (Public Services)

The project will not have a significant impact on public services. The services of fire protection, police protection, schools, parks, and other public facilities are sufficient to accommodate the proposed project. Impacts are considered less than significant.

Finding 15 (Recreation)

The project will not have a significant impact on recreation because it would not substantially increase the use of existing recreational facilities nor does the project include such facilities. No impacts are anticipated.

Finding 16 (Transportation/Traffic)

The project will not have a significant impact on transportation/circulation because it will not significantly increase traffic volumes on existing roads. The project will not change air traffic patterns. There will be adequate access to the site. Access roads will provide adequate emergency access to the project site. Alternative transportation plans will not be impacted. Impacts are considered less than significant.

Finding 17 (Tribal Cultural Resources)

The project will not have significant impact on cultural resources. State laws are in place in case of discoveries made during future ground disturbing activities. Impacts are considered less than significant.

Finding 18 (Utilities and Service Systems)

The project will not have a significant impact on utilities and service systems. The project can be served by existing and proposed utilities and service systems facility. Impacts are considered less than significant.

Finding 19 (Mandatory Findings of Significance)

There is no substantial evidence in light of the whole record that the project may have a significant impact on the environment either cumulatively or individually. Impacts are considered less than significant.

An Initial Study has been conducted for the proposed project, which revealed that the project would not have a significant impact on the environment. Mitigated Negative Declaration status is proposed for this project, and therefore an Environmental Impact Report is thereby not being proposed as requisite.

CHAPTER 1
INTRODUCTION

1.1 INTRODUCTION AND REGULATORY GUIDANCE

This Initial Study has been prepared by the County of Glenn to evaluate the potential impacts on the environment that could result from the implementation of the proposed project and to identify, if necessary, any mitigation measures that will reduce, offset, minimize, avoid, or otherwise compensate for significant environmental impacts.

This Initial Study has been prepared in accordance with the requirements of the California Environmental Quality Act (CEQA), encoded in Sections 21000 *et seq.* of the Public Resources Code (PRC) with Guidelines for Implementation codified in the California Code of Regulations (CCR), Title 14, Chapter 3, Sections 15000 *et seq*.

An initial study is conducted by a lead agency to determine if a project may have a significant effect on the environment [CEQA Guidelines §15063(a)]. If there is substantial evidence that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) must be prepared, in accordance with CEQA Guidelines §15064(a). However, if the lead agency determines that there is no substantial evidence that the project may have a significant effect on the environment, a Negative Declaration may be prepared [CEQA Guidelines §15064(f) (3)]. The lead agency prepares a written statement describing the reasons a proposed project would not have a significant effect on the environment and, therefore, why an EIR need not be prepared. This document conforms to the content requirements under CEQA Guidelines §15071.

Alternatively, a Mitigated Negative Declaration may be prepared if the Initial Study identifies a potentially significant effect for which the project's proponent, before public release of a proposed Mitigated Negative Declaration, has made or agrees to make project revisions that mitigate the effects [CEQA Guidelines §15064(f)(2)].

Approval of the proposed project requires discretionary action by the County. According to CEQA Guidelines, a discretionary action or project must be reviewed by the lead agency, to determine its potential effects on the environment. Prior to preparation of the Initial Study, a Pre-Consultation/Request for Review, which included a copy of the application and project description, was sent out by the County of Glenn to the State Clearinghouse, responsible, trustee, state, and local agencies and organizations in order to identify issues to be addressed in the Initial Study. Comments that were received were considered during the preparation of the Initial Study.

1.2 LEAD AGENCY

The lead agency is the public agency with primary approval authority over the proposed project. In accordance with CEQA Guidelines §15051(b) (1), "the lead agency will normally be an agency with general governmental powers, such as a city or county, rather than an agency with a single or limited purpose."
The lead agency for the proposed project is Glenn County Planning & Public Works Agency. The contact person for the lead agency to whom all inquiries and comments on this environmental document should be addressed is:

Andy Popper, Associate Planner, apopper@countyofglenn.net
Glenn County Planning & Public Works Agency
777 North Colusa Street, Willows, CA 95988
(530) 934-6540, (530) 934-6533 fax

1.3 SUMMARY OF FINDINGS

Chapter 3 of this document contains the Environmental (Initial Study) Checklist that identifies the potential environmental impacts (by environmental issue) and a brief discussion of each impact resulting from implementation of the proposed project.

In accordance with §15064(f) of the CEQA Guidelines, a Mitigated Negative Declaration (MND) shall be prepared if the proposed project will not have a significant effect on the environment after the inclusion of mitigation measures in the project. Based on the available project information and the environmental analysis presented in this document, there is no substantial evidence that, after the incorporation of mitigation measures, that the proposed project would have a significant effect on the environment. It is proposed that a MND be adopted in accordance with the CEQA Guidelines**.**

CHAPTER 2
PROJECT DESCRIPTION

2.1 PROJECT DESCRIPTION

2.1.1 General

According to the application, Conditional Use Permit 2017-002, Crop Production Services, Inc. (CPS) proposes an agricultural crop protection chemical/fertilizer storage facility for retail to local farmers. The property was formerly operated as a Sugar Beet Plant and contains several existing buildings. The application site plans show proposed new construction and demolition of five buildings. Crop Production Services (CPS) plans to remodel; the A-frame Structure called the Mixing Building (39,000 sq. ft.), concrete masonry unit building called the Package Warehouse (16,170 sq. ft.), Front Office (2,290 sq. ft.) and East Scale House (120 sq. ft.). The owners have decided to preserve the historic aspects of the site, which include the Holly Sugar plant sign at the entrance and the two (2) 300' concrete silos and the North face of the Package Warehouse. At the outset of operations, CPS anticipates selling roughly 12,000 tons of dry fertilizer, 15,000 tons of liquid fertilizer, 30,000 gallons crop protection products, and 2,000 to 3,000 bags of seed annually. The volumes could increase by as much as 150-200% over the initial five years of operations. In terms of total planned available storage space, CPS intends to renovate and improve an existing warehouse on the site that, when complete, is estimated to provide roughly 13,000 square feet of storage for packaged inputs such as seeds, nutritional products and crop protection products. CPS also intends to renovate and utilize the existing A-frame building on the site to hold roughly 6,000 tons of dry fertilizer. CPS will use various sizes of tanks capable of holding a total of 600,000 gallons of liquid fertilizer and 10,000-15,000 gallons of bulk crop protection products. CPS also intends to utilize rail if possible for incoming shipments of product from suppliers. Please refer to the attached application, project narrative, and site plans for more information.

2.1.2 Location

The project site is located at 555 West 1ST Street, Hamilton City, CA, 95951. This site is located on the south side of 1st Street, east of State Highway 45, east of County Road Y, Hamilton City, in Glenn County, California. Assessor's Parcel Number: 032-260-006 (51± acres)

Township 22 North, Range 1 West, M.D.B. & M. in the unincorporated territory of Glenn County, California. USGS 7.5' Quadrangle Map: Hamilton City

Latitude 39.737, Longitude -122.008 Decimal Degrees

2.1.3 General Plan and Zoning

The project site is designated "Industrial" in the General Plan and is located in the Industrial (M) Zone. The M zone allows a variety of manufacturing, fabricating, processing and related necessary product storage uses and associated structures. Glenn County Code Section 15.440.030(A) (3) lists the following as permitted with a conditional use permit: chemicals including but not limited to

basic chemicals, cleaning agents, cosmetics, explosives, fertilizers, gases, medicinal and botanical products, paints, pesticides, pharmaceuticals, plastics and synthetic fibers. The applicant has applied for a conditional use permit for the proposed project.

2.1.4 Existing Buildings and Proposed Buildings

The project proposes an agricultural crop protection chemical/fertilizer storage facility for retail to local farmers. The property was formerly operated as a sugar beet plant and contains several existing buildings as shown on the site plans. Site plans show proposed new construction and demolition.

Demolish five (5) existing buildings.
Building 1 to be demolished is 10’ by 10’ and located on the West side of the West entrance near the front gate.

Building 2 to be demolished is 40' x 126' and is located just south of the East entrance.

Buildings 3 and 4 to be demolished are 10’ x 10’ noted on plans as existing well buildings.

Building 5 to be demolished is 50' x 109' and is located on the far south end of the property.

Remodeling:
A-frame Structure called the Mixing Building (39,000 sq. ft.),

Concrete masonry unit building called the Package Warehouse (16,170 sq. ft.),

Front office (2,290 sq. ft.) and

East Scale House (120 sq. ft.).

The owners have decided to preserve the historic aspects of the site, which include the Holly Sugar plant sign at the entrance and the two 300 foot tall concrete silos and the north face of the Package Warehouse.

The intended uses for the new site are detailed in the application. According to the application, there are 13 existing structures including one tank, and there are 10 proposed structures in including two tanks. The application further states that there is approximately 74,600 square feet of new structure and approximately 82,100 square feet of existing structures. It is further stated that the existing building lot coverage is approximately 3.7%; the proposed buildings are 3.4% of lot coverage.

2.1.5 Operating Hours and Employees

Proposed hours of operation for the facility will vary by season. During the spring and fall seasons, the proposed hours of operation will be from 7 am to 5 pm. During summer and winter months, proposed hours of operation are 8 am to 4 pm. Hours of operation would be subject to demands of

customers and may vary throughout the year. Trucks trips would generally occur between one hour after opening and one hour prior to closing.

The applicant plans for approximately 10 employees at initiation with, the employee number growing from 25-30 employees over five years. The anticipated employees as provided by the applicant include a branch manager, administrative coordinator, crop consultants, applicators, warehouse personnel, and delivery drivers.

2.1.6 Public Access

The business will be open to the agriculture customer market. The applicant anticipates 10-15 visits daily from customers during busy times in the spring and fall, and 4-5 visits daily from customers during the winter and summer months; the majority of interactions with customers occur at ranches or farms.

2.1.7 Water Usage

California Water Service Company provides domestic and irrigation/landscaping water. New domestic water piping is proposed to be installed onsite.

2.1.8 Odor Control

According to the applicant, the majority of the work to be completed is on the interior of the existing structures, which will keep any air emissions to a minimum.

2.1.9 Fire Protection

The applicant will work with the local fire jurisdiction to assure that adequate fire resources are available for the proposed project, including access to fire-fighting water. An existing fire water system consisting of wells and multiple hydrants is located onsite. The project proposes to install a new onsite fire water system that includes new water piping, hydrants, and a connection to an existing 6” diameter California Water Service Company main on 1st Street.

2.1.10 Dust Control

There will be underground waterlines installed and limited grading work around the existing A-frame building. A concrete truck dock will be installed on the South side of the Package Warehouse. Potential dust from these activities will be wet down with a water truck or site water. Construction equipment will be regularly serviced and maintained. All equipment onsite will meet or exceed California Air quality standards.

2.1.11 Vehicle Traffic

According to the application, traffic at the site would include relatively little customer traffic, given that the majority of interactions with customers occur at ranches or farms. The applicant anticipates

10-15 visits daily from customers during busy times in the spring and fall, and 4-5 visits daily from customers during the winter and summer months.

The majority of traffic in and out of the site will be trucks hauling product to CPS from suppliers and by CPS to customers. The types of trucks used to move the products would include 1-ton flatbeds up to semi-trucks with bulk dry trailers, with the majority of shipments being handled by dual axle extended semi-trucks with flatbeds or van bodies.

Traffic count will depend on the season. During the peak seasons in the spring and fall, CPS could see an average of 4-6 trucks entering or leaving the facility on a daily basis, with that number rising to 8-12 daily over five years as the facility grows. This number would drop by roughly 75% during the winter and summer months. CPS also intends to utilize rail if possible for incoming shipments of product from suppliers, which would thereby reduce the amount of truck traffic. CPS is in discussions with the California Northern Railroad regarding the possible reactivation of the rail line serving the previous Holly Sugar Plant. Based on the geographical diversity of the customer base, coupled with the fact that the typical service area for a facility is 30 miles, CPS states the potential impact on Highway 32 would be minimal. Additionally, truck routes have been imposed as mitigation measures per commenting from Caltrans.

2.1.12 Equipment and Maintenance

CPS guidelines include ensuring facilities comply with all federal, state and local regulations, periodic inspection of all facility components and equipment. Construction equipment will be regularly serviced and maintained. All equipment onsite will meet or exceed California Air quality standards.

2.1.13 Access and Parking

The parcel has an existing driveway and entrance south of 1st Street. The parcel has adequate spaces for employee, customer, and equipment parking. According to the application and site plan the parcel includes ten 22’ parking spaces, west of the driveway and proposes one Americans with Disabilities Act (ADA) parking stall and sidewalk to the office building.

2.1.14 Landscaping and Irrigation

No existing trees are proposed to be removed with the project. A landscaping and irrigation plan is included with the application.

2.1.15 Energy, Water, and Sewage Disposal

Some overhead electrical facilities require relocation as the result of the five buildings proposed for demolition. The electric service to the east scale house, which will remain, currently runs from one of the five buildings that will be demolished. Electricity to the east scale house will therefore be ran from the existing transformer on the pole southeast of the building. The Pacific Gas and Electric Company supplies electricity in the area. California Water Service Company provides domestic and irrigation water. New domestic water piping is proposed to be installed onsite. Public

sewer (Hamilton City Community Service District) will service the office and package warehouse. A new septic system will service one bathroom in the mixing building.

2.1.16 Drainage

Any site work that does not increase the existing quantity of impervious areas will utilize the existing drainage features with no improvement proposed. Site work that does increase the existing quantity of impervious areas will utilize leach trenches sized for the 10-year storm event for storm water disposal.

2.1.17 Signage

The owners have decided to preserve the Holly Sugar plant sign at the entrance and the two (2) 300' concrete silos and the North face of the Package Warehouse. The signage is further addressed in the application.

2.2 SURROUNDING LAND USES AND SETTING

The project site was historically used for production of sugar from sugar beets by the Holly Sugar Company. The former Holly Sugar plant is generally inoperable and abandoned. The site is approximately one mile west of the Sacramento River, approximately 0.5 miles east of the Glenn-Colusa Canal, and south of Hamilton City. Elevation in the project area is approximately 145 feet above sea level. The land within the area of the project is flat. Agricultural uses are located east, south, and west of the site while residential and industrial uses are located north of the site. Noise in the area is generated by vehicle traffic and farm machinery.

EXISTING USES AND LAND USE DESIGNATIONS			
	Existing Uses	**General Plan**	**Zoning Designation**
Project Site	Existing industrial buildings formerly used by Wilbur-Ellis and Holly Sugar	Industrial	M
North	Railroad (N.E.) Residential (N.W.)	Industrial and Single Family	M and R-1
East	Orchard	Industrial	M
South	Orchard	Intensive Agriculture	AE-40
West	Orchard	Industrial	M

Parcels located northeast of the project site are zoned "M" (Industrial Zone) and designated "Industrial" in the General Plan. Parcels located northwest of the project site are zoned "R-1" (Single Family) and designated "Single Family" in the General Plan. Immediately north of the project site are railroad tracks and right of way, to the northwest are two residential properties. All other perimeter properties are intensive agricultural orchards.

2.3 APPROVAL ACTIONS FOR THE PROJECT

A listing and a brief description of the potential regulatory permits and approvals required to implement the proposed project are provided below.

- **Preparation and Approval of an Initial Study / Environmental Determination**– Glenn County will act as the lead agency as defined by the California Environmental Quality Act (CEQA), and will have authority to determine if the IS/ND/MND is adequate under CEQA.
- **Approval of Conditional Use Permit** – The Glenn County Planning Commission will consider approval of the Conditional Use Permit for the proposed project. Conditional Use Permits are discretionary permits for uses of land that require special review.
- **Building Permit issued by the Glenn County Building Inspection Division** – Glenn County will require a Building Permit for the proposed buildings.
- **Sewage Disposal System permit issued by the Glenn County Environmental Health Department** –Sewage disposal systems require permitting evaluation of size, capacity, and planned usage.
- **Municipal Waste Water –** Written concurrence from the Community Services District is required.
- **Encroachment Permit issued by the Glenn County Public Works Division –** Glenn County will require an Encroachment Permit for access to the site. Prior to any work done in the County Right-of-Way, an Encroachment Permit shall be applied for and received.
- **Hazardous Materials Business Plan (HMBP) issued by the Glenn County Air Pollution Control District/CUPA -** Any business that uses, generates, processes, produces, treats, stores, emits, or discharges a hazardous material in quantities at or exceeding 55 gallons, 500 pounds, or 200 cubic feet (compressed gas) at any one time in the course of a year are required to submit a HMBP.
- **General Construction Activity** – Construction activity, including demolition, resulting in a land disturbance of one acre or more must obtain coverage under the CGP. The Crop Production Services project must be conditioned to implement storm water pollution controls during construction and post construction as required by the CGP. To apply for coverage under the CGP the property owner must submit Permit Registration Documents electronically prior to construction. Detailed information on the CGP can be found on the State Water Board website:
  http://www.waterboards.ca.gov/water_issues/programs/stormwater/gen_const.shtml
- **Waste Discharge Requirements -** The CVRWQCB has commented that the subject property located at APN 032-260-006 was historically associated with the former Holly Sugar Hamilton City Facility (Facility) and is currently owned by Wantjas, LLC. The former Facility which includes the subject property is currently regulated under Waste Discharge Requirements (WDRs) Order 5-00-184 which was adopted by the Central Valley Water Board on 4 August 2000. These WDRs prescribe requirements for the removal of precipitated calcium carbonate (PCC) and for closure of the former PCC ponds at the Facility. To date PCC material is still present on the subject property and is still subject to requirements prescribed in the WDRs. Purchase of the subject property would make the new property owner a responsible party. As a responsible party the property owner may be partially or fully liable for ensuring compliance with the Facility's WDRs.

Any change in ownership could require revisions to the current WDRs to reflect changes in property ownership. The WDRs would also likely need to be amended to add the new property owner to the WDRs as a responsible party. Additionally, development of the subject property has the potential to affect PCC material currently stockpiled onsite. Any changes to the current disposition of the PCC material, including but not limited to removal, transportation, and disposal shall be approved by the Central Valley Water Board.

- **Industrial Storm Water -** Regulations published by U.S. Environmental Protection Agency (U.S. EPA) in 1992 require the operators of certain industrial facilities to obtain a permit (National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Industrial Activities (General Permit), Order number 2014-0057-DWQ) to discharge storm water from their facility. The regulations primarily refer to Standard Industrial Classification (SIC) codes to define the industrial activities that must be permitted. The proposed facility may be defined by SIC code 2879, "establishments primarily engaged in the formulation and preparation of ready to use agricultural and household pest control chemicals, including insecticides, fungicides, and herbicides, from technical chemicals and concentrates; and the production of concentrates which require further processing before use as agricultural pesticides. This industry also includes establishments primarily engaged in manufacturing or formulating agricultural chemicals not elsewhere classified." Establishments engaged in formulation and preparation of ready to use agricultural and household pest control chemicals and manufacturing or formulating agricultural chemicals not elsewhere classified are required to obtain coverage under the General Permit.

Other agencies may require permits that were not specifically listed or have yet to be recognized through the Initial Study and Glenn County permitting process. It is the responsibility of the applicant/agent to recognize and acquire any/all necessary permit approvals.

CHAPTER 3

ENVIRONMENTAL CHECKLIST

PURPOSE OF THIS INITIAL STUDY

This Initial Study has been prepared consistent with CEQA Guidelines Section 15063, to determine if the project, as proposed, may have a significant effect upon the environment.

A significant impact is considered a substantial adverse effect, one that exceeds some critical and accepted threshold for negative environmental effects. CEQA defines a significant effect on the environment as "...a substantial, or potentially substantial, adverse (i.e., negative) change in any of the physical conditions within the area directly or indirectly caused by the Project, including effects on land, air, water, flora, fauna, ambient noise, and objects of historic or aesthetic "significance" (CEQA Guidelines, §15382). As recommended in the CEQA Guidelines, impacts are also identified as "potentially significant" prior to mitigation.

Mitigation Measures are measures to mitigate, avoid, or substantially lessen impacts identified as significant or potentially significant. According to CEQA, the term "mitigation measures" refers to those items that are in addition to standard conditions, uniform codes, or project features that may also reduce potential impacts.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist, and corresponding discussion on the following pages.

☐	Aesthetics	☐	Agriculture and Forestry Resources	☐	Air Quality
☐	Biological Resources	☐	Cultural Resources	☐	Geology/Soils
☐	Greenhouse Gas Emissions	☐	Hazards & Hazardous Materials	☐	Hydrology/Water Quality
☐	Land Use/Planning	☐	Mineral Resources	☐	Noise
☐	Population/Housing	☐	Public Services	☐	Recreation
☐	Transportation/Traffic	☐	Utilities/Service Systems	☐	Mandatory Findings of Significance

DETERMINATION: On the basis of this initial evaluation:	
☐	I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
☒	I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
☐	I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
☐	I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
☐	I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Andy Popper, Associate Planner

August 18, 2016
Date

I. AESTHETICS

Would the project:		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c)	Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d)	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

a) Would the project have a substantial adverse effect on a scenic vista?

No Impact. The project site has been highly modified for recent and historical industrial uses and the southern portion is vacant. There are no designated scenic vistas on or adjacent to the project site. The surrounding topography is generally flat with a gentle slope. The project site itself is not a notably scenic vista within the County. As there are no vistas or scenic viewpoints in the area, it is concluded that there will be no impact. The improvements to the property could be considered an improvement to the vista.

b) Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

No Impact. Scenic resources are defined as those landscape patterns and features that are visually or aesthetically pleasing and that, therefore, contribute affirmatively to the definition of a distinct community or region. Scenic areas, open spaces, rural landscapes, vistas, country roads, and other factors interact to produce a net visual benefit upon individuals or communities. Those visual resources that uniquely contribute to that public benefit are scenic resources under CEQA.

The proposed project would not remove scenic resources such as rock outcroppings, or trees. The roadways in Glenn County are not listed as Eligible or as Officially Designated

Scenic Highways according to the California Department of Transportation.[1] The project will not damage scenic resources in the area. Therefore, it is concluded that there will be no impact.

c) Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

Less Than Significant Impact. The project is located in and generally surrounded by an industrial zoned area of south of Hamilton City. The surrounding land uses and setting are further described in Section 2.2. Intensive agricultural uses are located west, east, and south of the project site.

The project site within the Industrial zoning district already contain similar types of structures and previous uses. The parcel of the project site has been previously developed and was formerly used by Holly Sugar and Wilbur-Ellis.

The primary proposed development includes renovating existing structures, including an mixing building, package warehouse, and office building. Other primary proposals include a 52-foot diameter, 32-foot tall steel tank and loading and receiving areas. The Industrial zone has a maximum building height of seventy-five feet (Glenn County Code §15.440.070). All new and renovated structures will be below the maximum building height for the Industrial zone.

New landscaping with irrigation is proposed to be installed along the northern portion of the property and existing trees are proposed to remain in place. The proposed landscaping will act as an aesthetic improvement as well as a visual screen.

The materials of the facilities proposed by the project are similar to those of common industrial buildings (warehouses, grain elevators, silos, etc.) which could be developed as permitted structures under the Glenn County Zoning Code on industrial property. The project is an industrial use within an industrial area. The project is consistent with the industrial character of the premises and properties along the railroad right of way and industrial corridor of Hamilton City. The visual character will not be substantially degraded. It is concluded that there will be a less than significant impact on the existing visual character or quality of the site and its surroundings as a result of this project.

d) Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Less Than Significant Impact. The area to the north of the project site has ambient lighting predominately from industrial buildings and single-family residences, including area traveling vehicle headlights. The project site was formerly used as an animal feed

[1] California Department of Transportation. *Officially Designated State Scenic Highways and Historic Parkways.* http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/index.htm.

combining/shipping facility and contains existing buildings and structures. Development primary includes renovation of existing structures.

Proposed hours of operation for the facility will vary by season. During the spring and fall seasons, the proposed hours of operation will be from 7 am to 5 pm. During summer and winter months, proposed hours of operation are 8 am to 4 pm. Hours of operation would be subject to demands of customers and may vary throughout the year. Trucks trips would generally occur between one hour after opening and one hour prior to closing. Therefore, the facility is not proposing nighttime operations.

The installation of new lighting is required to conform to the Glenn County Code. Glenn County Code §15.560.080 (Glare and Heat) states the following: *All exterior lighting accessory to any use shall be hooded, shielded or opaque. No unobstructed beam of light shall be directed beyond any exterior lot line.* New (or restored) exterior lighting will be required to be hooded to reduce glare and retain light to limited areas. Additionally, the light shall not be directed beyond the property lines.

The project does not include highly reflective glass and high-gloss surface color, which will create daytime glare issues. Design and codified standards will reduce impacts to a less than significant level.

II. AGRICULTURE AND FOREST RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.

Would the project:		**Potentially Significant Impact**	**Less Than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a)	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b)	Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c)	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d)	Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e)	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

a) Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

No Impact. The California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program (FMMP), tracks and categories land with respect to agricultural resources. Farmland is classified according to its ability to support crops or livestock. Land is designated as one of the following and each has a specific definition: Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, Farmland of Local Potential, Grazing Land, Urban and Built-Up Land, and Other Land.

Based on the 2014 FMMP map, the parcel for the proposed project is designated as Urban and Built-Up Land. Urban and Built-Up Land is defined as land occupied by structures with a building density of at least one unit to 1.5 acres, or approximately six structures to a 10-acre parcel. This land is used for residential, industrial, commercial, construction, institutional, public administration, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, water control structures, and other developed purposes.

The entire project site is zoned Industrial. The proposed project is a permitted use within the Industrial zone with a Conditional Use Permit; therefore, the project is consistent with zoning. The proposed project is directly related to agriculture as its purpose is for the storage and handling of crop protection agricultural chemicals and fertilizer for retail to local farmers. The project site is not designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. The project would not therefore result in the conversion of prime or unique farmland or farmland of statewide importance. It is concluded that there will be no impact.

b) Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

Less Than Significant Impact. The project site is not under a California Land Conservation Act (Williamson Act) contract. The entire project site is zoned Industrial. The proposed project is a permitted use within the Industrial zone with a Conditional Use Permit; therefore, the project is consistent with zoning. The proposed project is directly related to agriculture as its purpose is for the storage and handling of crop protection agricultural chemicals and fertilizer for retail sale to local farmers. The use will not result in the removal of adjacent contracted land from agricultural or open-space use. The majority of the proposed project will take place at an existing industrial facility. It is concluded that there will be no impact on existing zoning for agricultural use or a Williamson Act contract.

c) Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

No Impact. The proposed project will not conflict with existing zoning for, or cause rezoning of, forestland, timberland, or timberland zoned Timberland Production. The

project site is not zoned for forestland or timberland nor is it adjacent to land that is zoned for forestland or timberland. The "FA" Foothill Agricultural/Forestry Zone and "TPZ" Timberland Preserve Zone (Chapters 15.320 and 15.450 of the Glenn County Code) are meant to protect timber and forest lands. Areas zoned "FA" and "TPZ" are located within the Mendocino National Forest in the western part of Glenn County. The project site is zoned Industrial. Therefore, it is concluded that the project will have no impact.

d) Would the project result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. Forest land is defined in Public Resources Code section 12220(g)) as *land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits.* This project will not result in the loss of forestland as the project site does not contain forestland. Therefore, there will be no impact as a result of this project.

e) Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

No Impact. This project will not involve a change of agricultural-related uses on surrounding parcels. The project does not include land being converted from farmland to non-agriculture related uses nor does it include land being converted from forestland to non-forest use. The project site will continue to be used as an industrial site. The project will not preclude agricultural uses in areas surrounding the project site. Therefore, there will be no impact.

III. AIR QUALITY

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations.

Would the project:		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b)	Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐
c)	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
d)	Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e)	Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

The Air Quality section addresses the impacts of the proposed project on ambient air quality and the exposure of people, especially sensitive individuals, to pollutant concentrations. The primary air pollutants of concern for which ambient air quality standards (AAQS) have been established are ozone (O_3), carbon monoxide (CO), course inhalable particulate matter (PM_{10}), fine inhalable particulate matter ($PM_{2.5}$), sulfur oxides (SO_x), nitrogen dioxide (NO_2), and lead (Pb). Geographic areas are classified under the federal and California Clean Air Act as in either attainment or nonattainment for each criteria pollutant based on whether the AAQS have been achieved.

a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

Less Than Significant Impact. Air quality standards are set at both the federal and state levels. The Glenn County Air Pollution Control District (GCAPCD) is responsible for the planning and maintenance/attainment of these standards at the local level. The GCAPCD

sets operational rules and limitations for businesses that emit significant amounts of criteria pollutants. The GCAPCD is supervised by the U.S. Environmental Protection Agency. Under the federal Clean Air Act, local air quality districts must produce and implement plans for cleaning up any pollutant that exceeds federal standards.

Local air districts are not able to enact rules that restrict "mobile sources" including cars, trucks, locomotives, and other vehicles. Only "stationary sources" of air pollution fall under their control. Mobile sources are regulated by the California Air Resources Board.

The proposal will not conflict with or obstruct implementation of an applicable air quality plan. The Air Quality section of the Glenn County General Plan establishes mitigation measures designed to reduce particulate matter (PM) and ozone precursors in the ambient air as a result of emissions from sources that attract or generate motor vehicle activity.

Glenn County lies within the Sacramento Valley Air Basin (SVAB). The SVAB includes Shasta, Tehama, Glenn, Butte, Colusa, Yolo, Solano (northeast portion), Sacramento, Sutter, Placer (southeast portion), and Yuba (southeast portion) counties. The entire air basin is currently designated as nonattainment for the State 24-hour and the annual particulate matter (PM10) standards. A “nonattainment” area is defined as a geographic area in which the level of a criteria air pollutant is higher than the level allowed by the federal and state standards.

Glenn County is designated as being nonattainment for the particulate matter (PM10) California ambient air quality standards and is designated either as attainment or unclassified for the remaining criteria pollutants.[2] Pursuant to the California Clean Air Act of 1988, an updated 2012 *Air Quality Attainment Plan* has been prepared for the Northern Sacramento Valley Planning Area (NSVPA). The NSVPA Districts have committed to jointly prepare and adopt the uniform air quality attainment plan for the purpose of achieving and maintaining healthful air quality throughout the air basin. The 2012 Plan addresses the progress made in implementing the 2009 Plan and proposes modifications to the strategies necessary to attain the California ambient air quality standard for the 8-hour ozone at the earliest practicable date. The 2012 Plan identifies those portions of the NSVPA designated as “non-attainment” for the State ambient air quality standards and discusses the health effects related to the various air pollutants. The Plan identifies the air pollution problems, which are to be cooperatively addressed on as many fronts as possible in order to make the region a healthier place to live now and in the future. The Plan focuses on the adoption and implementation of control measures for stationary sources, area wide sources, and indirect sources, and addresses public education and information programs. The 2012 Plan also addresses the effect that pollutant transport has on the ability of the NSVPA to meet and attain the state standards.

The owner or operator of any facility or activity (including agricultural processing activities) that emits criteria air pollutants or their precursors above certain thresholds must

[2] California Environmental Protection Agency, Air Resources Board. June 2013. *State Area Designations*. http://www.arb.ca.gov/desig/adm/adm.htm.

first obtain an Authority to Construct (ATC) from the GCAPCD. The applicant first obtains an ATC with specific conditions for implementation during construction; then an inspection is completed and, if all the conditions of the ATC are met during construction, the applicant is issued a Permit to Operate (PTO). For this project, the GCAPCD has not required the applicant to submit an application for an ATC and subsequent PTO to the District.

The projected number of truck trips and vehicle trips associated with this project would increase pollutants; however, when compared to existing traffic in the vicinity, the increase is anticipated to have a less than significant impact on air pollution standards.

The project would not significantly contribute to air quality impacts during future construction. All future development is to comply with the requirements of the GCAPCD. The proposed project would generate short-term emissions related to the construction phase of the project; however, these emissions are short in duration. Particulate matter emissions can be expected to occur during the construction phase. The project area will be watered during construction for dust control. Construction will also produce exhaust emissions with transport of workers and machinery to and from the site as well as operation of equipment on-site. All engines used shall be maintained in compliance with the U.S. Environmental Protection Agency (USEPA) and the California Air Resources Board engine standards. It is concluded that there will be a less than significant impact on air pollution standards.

b) Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Less Than Significant Impact.

See Section III a) above.

c) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?

Less Than Significant Impact.

See Section III a) above.

Each project with emissions falling under regulatory standards must individually comply with the Glenn County Air Pollution Control District regulations. When adopting the General Plan in 1993, the Glenn County Board of Supervisors adopted a Statement of Overriding Considerations finding that the unavoidable impact to air quality could be overridden because any project would represent a cumulative impact and that the General Plan employed all feasible mitigations. In addition, each project would be required to utilize the best available control technology to mitigate impacts to air quality.

d) Would the project expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant Impact. Neither California statutes nor regulations define "sensitive receptors" but this term normally refers to locations where uses and/or activities result in increased exposure of persons more sensitive to the unhealthful effects of emissions (such as children and elderly). Examples of sensitive receptors include schools and hospitals.

There are no public facilities, churches, schools, or recreation areas within the immediate vicinity of the project site. The nearest potential sensitive receptors in the project vicinity would be located at off-site residences. The closest residences to the project site are located on the north side of 1st Avenue. The nearest residence is located approximately 90 feet north of the projects property line; however, this residence is located approximately 1,300 feet northwest of the proposed mixing building. There is also a residence located approximately 1,200 feet north of the mixing building. During construction, activities would not be expected to result in substantial pollutant concentrations.

Carbon monoxide is the primary source pollutant of local concern for affecting sensitive receptors. Substantial concentrations of carbon monoxide can be generated by vehicles that idle for long periods of time in one location under congested traffic conditions. Under certain meteorological conditions, carbon monoxide concentrations close to a congested roadway or intersection may reach unhealthy levels, affecting local sensitive receptors. Typically, high carbon monoxide concentrations are associated with roadways or intersections operating at unacceptable levels of service (level of service "E" or below), indicating congested conditions. The proposed project would result in minimal increases in traffic volumes at any location. Consequently, it would not create a substantial increase in traffic congestion or existing concentrations of carbon monoxide at any location along the routes that project related traffic would travel.

Risk associated with diesel exhaust exposure is typically associated with chronic exposure. Diesel exhaust from construction activities is considered a toxic air contaminant and may generate odors. However, because the level of overall emissions would be low, and the duration of construction emissions would be temporary in nature, risk from diesel exhaust during construction would be considered less than significant.

All uses at the site shall comply with applicable local, state and federal laws and regulations regarding contaminants and pollutants (Glenn County Code §15.560.040). This requirement includes, but is not limited to, emissions of suspended particles, carbon monoxide, hydrocarbons, odors, toxic or obnoxious gases and fumes. Glenn County Air Pollution Control District regulations manage uses that may generate pollutants. It is concluded that there will be a less than significant impact as a result of this project.

e) Would the project create objectionable odors affecting a substantial number of people?

Less Than Significant Impact. Odors are generally labeled as a nuisance and not a health risk to a community. It is a violation for odor to cause a nuisance. The Glenn County Air Pollution Control District has jurisdiction over odor complaints and can issue Notices of Violation according to state and local nuisance regulations if warranted. "Nuisance" includes anything which is injurious to human health or is indecent or offensive to the senses and interferes with the comfortable enjoyment of life or property, and affects at the same time an entire community, neighborhood, household or any considerable number of persons although the extent of annoyance or damage inflicted upon an individual may be unequal and which occurs as a result of the storage, removal, transport, processing or disposal of solid waste.

The Glenn County Air Pollution Control District had the following comments regarding Pre-Application Review 2017-001, Crop Production Services:

1. Construction and fugitive related Particulate Matter (Dust) must be mitigated. All unpaved roads must be watered to the point that Particulate Matter emissions are prevented from leaving the property boundary. All disturbed surfaces must have the soil stabilized to the point that fugitive dust emissions are prevented from leaving the property boundary. All vehicle traffic on unpaved roads must be limited to 15 mph. Any grading or demolition activities must be suspended when winds are sustained above 15 mph.

2. All efforts should be made to prevent odor generated from this operation impacting local residents. The facility may be required to submit and maintain a District approved Odor Management Program.

3. The facility will be monitored for potential dust impacts on local residents. All efforts should be made to prevent dust from generated from this operation leaving the property and impacting local residents. The facility may be required to submit and maintain a District approved Dust Management Program.

4. The facility will be required to apply for an Authorization to Construct (ATC) and subsequent Permit to Operate (PTO) if the facility utilizes equipment subject to District Regulations such as diesel generators, boilers, screens, conveyors, shredders, separators, crushers, flares, etc.

In reply to the Glenn County Air Pollution Control District comments, the following Conditions of Approval are proposed for the project:

<u>Condition of Approval:</u>
All unpaved roads must be watered to the point that Particulate Matter emissions are prevented from leaving the property boundary.

<u>Condition of Approval:</u>
All disturbed surfaces must have the soil stabilized to the point that fugitive dust emissions are prevented from leaving the property boundary.

Condition of Approval:
All vehicle traffic on unpaved roads are limited to 15 mph. Any grading or demolition activities shall be suspended when winds are sustained above 15 mph.

Condition of Approval:
If any odor complaints are generated from this operation. The owner/operator shall be required to submit and maintain a District approved Odor Management Program. A copy of the approved plan shall be provided to the Planning Division.

Condition of Approval:
If any complaints are received regarding dust leaving the premise of the facility. The facility shall be required to submit and maintain a District approved Dust Management Program. A copy of the approved plan shall be provided to the Planning Division.

Condition of Approval:
The owner/operator is required to apply for an Authorization to Construct (ATC) and subsequent Permit to Operate (PTO) if the facility utilizes equipment subject to District Regulations such as diesel generators, boilers, screens, conveyors, shredders, separators, crushers, flares, etc. A copy of the said permits shall be provided to the Planning Division.

In addition to the APCD comments and corresponding Conditions, all uses at the site shall comply with applicable local, state and federal laws and regulations regarding contaminants and pollutants (Glenn County Code §15.560.040). This requirement includes, but is not limited to, emissions of suspended particles, carbon monoxide, hydrocarbons, odors, toxic or obnoxious gases and fumes.

Grading will be performed during demolition operations and for construction of proposed concrete slabs, truck loading dock, receiving area, tank, parking area and sidewalks. Dust will be controlled by watering exposed areas as necessary.

Most of the work to be completed is on the interior of the existing structures, which will keep any air emissions to a minimum. There will be underground water lines installed and limited grading work around the existing A-frame building. A concrete truck dock will be installed on the South side of the Package Warehouse. Potential dust from these activities will be wet down with a water truck or site water. Construction equipment will be regularly serviced and maintained. All equipment onsite will meet or exceed California Air quality standards.

Construction and operation of the proposed project is not anticipated to produce significant objectionable odors. Impacts are concluded to be less than significant.

IV. BIOLOGICAL RESOURCES

Would the project:		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
b)	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?	☐	☐	☐	☒
c)	Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d)	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
e)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f)	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

a) Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

No Impact.

Special-Status Species

State and federal "endangered species" legislation has provided the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS) with a mechanism for conserving and protecting plant and animal species of limited distribution and/or low or declining populations. Species listed as threatened or endangered under provisions of the state and federal endangered species acts, candidate species for such listing, state species of special concern, and some plants listed as endangered by the California Native Plant Society are collectively referred to as "species of special-status". Permits may be required from both the CDFW and USFWS if activities associated with a proposed project will result in the "take" of a listed species. "Take" is defined by the State of California as "to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill" (California Fish and Game Code, Section 86). "Take" is more broadly defined by the federal Endangered Species Act to include "harm" (16 USC, Section 1532(19), 50 CFR, Section 17.3). Furthermore, the CDFW and the USFWS are responding agencies under the California Environmental Quality Act (CEQA). Both agencies review CEQA documents in order to determine the adequacy of their treatment of endangered species issues and to make project-specific recommendations for their conservation.[3]

Special-status species are those plants and animals that, because of their recognized rarity or vulnerability to various causes of habitat loss or population decline, are recognized by federal, state, or other agencies. Some of these species receive specific protection that is defined by federal or state endangered species legislation. Others have been designated as sensitive on the basis of adopted policies and the expertise of state resource agencies or organizations with acknowledged expertise, or policies adopted by local governmental agencies such as counties, cities, and special districts to meet local conservation objectives.

This project will not have a substantial adverse effect on species identified as a candidate, sensitive, or special status species. The California Natural Diversity Database (CNDDB) is a positive-sighting database managed by the California Department of Fish and Wildlife (CDFW).[4] No sensitive species have been known to be located within the project site or surrounding area.

There is a high density of species observed approximately one mile east of the project site due to the influence of the riparian habitat of the Sacramento River. Although many species are found and have been documented along the banks of the Sacramento River, there have been no documented sightings of species found within the project site. The project site is not within an area of special biological importance as shown on Figure 3-14 of Volume I of the General Plan.[5]

[3] Quad Knopf. May 2005. *Confined Animal Facilities Element of the Glenn County General Plan,* Section 2.4, Biological Resources.

[4] California Department of Fish and Wildlife. *California Natural Diversity Database*. http://www.dfg.ca.gov/biogeodata/cnddb/.

[5] Quad Consultants. June 15, 1993. *Glenn County General Plan, Volume I, Policy Plan*, Figure 3-14.

In addition, the following records were searched and no special status species have been identified within the project site or surrounding area:

- U.S. Fish and Wildlife Service (USFWS) Critical Habitat Mapper
- California Native Plant Society (CNPS) Electronic Inventory
- Aerial photographs

The project will generally occupy existing buildings at an existing industrial site. It is concluded that the project will have no impact on species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.

b) Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?

No Impact. According to the Glenn County General Plan, riparian communities formerly occupied extensive stands within Glenn County; however, current riparian communities are principally located along the Sacramento River, Willow Creek, and Walker Creek.[6]

According to the California Central Valley Wetlands and Riparian GIS data sets of the California Department of Fish and Wildlife[7], the project site does not contain riparian areas. The project site does not contain streams or creeks, which support riparian habitat.

The project site is not located near the twelve important biological areas defined in Table 2-5 of Volume III of the General Plan.[8] These important biological areas are mostly located within the riparian zones of the Sacramento River. The project site is not located within an area of special biological importance as shown on Figure 3-14 of Volume I of the General Plan.[9]

The project does not involve changes to the existing physical environment, which would alter or destroy sensitive natural communities. The project will primarily occupy existing buildings at an existing industrial site. It is concluded that there would be no impact on riparian habitat or other sensitive natural community.

[6] Quad Consultants. January 22, 1993. *Glenn County General Plan, Volume III, Environmental Setting Technical Paper*, Section 2.4.1, Vegetation.

[7] California Department of Fish and Wildlife. 2014. *California Central Valley Wetlands and Riparian GIS Data Sets*: http://www.dfg.ca.gov/biogeodata/wetlands/.

[8] Quad Consultants. January 22, 1993. *Glenn County General Plan, Volume III, Environmental Setting Technical Paper*, Table 2-5.

[9] Quad Consultants. June 15, 1993. *Glenn County General Plan, Volume I, Policy Plan*, Figure 3-14.

c) Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

No Impact. According to the Confined Animal Facilities Element of the Glenn County General Plan, wetlands comprise approximately 4,278 acres of Glenn County, and include marshes, ponds, fringes of small lakes, sloughs, and swamps. The largest wetland assemblages occur within the Sacramento River floodplain, including the managed wetlands of the Sacramento National Wildlife Refuge. Wetlands may also be found in areas with suitable soil and hydrologic conditions.[10]

Since the 1970's, the U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency have used the following definition for wetlands for regulatory purposes: *"Wetlands are areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."*

According to the National Wetlands Inventory of the U.S. Fish and Wildlife Service[11], the project site does not contain wetlands. According to the California Central Valley Wetlands and Riparian GIS data sets of the California Department of Fish and Wildlife[12], the project site is not designated as a protected wetland site. The project will not directly remove, fill, interrupt the hydrology of, or otherwise impact federally protected wetlands. The project will primarily occupy existing buildings at an existing industrial site. Therefore, it is concluded that there will be no impact on federally protected wetlands as a result of this project.

d) Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

No Impact. According to the General Plan, there is a large expanse of deer range located in the western portion of the County next to the Mendocino National Forest.[13] Based on the project site's location within the County, there will be no impact on the existing deer range.

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[10] Quad Knopf. May 2005. *Confined Animal Facilities Element of the Glenn County General Plan*, Section 2.4, Biological Resources.

[11] United States Fish and Wildlife Service. 2013. *National Wetlands Inventory*: http://www.fws.gov/nwi.

[12] California Department of Fish and Wildlife. 2014. *California Central Valley Wetlands and Riparian GIS Data Sets*: http://www.dfg.ca.gov/biogeodata/wetlands/.

[13] Quad Consultants. January 22, 1993. *Glenn County General Plan, Volume III, Environmental Setting Technical Paper*, Section 2.4.2, Wildlife.

Glenn County is located within the Pacific Flyway; a migratory corridor for birds moving between winter and summer ranges. Winter waterfowl habitat is located within and surrounding the Sacramento National Wildlife Refuge, which is located in the southern part of the County. Many of the these birds are protected by the Migratory Bird Treaty Act which prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the United States Secretary of the Interior. The project would have no impact on migratory waterfowl and other birds migrating through the region because the project does not include features, which would draw migratory fowl to the area.

The project does not involve new activities on undisturbed ground. The project activities would not alter or destroy migratory wildlife corridors. According to Figure 2-7 of Volume III of the General Plan, major migration corridors are located in the western part of the County.[14] The project would not significantly impede migratory wildlife corridors. Therefore, it is concluded that there would be no impact.

e) Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

No Impact. The proposed project would not create a conflict with local policies or ordinances protecting biological resources because there are none within the area of the project. Therefore, it is concluded that there will be no impact.

f) Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No Impact. The proposed project would not create a conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan or other approved local, regional, or state habitat conservation plan because no plans have been adopted for this specific area. Therefore, it is concluded that there will be no impact.

[14] Quad Consultants. January 22, 1993. *Glenn County General Plan, Volume III, Environmental Setting Technical Paper*, Figure 2-7.

V. CULTURAL RESOURCES

Would the project:		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☒	☐	☐
b)	Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c)	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐
d)	Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

a) Would the project cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Less Than Significant With Mitigation Incorporated. In compliance with CEQA Guideline §15064.5 (Determining the Significance of Impacts to Archaeological and Historical Resources), a request for a records search was submitted to the Northeast Information Center (NEIC), a member of the California Historic Resources Information System (CHRIS), to determine if any cultural places are located within the project site .

Prehistoric Resources

According to the records of the NEIC, no sites of this type have been recorded in the project area or its vicinity. However, four prehistoric resources have been informally documented as a result of previous survey in the project vicinity; these include flake tools and core tools. The project area is located in a region utilized by Nomlaki populations. The NEIC stated that unrecorded prehistoric cultural resources may be located in the project area.

Historic Resources

According to the records of the NEIC, three historic sites have been recorded in the project area, consisting of Colusa Hamilton Railroad Spur (CA-GLE-000606H), Hamilton City Sugar Mill (P-11-000707), and Hamilton City Rail yard culverts (P-11-000708).

Additionally, three sites of this type have been recorded in the project vicinity, consisting of a stockpile of lime rich filter mud from Holly Sugar Corporation, abandoned sewage ponds, and the Sacramento River levee. The NEIC stated that unrecorded historic cultural resources may be located in the project area.

The NEIC stated that the project appears to be located in an area considered to be sensitive for prehistoric and historical resources. Due to the presence of recorded resources within the project area and lack of prior survey of the entire project area, the NEIC recommended that a cultural resources survey of the project site be conducted.

Although the site has already been previously developed and the project will be primarily located within existing buildings, there is the potential possibility that previously undiscovered cultural and/or tribal resources could be discovered. If buried archaeological resources exist on the site, grading and other construction-related activities could cause a potentially significant impact to these undiscovered resources. As a result, implementation of the following mitigation measures is to be implemented.

Mitigation

Mitigation Measure CR-1 (Cultural Resources):
In the event that any prehistoric or historic subsurface cultural (including Tribal) resources are discovered during ground disturbing activities, all work within 100 feet of the resources shall be halted and the applicant/operator shall consult with the County and a qualified archaeologist (as approved by the County) and corresponding tribal representative to assess the significance of the find per CEQA Guidelines Section 15064.5. The qualified archaeologist shall determine the nature of the find, evaluate its significance, and, if necessary, suggest preservation or mitigation measures. Appropriate mitigation measures, based on recommendations listed in the archaeological survey report and tribal representative, will be determined by the Glenn County Planning & Public Works Agency Director. Work may proceed on other parts of the project site while mitigation for historical resources, unique archaeological resources, and/or tribal resources is carried out. All significant cultural materials recovered shall be, at the discretion of the consulting archaeologist, subject to scientific analysis, professional museum curation, tribal representative, and documented according to current professional standards.

Timing/Implementation:	During Construction/Excavation Activities
Enforcement/Monitoring:	Glenn County Planning & Public Works Agency

c) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less Than Significant With Mitigation Incorporated.

See Section V a) b) above.

d) Would the project disturb any human remains, including those interred outside of formal cemeteries?

Less Than Significant With Mitigation Incorporated.

The project site is currently graded; however, additional/updated grading is planned. The site has already been developed and the project will be located primarily within existing buildings formerly occupied by industrial type activities. No human remains are likely to be encountered; however, the potential exists during construction to possibly uncover previously unidentified resources. Section 7050.5 of the California Health and Safety Code states that if human remains are found during construction activities, all operations are to cease until the County coroner has determined that the remains are not subject to the provisions of law concerning investigation of the circumstances in the manner provided in Section 5097.98 of the Public Resources Code. Additionally, mitigation measures have been required in the event of discovery. See Section V a) b) above.

VI. GEOLOGY AND SOILS

Would the project:			Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:					
	i)	Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
	ii)	Strong seismic ground shaking?	☐	☐	☒	☐
	iii)	Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
	iv)	Landslides?	☐	☐	☐	☒
b)	Result in substantial soil erosion or the loss of topsoil?		☐	☐	☒	☐
c)	Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?		☐	☐	☒	☐
d)	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?		☐	☐	☒	☐
e)	Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?		☐	☐	☒	☐

a) Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

ii) Strong seismic ground shaking?

Less Than Significant Impact. Fault rupture occurs when an active fault displaces in two separate directions during an earthquake. Concern about the growing number of structures located on or near active and potentially active faults led the State of California to enact the Alquist-Priolo Geologic Hazard Zone Act of 1972. The Act was revised in 1975 and renamed to the Alquist-Priolo Special Studies Zone Act. Sudden surface rupture from severe earthquakes can cause extensive property damage, but even the slow movement known as "fault creep" can cause displacement that results in offset or disfiguring of curbs, streets, and buildings.

According to the Glenn County General Plan, Glenn County is in a relatively inactive seismic area. There are no Alquist-Priolo Special Studies Zones within the County. During the past 100 years, the County has experienced only minor earthquakes within its boundaries and secondary impacts from earthquakes centered out of the area. Projections of future impacts are low to moderate.[15] All construction in the County is required to meet the standards set by the California Building Code (CBC).

According to the Glenn County General Plan, the highest historic intensity rating for an earthquake affecting Glenn County is VII as measured by the Modified Mercalli Intensity Scale.[16] The CBC establishes standards for structures to survive earthquakes of an intensity of VII with little or no damage. The CBC also classifies all of Glenn County as being within a Seismic Risk Zone 3. Seismic risk zones are based, in part, on the distribution of earthquakes and the Modified Mercalli Intensity Scale rating of known earthquakes. A Seismic Risk Zone 3 requires that special precautions be taken, in accordance with the CBC, during construction to avoid or minimize earthquake damage.

The United States Geologic Survey (USGS) and California Geologic Survey (CGS) produced a Seismic Shaking Hazards in California map (revised April 2003), which depicts the peak ground acceleration (pga) percentage that has a 10% potential of

[15] Quad Consultants. January 22, 1993. *Glenn County General Plan, Volume III, Environmental Setting Technical Paper*, Section 3.3.1, Seismicity.

[16] Quad Consultants. June 15, 1993. *Glenn County General Plan, Volume II, Issues,* Public Safety Issue Paper, Section 4.1.4, Earthquakes.

occurring in the next fifty years.[17] Glenn County, as well as areas on the west side of the central valley, are rated as 10%–30% on a scale of 0%–100%. Additionally, no earthquake greater than a magnitude 5.5 has occurred in Glenn County in over 200 years.[18]

The seismic history of Glenn County shows the area to be generally stable. Glenn County's stability can be correlated with its location away from tectonic plate boundary convergence/divergence and its location away from major active faults with high slip rates. Given this data, seismic related activities such as rupture of known earthquake faults and strong seismic ground shaking would have a less than significant impact on people and structures in the area of the project.

iii) Seismic-related ground failure, including liquefaction?

Less Than Significant Impact. Liquefaction is defined as the transformation of a granular material from a solid state into a liquefied state as a consequence of increased pore water pressure. Ground shaking resulting from an earthquake is capable of providing the mechanism for liquefaction.

Due to the lack of seismic activity in Glenn County, it is unlikely that liquefaction or other ground failure of this type would occur. Liquefaction generally occurs in low-lying areas with saturated soils and its effects are commonly observed near water bodies. Soils with a loose structure, such as sand, are more susceptible to liquefaction when saturated.

Depending on the level of saturation, soils at a site may be subject to liquefaction during strong shaking in a seismic event. However, since 1800, there have been no recorded earthquakes in Glenn County above a magnitude 5.5. The Earthquake Shaking Potential for California map published by the California Geologic Survey in 2008 indicates that Glenn County is in an area that only will experience lower levels of ground shaking (USGS and California Geological Survey, 2008).[19] Further, the California Geologic Survey does not list Glenn County as an area where seismic activity affects soil stability. It is concluded that there is a less than significant impact.

Also see a) i-ii) above.

iv) Landslides?

[17] United States Geological Survey and California Geologic Survey. *Seismic Shaking Hazards in California*. http://www.consrv.ca.gov/cgs/rghm/psha/Pages/pga.aspx.

[18] California Department of Conservation, California Geologic Survey. *Map 49, California Earthquakes, 1800-2000*. http://www.consrv.ca.gov/CGS/rghm/quakes/Pages/index.aspx.

[19] United States Geological Survey and California Geological Survey. 2008. *Earthquake Shaking Potential for California*. http://www.consrv.ca.gov/cgs/information/publications/ms/Documents/MS48_revised.pdf.

No Impact. Landslides include phenomena that involve the downslope displacement and movement of material, either triggered by static (gravity) or dynamic (earthquake) forces. Areas susceptible to landslides are typically characterized by steep, unstable slopes in weak soil or bedrock units. The highest potential for landslides exists in the western portion of the County. Figure 4-2 of Volume II of the General Plan depicts the project area as being in an area of least landslide potential.[20] The topography of the project area is relatively flat; therefore, it is not susceptible to slope failures and landslides. It is concluded that there will be no impact.

Also see Section VI. a) i) above.

b) Would the project result in substantial soil erosion or the loss of topsoil?

Less Than Significant Impact. The project site is relatively flat and has been graded in the past to accommodate the existing use of the site. Severe erosion typically occurs on moderate slopes of sand and steep slopes of clay subjected to concentrated water runoff. These topographic conditions do not exist at the site. According to Figure 4-1 of Volume II of the Glenn County General Plan, the project site is not located within an area with high erosion potential.[21]

Disruption of soils on the site is not expected to create significant soil erosion due to the flat topography on the site. All future construction at the site is required to conform to the Glenn County Code, which includes Glenn County Code Section 15.700 (Leveling of Land-Drainage Changes) and Glenn County Code Section 15.560.060 (Erosion Control). The erosion control standards for new development states the following: *The following erosion control standards shall apply to all development projects in commercial or industrial zoning districts:*
A. The smallest area practical of land shall be exposed at any one time during development;
B. When land is exposed during development, the exposure shall be kept to the shortest practical period of time;
C. Natural features such as trees, groves, natural terrain, waterways and other similar resources shall be preserved where feasible;
D. Temporary vegetation and/or mulching shall be used to protect critical areas exposed during development;
E. The permanent final vegetation and structures shall be installed as soon as practical in the development;
F. Wherever feasible the development shall be fitted to the topography and soils to create the least erosion potential;

[20] Quad Consultants. June 15, 1993. *Glenn County General Plan, Volume II, Issues*, Public Safety Issue Paper, Figure 4-2.

[21] Quad Consultants. June 15, 1993. *Glenn County General Plan, Volume II, Issues,* Public Safety Issue Paper, Figure 4-1.

G. Provisions shall be made to effectively accommodate the increased runoff caused by changed soil and surface conditions during and after development;
H. Sediment basins (debris basins, desalting basins, or silt traps) shall be installed and maintained to remove sediment from runoff waters from land undergoing development where needed.

When the total land disturbance area will be greater than one acre, the project is subject to the National Pollutant Discharge Elimination System (NPDES) General Construction Activities Storm Water permit program regulated by the Regional Water Quality Control Board. This program requires implementation of erosion control measures during and immediately after construction that are designed to avoid significant erosion during the construction period. The NPDES construction permit requires implementation of a Storm Water Pollution Prevention Program (SWPPP) that includes storm water best management practices to control runoff, erosion, and sedimentation from the site both during and after construction. A SWPPP is to be obtained prior to any soil disturbance activities.

Pre-construction activities will include installation of erosion and sediment control measures, including watering for dust control and soil compaction during grading and throughout construction activities. Implementation of the SWPPP will control pollution in stormwater runoff from the project site, including excessive erosion and sedimentation.

The project would therefore not result in substantial soil erosion or the loss of topsoil. Codified standards are in place for future development. It is concluded that there will be a less than significant impact.

c) Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

Less Than Significant Impact. This proposal will have a less than significant impact on soil involving unstable soils that may result in on- or off-site landslides, lateral spreading, subsidence, liquefaction, or collapse. Soils and the geology of the project site are generally stable because of the area's seismic stability and low relief (see Section VI. a) i) above).

<u>On or Off-Site Landslide</u>
Landslide potential in the County generally correlates with relief. Landslides are not a threat because the site is not located in an area with a great amount of relief. Figure 4-2 of Volume II of the General Plan shows that the project area is in an area of least landslide potential.[22]

[22] Quad Consultants. June 15, 1993. *Glenn County General Plan, Volume II, Issues*, Public Safety Issue Paper, Figure 4-2.

Lateral Spreading
There is a low probability for lateral spreading to occur because of the area's seismic stability. All future construction is required to meet the standards set by the California Building Code, which will reduce impacts from lateral spreading.

Subsidence
Land subsidence is a gradual settling or sudden sinking of the Earth's surface owing to subsurface movement of earth materials. The principal causes of subsidence are aquifer-system compaction, drainage of organic soils, underground mining, hydrocompaction, natural compaction, sinkholes, and thawing permafrost.[23]

According to the Glenn County General Plan, potential subsidence areas occur in the eastern portion of the County where extensive groundwater withdrawals have occurred.[24] Extraction of natural gas reservoirs located in these same areas can also contribute to local subsidence of the land surface.

There are no known areas of subsidence within Glenn County at this time. The problem is potentially a widespread one, affecting the entire valley floor. All future construction is required to meet the standards set by the California Building Code, which will reduce impacts from subsidence.

Liquefaction/Collapse
Liquefaction occurs when loosely packed sandy or silty materials saturated with water are shaken hard enough to lose strength and stiffness. Liquefied soils behave like a liquid and are responsible for damage during an earthquake, causing pipes to leak, roads and airport runways to buckle, and building foundations to be damaged. There is a low probability for liquefaction and ground collapse to occur because of the area's seismic stability. Future construction in compliance with the California Building Code will reduce impacts from liquefaction and collapse.

There is no record of any incidents of unstable geologic units in the project area. Based on the information provided above, it is concluded that there will be a less than significant impact.

d) Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

Less Than Significant Impact. Expansive soils are those that shrink or swell with the change in moisture content. The volume of change is influenced by the quantity of moisture, by the kind and amount of clay in the soil, and by the original porosity of the soil. According to Figure 4-5 of Volume II of the Glenn County General Plan, most of

[23] U.S. Geological Survey. December 2000. *Land Subsidence in the United States*, USGS Fact Sheet -165-00. http://water.usgs.gov/ogw/pubs/fs00165/.

[24] Quad Consultants. June 15, 1993. *Glenn County General Plan, Volume II, Issues*, Public Safety Issue Paper, Section 4.1.3, Subsidence.

Glenn County has high expansive soils.[25] Soils containing a high clay content often exhibit a relatively high potential to expand when saturated, and contract when dried out. This shrink/swell movement can adversely affect building foundations, often causing them to crack or shift, with resulting damage to the buildings they support.

There would be no substantial risks to life or property from this project because all future development will require compliance with the California Building Code (CBC) to avoid potential unstable earth conditions or changes in geologic substructures. As part of the building permit process for structures on the project site, the Glenn County Building Division will ensure that the foundations of all new structures are adequately designed for the shrink/swell characteristics of expansive soils and no significant impacts to life or property are expected. The applicant's engineer will be required to design the footings for all structures to address this soil condition. CBC compliance reduces potential impacts from expansive soils to less than significant. Therefore, it is concluded that there is a less than significant impact.

e) Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

Less Than Significant Impact. According to the Glenn County Environmental Health Department, comments

The majority of the site will be served by both city water and city sewer. One building, described in the application package as the mixing building, will be served by an onsite sewage disposal system (i.e. septic system). This new septic system will require the applicant to obtain a permit from our office.

The site may have additional septic systems and/or wells that the applicant does not plan to use for the new facility. Environmental Health approval is contingent upon the applicant thoroughly investigating the property, locating and/or identifying any preexisting wells or septic systems not intended for use, and destroying these abandoned wells and septic systems through permits obtained from our office.

Compliance with Glenn County Environmental Health standards would ensure that the existing septic systems are properly operating and an expansion of the system is designed with respect to on-site soil capabilities for the safe treatment and disposal of wastewater and the protection of groundwater quality. Therefore, this impact would be less than significant.

[25] Quad Consultants. June 15, 1993. *Glenn County General Plan, Volume II, Issues*, Public Safety Issue Paper, Figure 4-5.

VII. GREENHOUSE GAS EMISSIONS

Would the project:		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b)	Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Legislative/Regulatory

The Governor of California signed Executive Order S-3-05 (EO), in June 2005, which established statewide reduction targets for greenhouse gases. The EO states that emissions shall be reduced to 2000 levels by 2010, to 1990 levels by 2020, and by 2050 reduced to 80 percent of the 1990 levels. Assembly Bill 32, the California Global Warming Solutions Act, 2006 (AB 32), was signed into law in September 2006. AB 32 finds that global warming poses a serious threat to the economic wellbeing, public health, natural resources, and the California environment. It establishes a state goal of reducing greenhouse gas emissions to 1990 levels by the year 2020, which would be a 25 percent reduction from forecasted emission levels.

Senate Bill 97 (SB 97) was approved by the Governor of California in August 2007. SB 97 requires the Governor's Office of Planning and Research (OPR) to prepare, develop, and transmit guidelines to the Resources Agency for the feasible mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions, as required by CEQA. In April 2009, OPR submitted to the Secretary for Natural Resources its proposed amendments to the CEQA Guidelines for greenhouse gas emissions, as required by Senate Bill 97 (Chapter 185, 2007). The Natural Resources Agency (Resources Agency) conducted formal rulemaking prior to certifying and adopting the amendments, as required by Senate Bill 97. The Resources Agency adopted the proposed amendments, and transmitted the amendments to the Office of Administrative Law on December 31, 2009. The Office of Administrative Law reviewed the Adopted Amendments and the Natural Resources Agency's rulemaking file. The Adopted Amendments were filed with the Secretary of State, and became effective March 18, 2010.

These CEQA Guidelines amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of greenhouse gas emissions in draft CEQA documents. The greenhouse gas guidelines fit within the existing CEQA framework by amending existing Guidelines to reference climate change.

Greenhouse gases (GHGs), as defined by the Health and Safety code, include but are not limited to water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), ozone (O_3), and

chlorofluorocarbons (CFCs) (Health and Safety Code §38500 et seq.). These gases all act as effective global insulators, reflecting back to earth visible light and infrared radiation.

GHGs are present in the atmosphere naturally, released by natural sources, or formed from secondary reactions taking place in the atmosphere. In the last 200 years, substantial quantities of GHGs have been released into the atmosphere. These extra emissions are increasing GHG concentrations in the atmosphere, enhancing the natural greenhouse effect, which is believed to be causing global warming. While manmade GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), some (like CFCs) are completely new to the atmosphere.

Natural sources of carbon dioxide (CO_2) include respiration (breathing) of animals and plants and evaporation from the oceans. Together, these natural sources release about 150 billion tons of CO_2 each year, far outweighing the seven billion tons of manmade emissions from fossil fuel burning, waste incineration, deforestation, and cement manufacture. Nevertheless, natural removal processes such as photosynthesis by land and ocean-dwelling plant species cannot keep pace with this extra input of manmade CO_2, and consequently the gas is building up in the atmosphere.

Methane (CH_4) is produced when organic matter decomposes in environments lacking sufficient oxygen. Natural sources include wetlands, termites, and oceans. Manmade sources include the mining and burning of fossil fuels, digestive processes in ruminant animals such as cattle, rice paddies, and the burying of waste in landfills. Total annual emissions of CH_4 are about 500 million tons, with manmade emissions accounting for the majority. The major removal process of atmospheric methane – chemical breakdown in the atmosphere – cannot keep pace with source emissions, and CH_4 concentrations in the atmosphere are increasing. [26]

a) Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less Than Significant Impact. The project cannot generate enough GHG emissions to influence global climate change on its own. The project participates in potential climate change by its incremental contribution (positive or negative) of GHG emissions that, when combined with the cumulative increase of all other natural and anthropogenic sources of GHGs, impact global climate change. Therefore, global climate change is a type of cumulative impact and the project's participation in this cumulative impact is through its incremental contribution of GHG emissions.

The primary source of GHG emissions associated with the project results from the transportation of materials to and from the facility and the operation of on-site machinery. There is a demand for the proposed facility in Glenn County. Currently crop protection chemicals/fertilizers are transported to the County from other areas. The transportation of these materials to the County from other areas produces GHG emissions, which would continue without the project. The project is located close to the farms and ranches that would utilize the crop protection chemicals/fertilizers. As the facility is located close to the

[26] State of California. September 2006. *Assembly Bill 32 California Global Warming Solutions Act of 2006*, http://www.leginfo.ca.gov/pub/05-06/bill/asm/ab_0001-0050/ab_32_bill_20060927_chaptered.pdf

source, it may reduce the amount of miles traveled by trucks and hence the GHG emissions could decrease.

As discussed in Section III above, the proposed project would generate air emissions during construction and transportation activities, some of which may be greenhouse gases. However, construction activities will be temporary. It is anticipated that these emissions would not prevent the state from reaching its GHG reduction targets.

The proposed facility will utilize modern equipment, which will be more energy efficient. New standards on diesel emissions are being phased in and the maximum horsepower is not always required by the equipment. The project will support the agricultural industry. The planting and growth of vegetation may help sequester emissions of greenhouse gases.

GHG emissions would be generated from the proposed project during construction and operation. GHGs directly associated with the proposed project would likely include nitrous oxide (N_2O), ozone (O_3), and carbon dioxide (CO_2). Construction activities associated with the project would result in short-term and temporary CO_2 emissions. Other GHG emissions may result depending on the type of construction equipment used. Operational emissions would also result in CO_2 emissions, which would occur from transportation sources (primarily heavy truck trips) and from electricity and natural gas consumption for building electricity, space heating and cooling, and water usage associated with dust control, fire prevention, storage, and equipment cleaning facilities.

The proposed project would comply with standard green building and energy efficiency standards that would reduce potential GHG emissions. Consistent with the CBC and Title 24 Energy Code standards, the incorporation of green building measures, as applicable for an industrial building, would reduce energy and water consumption, which would also reduce GHG emissions. Because of the low levels of GHG emissions, and the energy efficiency practices that would reduce GHG emissions, the proposed project would not be expected to make a substantial contribution of GHG emissions, and a less than significant impact would result.

Based on the analysis provided above, it is concluded that the proposed project would have a less than significant impact on emissions of GHG's and climate change.

b) Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Less Than Significant Impact. See discussion in section VII a) above. AB 32 is the State of California's primary GHG emissions regulation. The project would not conflict with the state's ability to achieve the reduction targets under AB 32. Impacts are anticipated to be less than significant.

VIII. HAZARDS AND HAZARDOUS MATERIALS

Would the project:		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d)	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☒	☐
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f)	For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
h)	Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

a) Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Less Than Significant Impact. The California Health and Safety Code defines a Hazardous Material as "any material that because of its quantity, concentration, or physical or chemical characteristics poses a significant present or potential hazard to human health and safety or the environment if released into the workplace or environment". Thus, hazardous material is a broad term for all substances that may be hazardous (there is no single list) and includes hazardous substances and hazardous wastes. Substances that are flammable, corrosive, reactive oxidizers, radioactive, combustible, or toxic are considered hazardous. Examples include oil, fuels, paints, thinners, cleaning solvents, compressed gasses (acetylene, carbon dioxide, oxygen, nitrogen, etc.), radioactive materials, and pesticides.

The Glenn County Air Pollution Control District (GCAPCD) is the Administering Agency and the Certified Unified Program Agency (CUPA) for Glenn County with responsibility for regulating hazardous materials handlers, hazardous waste generators, underground storage tank facilities, above ground storage tanks, and stationary sources handling regulated substances. The storage and handling of hazardous materials are closely monitored by the GCAPCD.

The Certified Unified Program Agency made the following comments regarding the proposal:

Re: Notice of Cal ARP and Risk Management Plan (RMP) Requirements

Based upon the projected inventory of Aqua Ammonia at your facility in Hamilton City, your facility has been identified by this office as a candidate to be subject to the California Accidental Release Prevention Program (Cal ARP). This program will involve, among other requirements, the submission of a Risk Management Plan (RMP) to both the Federal EPA and to our agency (the local Certified Unified Program Agency or CUPA). The Cal ARP regulations are a merging of the federal and state risk management and prevention programs for accidental release prevention. The listed regulated substances that are included in this program are toxic and flammable substances (e.g.; anhydrous ammonia, gaseous chlorine, propane, etc.) which pose the greatest risk of causing death, injury, or seriously affecting human health or the environment if accidentally released.

A list of the substances regulated by this program is enclosed with this letter for your reference. The threshold quantity for each substance is listed on the same table. Please review for any chemicals subject to these requirements in addition to the Aqua Ammonia.

The rule requires certain facilities to develop and implement an integrated system to identify hazards and manage risks associated with these regulated substances. Since your facility appears to be subject to this rule, you will be required to analyze worst-case releases; document a five year history of serious accidents at the facility; coordinate with local emergency responders; develop and implement a prevention program that includes, among other steps, identification of hazards, written operating procedures, training, maintenance, and accident investigation. If your employees also respond to accidental releases, you must also implement an integrated local emergency response program. ***The Risk Management Plan must be completed and submitted by the date on which the regulated substance is first present in a process, above the threshold quantity.***

In paragraph 3 of the Health and Safety section of the Conditional Use Permit application *Detailed Project Proposal* it states "The proposed facility in Hamilton City will not store or sell straight ammonium nitrate, which is the agricultural input most commonly associated with public safety concerns."

Therefore, the following Condition of Approval is proposed.

Condition of Approval:
At no time shall the facility store or sell straight ammonium nitrate.

Additionally based on the CUPA comments the following Conditions of Approval are also proposed:

Condition of Approval:
A Risk Management Plan must be completed and submitted by the date on which the regulated substance is first present in a process, above the threshold quantity as described in the Glenn County CUPA comments regarding the proposal. If it is determined that such plan is not required, written evidence from CUPA shall be provided. In either case copies of the documentation shall be provide to the Planning Division.

In addition to the above Conditions, the project site is subject to Glenn County Code §15.560.070 for fire and explosion hazards. This section states: *All uses involving the use or storage of combustible, explosive, caustic or otherwise hazardous materials shall comply with all applicable local, state and federal safety standards and shall be provided with adequate safety devices against the hazard of fire and explosion, and adequate fire-fighting and fire suppression equipment.*

The first step in evaluating if a facility is subject to the Certified Unified Program Agency (CUPA) for Glenn County/Glenn County Air Pollution Control District is to have businesses complete a Hazardous Materials Questionnaire. The Hazardous Materials Questionnaire is to determine if the project is required by law to complete a Hazardous Materials Business Plan (HMBP) or is subject to any of the other program elements. Any business that uses, generates, processes, produces, treats, stores, emits, or discharges a hazardous material in quantities at or exceeding 55 gallons, 500 pounds, or 200 cubic feet (compressed gas) at any one time in the course of a year are required to submit a HMBP. The HMBP includes an inventory of all hazardous materials handled at the facility, floor plans showing where hazardous materials are stored, an emergency response plan, and provisions for employee training in safety and emergency response procedures. The applicant will be required to file a HMBP with the GCAPCD. Compliance with the provisions of the facility's HMBP would reduce the risk of hazards to the public.

The GCAPCD has noted that additional requirements are required when storing extremely hazardous materials including aqua ammonia and certain fumigants and pesticides. These requirements include creating a Risk Management Plan under the California Accidental

Release Program (CalARP) or the Federal Risk Management Program. These requirements must be done prior to chemicals being brought on site.

While it may be necessary to periodically transport incidental volumes of fuel to the site during the construction process to support the use of construction equipment, such transport is routine and would be conducted by licensed fuel haulers. Other types of hazardous materials would not likely be required in more than nominal volumes to construct the project. The transport and use of hazardous materials is strictly regulated by state and federal agencies to minimize adverse hazards from accidental release.

Given the information provided above, the proposed project would have a less than significant impact from hazards to the public or environment from the routine use or accidental release of hazardous materials. Local, state, and federal regulations for use and handling of hazardous materials associated with the project will reduce impacts to the public and the environment. Therefore, it is concluded that impacts would be less than significant.

b) Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Less Than Significant Impact.
Refer to subsection VIII a) above.

All uses involving the storage and handling of hazardous materials would be closely monitored by the GCAPCD, which is the CUPA for Glenn County. According to the GCAPCD, businesses that handle hazardous materials are required by law to provide an immediate verbal report of any release or threatened release of hazardous materials, if there is a reasonable belief that the release or threatened release poses a significant present or potential hazard to human health, safety, property, or the environment.

Local, state, and federal regulations for use and handling of hazardous materials will reduce impacts to the public and the environment to a less than significant level.

c) Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Less Than Significant Impact. The northwest corner of the project property is approximately 0.24 miles (1,288 feet) from the southeast corner of the property situating Hamilton City Elementary School. The proposed mixing building is approximately 0.48 miles (2,500 feet) from the southeast corner of the Hamilton City Elementary School.

Although the facility property is located within one-quarter mile of a school property boundary. The proposed project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing

or proposed school structure and there are no known schools proposed within the immediate vicinity of the project site. Additionally, conditions of approval, local, state, and federal regulations reduce impacts to the public and the environment to a less than significant level.

d) Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

The CVRWQCB has commented that the subject property located at APN 032-260-006 was historically associated with the former Holly Sugar Hamilton City Facility (Facility) and is currently owned by Wantjas, LLC. The former Facility which includes the subject property is currently regulated under Waste Discharge Requirements (WDRs) Order 5-00-184 which was adopted by the Central Valley Water Board on 4 August 2000. These WDRs prescribe requirements for the removal of precipitated calcium carbonate (PCC) and for closure of the former PCC ponds at the Facility. To date PCC material is still present on the subject property and is still subject to requirements prescribed in the WDRs. Purchase of the subject property would make the new property owner a responsible party. As a responsible party the property owner may be partially or fully liable for ensuring compliance with the Facility's WDRs. Any change in ownership could require revisions to the current WDRs to reflect changes in property ownership. The WDRs would also likely need to be amended to add the new property owner to the WDRs as a responsible party. Additionally, development of the subject property has the potential to affect PCC material currently stockpiled onsite. Any changes to the current disposition of the PCC material, including but not limited to removal, transportation, and disposal shall be approved by the Central Valley Water Board.

The applicant has provided documentation (see Lime Report dated July 20, 2017) that the premises have been cleaned up of the PCC. However, because of the CVRWQCB comment that the development of the subject property has the potential to affect PCC material currently stockpiled onsite. The following Condition of Approval shall apply:

<u>Condition of Approval:</u>
Prior to Planning Division building permit approval/zoning clearance (i.e. development of the property) the applicant shall provide written evidence regarding the current disposition of the PCC material, including but not limited to removal, transportation, and disposal approved by the Central Valley Water Board, and that proposed development will not affect PCC material (if any remains).

The project is not located on a site which is included on a list of hazardous materials sites compiled pursuant to California Government Code §65962.5. According to the EnviroStor database of cleanup sites provided through the California Department of Toxic Substance Control (DTSC), there are no cleanup sites within the vicinity of the project.[27]

[27] California Department of Toxic Substance Control. *Envirostor: Cleanup Sites and Hazardous Waste Permitted Facilities*. http://www.envirostor.dtsc.ca.gov/public/.

The site is listed as "other sites" *Cleanup Program Site*, and states "Cleanup Status Completed".
HOLLY SUGAR - HAMILTON CITY PLANT, 1st Street, HAMILTON CITY, CA
Cleanup Status: Completed - Case Closed, RB Case #: SL373553627
Therefore, it is concluded that there will be a less than significant impact.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

No Impact. The project site is not located within an adopted airport land use plan for a public airport and is not located within two miles of a public airport. The project would not result in a safety hazard for people residing or working in the project area. Therefore, it is concluded that there is no impact.

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

No Impact. There are no private airports or private airstrips located within the vicinity of the project. After a review of topographic maps and aerial photos, no private airstrips were identified within the vicinity of the project. The project would not result in a safety hazard for people residing or working in the project area. Therefore, it is concluded that there is no impact.

g) Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less Than Significant Impact. The project would not significantly interfere with an adopted emergency response or evacuation plan. All roads in the area would remain open. The project site is located on private property with adequate access to county roads. The project will not significantly interfere with adjacent roadways that may be used for emergency response or evacuation. The project will not prohibit subsequent plans from being established or prevent the goals and objectives of existing plans from being carried out.

Designated emergency evacuation routes in the event of flood or dam failure are listed in Section 3.7 of Volume II of the Glenn County General Plan.[28] State Highway 32 (east to west) and State Highway 45 (north to south) are both listed as a designated evacuation route. The proposed project does not pose a unique or unusual use or activity that would impair the effective and efficient implementation of an adopted emergency response or evacuation plan. The project will not obstruct or compromise the safety of emergency response vehicles or aircraft and their ability to effectively respond in an emergency. The project would not add significant amounts of traffic that could interfere with emergency

[28] Quad Consultants. June 15, 1993. *Glenn County General Plan, Volume II, Issues*, Public Safety Issue Paper, Section 3.7, Emergency Response Plan.

response. The project would not result in an increased concentration of large numbers of people in an at-risk location. Therefore, it is concluded that there will be a less than significant impact.

h) Would the project expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

No Impact. The proposed project would not expose people or structures to a significant risk of loss, injury or death involving wildland fires because there are no wildlands surrounding the project site. The project site is not located within or adjacent to a State Responsible Area (SRA) managed by the California Department of Forestry and Fire Protection (CAL FIRE); therefore, the site is not ranked by CAL FIRE.[29] According to Figure 3-2 of Volume II of the Glenn County General Plan, the project site is not located within a fire hazard severity zone.[30] The most severe wildland fires occur in the western portion of the County within the Mendocino National Forest. It is concluded that there will be no impact on the project from wildland fires.

[29] California Department of Forestry and Fire Protection. 2007. *Fire Hazard Severity Zones in State Responsible Areas (SRA*, Fire and Resource Assessment Program (FRAP). http://frap.cdf.ca.gov/webdata/maps/glenn/fhszs_map.11.jpg.

[30] Quad Consultants. June 15, 1993. *Glenn County General Plan, Volume II, Issues*, Public Safety Issue Paper, Figure 3-2.

IX. HYDROLOGY AND WATER QUALITY

Would the project:		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
b)	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☒	☐
c)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
d)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☒	☐
e)	Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
f)	Otherwise substantially degrade water quality?	☐	☐	☒	☐
g)	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h)	Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
i)	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐
j)	Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

a) Would the project violate any water quality standards or waste discharge requirements?

Less Than Significant Impact. The proposed project would not violate water quality standards or waste discharge requirements, or substantially degrade water quality. There is an integrated sewer system for the Hamilton City Service District. The project will use existing sewer connections as well as an on-site sewage disposal system. Onsite systems are required to comply with Glenn County Environmental Health Department standards.

The Central Valley Regional Water Quality Control Board (CVRWQCB) (Central Valley Water Board) has reviewed the proposed project. The CVRWQCB is a responsible agency for the project as defined by CEQA.

The applicant will be required to obtain coverage under the State Construction General Permit, under the National Pollutant Discharge Elimination System (NPDES) program. This program requires implementation of erosion control measures during and immediately after construction that are designed to avoid significant erosion during the construction period. The NPDES construction permit requires implementation of a Storm Water Pollution Prevention Program (SWPPP) that includes storm water best management practices to control runoff, erosion, and sedimentation from the site both during and after construction.

Pre-construction activities will include installation of erosion and sediment control measures, including watering for dust control and soil compaction during grading and throughout construction activities. The SWPPP will be implemented before construction. Implementation of the SWPPP will control pollution in stormwater runoff from the project site, including excessive erosion and sedimentation.

The following is proposed as a Condition of Approval:

<u>Condition of Approval:</u>
The applicant shall at all times comply with Regional Water Quality Control Board regulations. Prior to ground disturbance, the applicant shall meet all application and permitting requirements required by the Central Valley Water Board and provide written evidence of compliance to the Glenn County Planning Division.

The proposed project is not expected to violate any water quality standards or waste discharge requirements. Compliance with applicable requirements and water quality standards would minimize project impacts to water quality. Therefore, it is concluded that there will be a less than significant impact.

b) Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production

rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

Less Than Significant Impact. The proposed project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge. According to the Glenn County General Plan, the eastern portion of Glenn County overlies the Sacramento Valley Groundwater Basin, which contains abundant supplies of high quality groundwater to depths of 800 feet.[31] Additionally, the California Water Company will serve the property.

The project is not anticipated to require heavy uses of water. While the project may result in increased water use, the amount of water used to operate the proposed business would be negligible. The proposed storage and transportation of materials does not require the use of heavy amounts of water.

Irrigation water is currently used to support agricultural uses in the vicinity of the project. Irrigation of agricultural fields has been considered a major contributor to groundwater recharge. Groundwater recharge in the project area will potentially continue to take place as crops are irrigated. Therefore, the proposed project would not substantially interfere with groundwater recharge or otherwise substantially affect groundwater supplies. It is concluded that there will be a less than significant impact.

c) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?

Less Than Significant Impact. See discussion in Section IX. a) above.

The drainage pattern of the project site will not significantly change; therefore, there will not be a significant increase in surface runoff, which would result in erosion or siltation on- or off-site. No streams or rivers are located on or next to the project site.

The applicant will prepare a Stormwater Pollution Prevention Plan (SWPPP) as a component of the General Construction Permit for storm water discharges. This plan will be implemented during the construction phase of the project and will reduce erosion and stormwater pollution. Project-related impacts would be reduced to less than significant by the implementation of Best Management Practices (BMP's) that are part of the SWPPP. It is concluded that there will be a less than significant impact.

d) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

[31] Quad Consultants. June 15, 1993. *Glenn County General Plan, Volume II, Issues,* Natural Resources Issue Paper, Section 3, Water Resources.

Less Than Significant Impact. See discussion in Section IX. c) above.

The proposed project site is relatively flat. Given that the drainage pattern of the project site will not significantly change, there will not be a significant increase in surface runoff, which would result in flooding on- or off-site. Therefore, it is concluded that there will be a less than significant impact.

e) Would the project create or contribute runoff water, which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Less Than Significant Impact. See discussion in Section IX. a) above.

The project would not result in a substantial amount of runoff; therefore, it would not exceed the capacity of a stormwater drainage system. Storm water pollution impacts during construction will limited by implementing BMP's that are included in the SWPPP.

Therefore, it is concluded that there will be a less than significant impact.

f) Would the project otherwise substantially degrade water quality?

Less Than Significant Impact.

See Sections IX. a) c) d) and e) above.

g) Would the project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

h) Would the project place within a 100-year flood hazard area structures which would impede or redirect flood flows?

No Impact. The site is not located within a 100-year flood hazard area. The project site is within Flood Zone "X" according to Flood Insurance Rate Map (FIRM) No. 06021C 0425D, dated August 5, 2010, issued by the Federal Emergency Management Agency (FEMA). Flood Zone "X" consists of areas outside the 1-percent annual chance floodplains. Therefore, there will be no impact.

i) Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

Less Than Significant Impact. As discussed in Section IX g) and h) above, the project site is not located within a 100-year flood hazard area. The site is located within an area of minimal flooding.

Black Butte Reservoir dam is located approximately 18 linear miles northwest of the project site. Dam failure is a possibility, but is not an immediate danger given the seismic stability of the region and the rarity for this hazard to occur. In the unlikely event of dam failure, the Glenn County Sheriff's Department and emergency personnel would initiate the Glenn County Emergency Operations Plan. The plan would take effect immediately and outline evacuation routes and begin the evacuation process. It is concluded that there will be a less than significant impact as a result of this project.

j) Would the project be subject to inundation by seiche, tsunami, or mudflow?

No Impact. A seiche is a surface wave created when a body of water is shaken, usually by earthquake activity. Seiches are potentially hazardous when the wave action created in lakes or swimming pools is strong enough to threaten life and property. Tsunamis are large ocean waves generated by major seismic events and mudflows are landslide events in which a mass of saturated soil flows downhill as a very thick liquid.

There would be no impact on the project site from inundation by seiche or tsunami because the project area is not located near large bodies of water that would pose a seiche or tsunami hazard. Intensive mudflows occur in areas with steep terrain, heavy rain, and loose soils. The site is not located near steep terrain, mountains, or steep slopes that would pose a mudflow hazard. Therefore, it is concluded that there will be no impact.

X. LAND USE AND PLANNING

Would the project:		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Physically divide an established community?	☐	☐	☐	☒
b)	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c)	Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

a) Would the project physically divide an established community?

No Impact. The proposed project would not physically divide an established community. The project site lies just south of the within the community of Hamilton City. The project is proposed within an existing built up area on property zoned for industrial use. The majority of surrounding property is zoned for industrial uses. Residential uses and residential zoning in Hamilton City is generally located north of the property and 1st Street. The project would not block a public street, trail, or other access route or result in a physical barrier that would divide a community. Therefore, no impacts would occur.

b) Would the project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

No Impact. The existing General Plan land use designation is "Industrial" and the zoning designation is "M" (Industrial Zone). The proposed project will meet the conditionally permitted use and building intensity requirements for this designation. The project would be developed consistent with the General Plan land use goals and policies and no significant land use impacts will occur. It is concluded that there will be no impact on land use.

c) Would the project conflict with any applicable habitat conservation plan or natural community conservation plan?

No Impact. There are no adopted habitat conservation plans, natural community conservation plans, or local, regional, or state habitat conservation plans that include the project area. As a result, there will be no impact.

XI. MINERAL RESOURCES

Would the project:		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☒	☐
b)	Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☒	☐

The purpose of the Mineral Resources section is to identify and evaluate the potential for the project to adversely affect the availability of known mineral resources. The mineral resources of concern include metals, industrial minerals (e.g., aggregate, sand and gravel), oil and gas, and geothermal resources that would be of value to the region and residents of the State of California.

Notable mineral resources in Glenn County include natural gas and construction grade aggregate material. In addition, published reports indicate past attempts to exploit deposits of chromite, molybdenite and copper. Primary areas for gravel extraction occur along Stony Creek and the Sacramento River, although there are other pockets of gravel scattered throughout the County.

Several gas fields contribute to a significant quantity of natural gas production in Glenn County. Of these, the Malton-Black Butte field located on the border with Tehama County in eastern Glenn County, and the Willows-Beehive Bend field located in southeastern Glenn County account for nearly 80 percent of total gas production in the County. No oil or geothermal resources have been discovered in the County.

Mining in Glenn County was primarily related to the extraction of strategic minerals during World Wars I and II. The extraction of chrome and manganese essentially ended in the late 1940s with the loss of government demand and subsidies.[32]

a) Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

b) Would the project result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

[32] Quad Consultants. January 22, 1993. *Glenn County General Plan, Volume III, Environmental Setting Technical Paper*, Section 2.5, Mineral and Energy Resources.

Less Than Significant Impact. According to the Mined Land Classification Map for Concrete-Grade Aggregate Resources Central Glenn County, produced by the California Department of Conservation, the project area is not located within an area, which contains significant aggregate resources.[33] Mineral extraction activities are not present at the project site and no such activities are known to have occurred on the project site in the past.

Glenn County does not contain oil or geothermal fields but contains several natural gas fields.[34] Additionally, no oil or geothermal resources have been discovered in the County.[35] The project site does not lie within a natural gas field or known reserve.

No locally-important mineral resource recovery sites are located on or near the project site. Therefore, no significant impacts to mineral resources are anticipated. It is concluded that the project would have a less than significant impact on mineral resources.

[33] California Department of Conservation. 1997. *Mined Land Classification Map for Concrete-Grade Aggregate Resources Central Glenn County.*

[34] California Department of Conservation, Division of Oil, Gas, and Geothermal Resources. 2001. *Oil, Gas, and Geothermal Fields in California*.

[35] Quad Consultants. January 22, 1993. *Glenn County General Plan, Volume III, Environmental Setting Technical Paper*, Section 2.5, Mineral and Energy Resources.

XII. NOISE

Would the project result in:		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b)	Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c)	A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
d)	A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f)	For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

a) Would the project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less Than Significant Impact. The Glenn County General Plan Noise Element provides a basis for local policies to control and abate environmental noise, and to protect the citizens of Glenn County from excessive noise exposure. The County also enforces its Noise Ordinance (Chapter 15.560.100) in the County Code. This ordinance contains noise level standards for residential and non-residential land uses. The proposed project will be required to operate business in a manner that meets the noise level standards.

The project is located in an industrial zoned area. The surrounding land uses and setting are further described in Section 2.2. Industrial and agriculturally zoned parcels are located west, east, and south of the project site. Parcels located north of the project site are zoned for single-family residential use.

The noise environment in the vicinity of the project site is primarily influenced by roadway traffic, residential uses, agricultural operations, and industrial operations. The California Northern Railroad also has spur and right of way that travels in a general northwest to southeast direction through Hamilton City. Noise impacts associated with on-site activities and traffic is not anticipated to exceed the area's existing ambient noise levels. If railroad and train cars were to be implemented in the future, the noise impacts would be offset by the reduction in the truck trips required to the site.

The parcel of the project site has been developed and was formerly used. Construction activity will temporarily increase noise levels in the project vicinity during the construction period. Construction activities, including site clearing, excavation, grading, building construction, and paving, would be considered an intermittent noise impact throughout the construction period of the project. Noise levels would fluctuate depending upon construction activity, equipment type, and duration of use, and the distance between noise source and receiver. Glenn County Code §15.160.100 states that construction site sounds between 7:00 a.m. and 7:00 p.m. are exempt from local noise standards. These hours are so defined because they include a period of time where noise sensitivity is at its lowest. Trucks and/or loaders may create groundborne vibrations, but none that are excessive. Vibrations are regulated by Glenn County Code §15.560.130, which states that no use shall generate ground vibrations which are perceptible without instruments beyond the lot line. Ground vibration caused by motor vehicles, aircraft, temporary construction work or agricultural equipment are exempt from the vibration performance standard as stated under Glenn County Code §15.560.130. All construction equipment to be used is late model and in sound working order with property sound attenuating mufflers attached. Temporary noise generated during construction would not significantly differ from noise from construction of other uses already allowed in the Industrial zoning district.

During the busy spring and fall seasons, the proposed hours of operation would be 7 a.m. to 5 p.m. During the slower summer and winter months, proposed hours of operation would be 8 a.m. to 4 p.m. These hours of operation would be subject to demands of the customers and may vary throughout the year. Operational noise associated with the project will not occur during the late night hours.

The proposed facility may generate noise from machinery, fans, blowers, truck traffic, heavy equipment, warning bells, etc. Glenn County Code Section 15.560.100(F) exempts noise standards as they relate to bells, chimes or carillons and warning devices operated continuously for no more than five minutes. The majority of the facility will be enclosed within the proposed and existing buildings, which will reduce the amount of noise.

General noise levels at the new facility may be similar to those at the previous animal feed operation. The storage and sale of crop protection chemicals and fertilizers does not generally create excessive amounts of noise. In addition, the proposed landscaping would act as a visual screen and sound attenuation.

The proposed facility may potentially expose employees to various sources of noise. Noise levels are controlled by Federal and State employee health and safety regulations (OSHA and Cal-OSHA). Measures required by OSHA will reduce potential noise exposure to employees.

No significant increase in noise is anticipated as a result of this project. Based on the aforementioned information, it is concluded that there will be a less than significant impact.

b) Would the project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Less Than Significant Impact.

See Section XII a) above.

c) Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Less Than Significant Impact.

See Section XII a) above.

d) Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Less Than Significant Impact.

See Section XII a) above.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. The project site is not located within an adopted airport land use plan or within two miles of a public airport. Therefore, there would be no impact to people residing or working in the project area from noise levels generated from public airports.

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. There are no private airports or private airstrips located within the vicinity of the project site. After a review of topographic maps and aerial photos, no private airstrips were identified within the vicinity of the project site. Therefore, it is concluded that there will be no impact to people working or residing in the project area from excessive noise levels generated by a private airstrip.

XIII. POPULATION AND HOUSING

Would the project:		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b)	Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c)	Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Population impacts are often associated with substantial increases in population from a project. Housing impacts may result directly from the construction of new housing units or indirectly from changes in housing demand associated with new non-residential development, such as office, manufacturing, and industrial uses that increase employment in an area.

a) Would the project induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Less Than Significant Impact. Initially, CPS plans to employ approximately 10 individuals at the location, with that number potentially growing to 25-30 over five years. It is anticipated that most of these employees would come from the local area; therefore, they would not create a direct increase in population. It is concluded that there will be a less than significant impact on population growth as a result of this project.

b) Would the project displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

c) Would the project displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

No Impact. The proposal would not displace existing housing or people within the area of the project. Construction of replacement housing would not be necessary with this proposal. Therefore, it is concluded that there will be no impact.

XIV. PUBLIC SERVICES

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:					
i)	Fire protection?	☐	☐	☒	☐
ii)	Police protection?	☐	☐	☒	☐
iii	Schools?	☐	☐	☒	☐
iv)	Parks?	☐	☐	☒	☐
v)	Other public facilities?	☐	☐	☒	☐

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

i) Fire protection?

Less Than Significant Impact. Glenn County is primarily serviced by volunteer fire protection districts. The community of Hamilton City and the City of Willows are the only areas that have paid firefighter personnel. The project site is served by the Hamilton City Fire Protection District. The fire department is located on the north side of 1st Street directly across from the project site. Response time would not be affected by the proposed project. The project will be required to meet all fire and building code. Compliance with building and fire codes will be determined by the Building Inspection Division. All of the fire protection regulations of the affected fire district shall be complied with. It is concluded that there will be a less than significant impact on fire protection as a result of this project. The project would not create significant demand for fire protection services to the extent that new fire facilities must be constructed to provide added protection capacity. It is

concluded that there will be a less than significant impact on fire protection as a result of this project.

ii) Police protection?

Less Than Significant Impact. Glenn County Sheriff Warren has commented that *the project would have minimal impact on law enforcement services. There are some Minor impacts on Emergency Services, but they are no greater than the impacts of other similar businesses. I would have no objections or concerns with the project.*

Law enforcement for unincorporated portions of Glenn County, including the project site, is provided by the Glenn County Sheriff's Department. There is a sheriff's office located in the City of Willows and substations located in the City of Orland. The California Highway Patrol is responsible for patrolling all interstate and state highways (including Interstate 5). Transportation routes to the project site are adequate for law enforcement to reach the area in the event of an emergency. Response time would not be affected by the proposed project. This project will not require the staffing of additional peace officers or the purchase of additional equipment to support law enforcement activities. It is concluded that the project would have a less than significant impact.

iii) Schools?

Less Than Significant Impact. The project site lies within the Willows Unified School District. To help offset the impacts of development, the District assesses a development fee per square foot of the development. The proposed project does not require the use of school facilities. The proposed project would not substantially increase the demand on schools. Therefore, it is concluded that there will be a less than significant impact.

iv) Parks?

Less Than Significant Impact. The County provides for maintenance and upkeep of the existing parks within the unincorporated area. The proposed project would not affect the County's ability to provide recreational opportunities facilitated by parks and no demands on the current facilities would be generated by this proposal. The proposed project does not involve any use of parks and will not increase park use. The proposed project would not induce substantial population growth and therefore, would not substantially increase the demand on parks. Therefore, it is concluded that there will be a less than significant impact.

v) Other public facilities?

Less Than Significant Impact. The proposed project may have incremental increases on demands for other public services and facilities; however, this would be a less than significant impact. Public agencies have reviewed this proposal for impacts to public services and facilities and a potentially significant impact has not been identified for this proposed project. The project will not significantly affect the ability of such utilities as electricity or telephone to provide service. Therefore, there is a less than significant impact to other public facilities.

XV. RECREATION

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b)	Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

No Impact. There are no park facilities within the area of the project. The project does not involve the use of recreational facilities. Construction workers are expected to come from the local area and would not create an additional demand on recreational facilities. The applicant anticipates hiring between 25 and 35 full time employees to operate the new business. These employees are expected to come from the local area and would not create an additional demand on recreational facilities. The project does not involve the use of recreational facilities. The project would not result in substantial physical deterioration of recreational facilities. Therefore, it is concluded that there will be no impact.

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

No Impact. The project does not include recreational facilities or require the construction or expansion of recreational facilities. Therefore, there will be no impact from the proposed project.

XVI. TRANSPORTATION/TRAFFIC

Would the project:		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☒	☐
b)	Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐
c)	Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d)	Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☒	☐	☐
e)	Result in inadequate emergency access?	☐	☐	☒	☐
f)	Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒

Glenn County Roads Overview:

The major north-south road is Interstate 5 (I-5), which provides major connection between Glenn County and major cities to the north, such as Red Bluff and Redding, and to the south to cities such as Sacramento. East of I-5, Routes 32 and 162 are the major east-west roads. Route 32 provides a connection through Orland to Chico, the closest of the major urban areas of California to Glenn County residents. To the south, Highway 162 provides a similar connection to Oroville. The next major east-west road to the south is Highway 20 (approximately 23 miles south of Highway 162), which provides a connection to the Yuba City- Marysville area. Highway 45 is the major north-south road east of I-5. It serves adjoining land uses as well as providing a connection between State Routes 32, 162, and 20.

State Route 162 is the only state route west of I-5. The route originally began at Highway 101 in Mendocino County and continued into Glenn County, but a 70-mile break currently exists (34 miles of which is in Mendocino County and 36 miles in Glenn County). The intermediate mileage is a seasonal road owned and maintained by Mendocino and Glenn Counties. This travel corridor is the only east-west route between I-5 and Highway 101 between State Routes 20 and 36, a distance of approximately 75 miles.

The jurisdictions responsible for public roads within Glenn County include the County of Glenn, incorporated cities (Orland, Willows), the State of California, and the U.S. Forest Service.

a) Would the project conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

Less Than Significant Impact With Mitigation Incorporated. The project may conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system.

The parcel has adequate spaces for employee, customer, and equipment parking. The Glenn County Public Works Agency made the following remarks regarding the proposal.

Comments

That prior to any work being done in the County Right-of-Way an Encroachment Permit shall be applied for and received from the Glenn County Planning and Public Works Agency.

That the applicant shall construct off-street parking in accordance with the requirements of Title 15.610 of the Glenn County Code. Said parking areas shall be designed to accommodate all employees and customers. This project will increase truck traffic in the area. It is recommended that a Road Maintenance Agreement is added. A similar fee-based formula that we have used recently on other truck traffic generating Conditional Use Permits is recommended. The fee would be based on the weight of the product exported from the site. The applicant should give us the route used by their trucks so that we can apply the fees collected to those roads.

Conditions

That no off-site parking associated with this development shall be allowed on First Street. That all truck traffic shall use designated truck routes only.

Therefore, the following Condition of Approval will apply:

Condition of Approval:
That no off-site parking associated with this development shall be allowed on First Street. That all truck traffic shall use designated truck routes only.

Cal-Trans has made the following remarks regarding the proposal (August 16, 2017, Agreement Letter).

A phone conference was held on August 7, 2017, between Caltrans, the County of Glenn, and Crop Production Services to discuss truck accessibility to the project site in response to a community meeting in Hamilton City. All parties are in agreement of the following:

Truck traffic travelling northbound on State Route (SR) 45 can make a right turn onto 1st Street to access the site. Trucks will not be directed to southbound SR 45, as there is no existing turn lane to remove the trucks from through traffic when turning.

Truck traffic travelling along SR 32 will use Walsh Avenue to access the site. Existing facilities on SR 32 are adequate for the increase in truck traffic.

As a result, of potential impacts regarding traffic on State Highway 45, as well has State Highway 32, the following is Mitigation Measure(s) shall be implemented for the project:

Mitigation Measure TR-1 (Transportation):
Truck traffic travelling northbound on State Route (SR) 45 can make a right turn onto 1st Street to access the site. Trucks will not be directed to southbound SR 45, as there is no existing turn lane to remove the trucks from through traffic when turning.

Timing/Implementation:	In Perpetuity
Enforcement/Monitoring:	Glenn County Planning & Public Works Agency

Mitigation Measure TR-2 (Transportation):
Truck traffic travelling along SR 32 will use Walsh Avenue to access the site. Existing facilities on SR 32 are adequate for the increase in truck traffic.

Timing/Implementation:	In Perpetuity
Enforcement/Monitoring:	Glenn County Planning & Public Works Agency

A conditional use permit generally requires the applicant to enter into a Road Maintenance Agreement with the Glenn County Public Works. Glenn County Public Works recommends that in lieu of a Road Maintenance Agreement, the applicant agree to a funding mechanism with the County to provide a funding source for wear of County roads due to trucks.

The following is proposed as a Condition of Approval:

Condition of Approval:
That the applicant/operator shall pay money into a road maintenance fund (paid to the Glenn County Planning & Pubic Works Agency) to be paid on an annual basis to maintain County roadways. The payment shall be equal to $0.00002351 (July 1, 2017 to June 30, 2018) per pound (approx. $4.70 per 100 tons). The fee is based on the weight of the product exported from the site. The payment described above shall be amended on an annual basis, based on the All-Urban Consumers, Consumer Price Index (computed by the U.S. Department of Labor, Bureau of Labor Statistics).

Additionally, in order to implement Mitigation Monitoring and Condition of Approval compliance the following Condition of Approval will apply.

Condition of Approval:
That the applicant shall pay an annual nonrefundable fee of $250.00 for the purpose of Condition of Approval and Mitigation compliance monitoring. The first deposit shall be made within 30 days of approval, and each year thereafter.

The parcel will have a commercial drive approach off 1st Avenue. This drive approach will be constructed per County requirements and will require an encroachment permit issued by Glenn County. County roads in the area of the project serve residential, commercial, agricultural, and industrial in the vicinity. Additional vehicle traffic as a result of this project would not have a significant impact on current access roads or nearby connecting roads. Therefore, it is concluded that there will be a less than significant impact.

b) Would the project conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

Less Than Significant Impact.

Also refer to Section XVI a) above.

The Glenn County General Plan states that Level of Service (LOS) "C" is the standard for all road segments in the County. Project related traffic would not adversely affect the LOS that currently exists on County roads. Additionally, all roads will continue to operate at or better than the LOS "C" standard as prescribed by the Glenn County General Plan. Therefore, it is concluded that there will be a less than significant impact as a result of this project. Caltrans and Public Works has commented on the proposal Mitigations and Conditions have been proposed in regards to those comments.

c) Would the project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

No Impact. The proposed project would not result in a change in air traffic patterns that would result in safety risks. The project is not primarily dependent upon air transport related materials, labor, or services, and would therefore not result in increases of air traffic levels or changes in air traffic locations. No project design feature will obstruct air traffic patterns. The project is not located within the vicinity of a public use airport. Therefore, it is concluded that there will be no impact as a result of this project.

d) Would the project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Less Than Significant Impact With Mitigation Incorporated. See Mitigation Measures TR-1 and TR-2 as well as Caltrans comments. The proposed project could increase traffic hazards due to a dangerous intersection without truck route requirements. County roads in the project area are relatively straight and the project is in a relatively flat rural area. With truck route requirements. The project will not be incompatible with other uses of nearby roadways. Any work done in the County Right-of-Way will require an Encroachment Permit. It is concluded that there will be a less than significant impact with mitigations.

e) Would the project result in inadequate emergency access?

Less Than Significant Impact. There will be adequate emergency access to the project site and the project will not inhibit emergency vehicle access to surrounding parcels. Projected operational traffic volumes will both be low and will not hinder emergency response. The project site will have adequate ingress and egress. Emergency services agencies have been contacted and have provided no objections to the proposal. The site will be accessible to fire, ambulance, and law enforcement vehicles. The site will provide adequate interior circulation. It is concluded that there will be a less than significant impact on emergency access.

f) Would the project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

No Impact. The project will not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities. Glenn County has a deviated fixed bus system (Glenn Ride). This project will not conflict with plans, policies or programs related to the transit system. There are no bicycle or pedestrian facilities located next to the project. There will be no off-site parking. It is concluded that the project will have no impact.

XVII. TRIBAL CULTURAL RESOURCES

	Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i)	i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☒	☐	☐
ii)	A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?	☐	☒	☐	☐

a) a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.
a) i) and ii)

Less Than Significant With Mitigation Incorporated. The mitigation regarding **Tribal Cultural Resources** is addressed in item V. Cultural Resources. The property has already been previously developed and primary construction involves the renovation of existing structures.

XVIII. UTILITIES AND SERVICE SYSTEMS

Would the project:		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☒	☐
b)	Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c)	Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
d)	Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☒	☐
e)	Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
f)	Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g)	Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

a) Would the project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

Less Than Significant Impact. The proposed project will not exceed wastewater treatment requirements of the Regional Water Quality Control Board. There is no municipal wastewater treatment facility proposed with this project. The project will utilize an on-site septic system for wastewater treatment.

The existing office building has a restroom, which is served by an existing septic tank and leach field. According to the Glenn County Environmental Health Department, the existing

sewage disposal system will need to be brought up to current County code. This will require re-evaluation of size, capacity, and planned usage. The yard is proposed to have portable restrooms serviced and pumped by an outside company.

The project will be required to comply with the requirements of the Regional Water Quality Control Board as discussed in Section IX (Hydrology and Water Quality). It is concluded that there will be a less than significant impact.

b) Would the project require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

No Impact. The project will not require new water or wastewater treatment facilities. The project will not require or result in new or expanded facilities, which could cause significant environmental effects. Therefore, it is concluded that there is no impact.

Jose Puente, General Manager of the Hamilton City Community Services District (HCCSD) made the following comments regarding the project:

I have reviewed records on file at the Hamilton City Community Services District (HCCSD) office regarding the "Holly Sugar" property and have found that this property is not annexed to the District. From my review of the minutes of the HCCSD Board of Directors, the history of the service to the Holly Sugar property is as follows:

In 1976 the District was approached by representatives from Holly Sugar Corporation to hook up to the District's sewer system to treat their non-industrial waste water. The HCCSD Board of Directors agreed to allow Holly Sugar to connect to the HCCSD sanitary sewer system provided that Holly Sugar bear the costs associated with extending their new line to connect to the District's main line on Walsh Avenue. The agreement was to be on a contract basis, subject to a 5 to 7 year review/revision. Further, Holly Sugar was responsible for the maintenance of said line. No written contract is on file.

It is my understanding, having spoken with the previous General Manager of the District, only the agricultural building, located at the front of the property, was to be connected to the HCCSD system. The main office and the other bathrooms were to remain serviced by Holly Sugar's existing waste water system. Please note that the HCCSD Board of Directors may choose to revisit the original agreement to determine whether to continue with the agreement or require that the parcel be annexed to the District. One reason for annexation being that the onsite wastewater treatment plant is no longer in operation. As such, without construction of their own waste water treatment plant, there is no legal means for them to discharge waste water. Also, the main office is situated within 250 feet of an available District sewer connection and, under HCCSD's ordinance, must be connected to the District's sewer line (reference: HCCSD Ordinance 82-9).
Regarding the storage and mixing of chemicals, we are concerned about odors emanating from this process, as the prevailing winds in our area are south to north. The District reserves the right to make additional comments once an application has been submitted.

The following Condition of Approval shall apply regarding the subject:

Condition of Approval:
Prior to receiving a building permit approval/zone clearance from the Glenn County Planning Division, the applicant shall confer with the HCCSD prior to the installation of any new/updated septic systems regarding the proposal. Evidence of concurrence from the HCCSD shall include written documentation from HCCSD that the proposed septic system is either allowable under HCCSD regulations, out of their jurisdiction or requirement for annexation, or acceptable to HCCSD.

Regarding HCCSD comments to odors, the item is addressed in the air pollution section of this report.

c) Would the project require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Less Than Significant Impact. Future improvements will utilize surface and/or underground conveyance systems to direct water of the proposed improvements and will direct drainage as necessary. The project will be required to be constructed in accordance with a Storm Water Pollution Prevention Plan (SWPPP). It is concluded that there is less than significant impact.

d) Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

Less Than Significant Impact. The project does not require new or expanded entitlements for water supplies and the project would not result in a substantial increased demand for water supply. The project is not anticipated to require heavy uses of water.

Existing municipal and groundwater entitlements and resources will be sufficient to serve the project. It is concluded that there will be a less than significant impact.

e) Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Less Than Significant Impact. There is a municipal wastewater treatment provider for the area. Individual sewage disposal systems are currently proposed; however, the Condition of Approval in this section regarding HCCSD concurrence will provide evidence of responding to comments regarding onsite septic systems. Therefore, there is a less than significant impact.

f) Would the project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

Less Than Significant Impact. The proposed project will be required to comply with all solid waste regulations as implemented and enforced by the County of Glenn. Solid waste disposal is currently provided at the Glenn County landfill. Glenn County is planning on the future closure of the landfill and updating the solid waste system.

Development at the project site would generate moderate amounts of solid waste during construction. Construction materials would be sorted on site throughout construction and transported to appropriate waste management facilities. Recyclable materials would be separated from non-recyclable items and stored until they could be transported to a designated recycling facility. Normal waste/garbage will be collected in a container and disposed of by a private carrier such as Waste Management. At this time, waste disposal is not anticipated to be a significant issue. The cumulative impacts on the landfill will be offset in the future from increased requirements for sorting and diversion and increases in disposal costs. It is concluded that there will be a less than significant impact.

g) Would the project comply with federal, state, and local statutes and regulations related to solid waste?

No Impact. The proposed project will be required to comply with all federal, state, and local statutes and regulations related to solid waste disposal. As a result, there would be no impact on solid waste regulations.

XIX. MANDATORY FINDINGS OF SIGNIFICANCE

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☒	☐
b)	Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☒	☐
c)	Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

Less Than Significant Impact. All impacts associated with the project have been identified in this document. Impacts on biological resources and cultural resources were discussed in sections IV and V above. The project would not degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory. All uses at the site are subject to applicable codified federal, state, and local laws and regulations. It is concluded that there will be a less than significant impact.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

Less Than Significant Impact. As detailed throughout this document, the proposed project would have a less than significant impact. Each impact will be less than significant with implementation of applicable federal, state, and county standards or adopted best practices. Total impacts from the project will not be cumulatively considerable. Therefore, impacts are considered less than significant.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Less Than Significant Impact. The proposed project would not create significant hazards or health safety concerns. It would be constructed to meet required building codes. Aspects of this project, which have the potential to have an effect on human beings or the environment, have been discussed in this document. The impacts of the project have been concluded to be less than significant. The facility will not create significant hazards from fire or explosion. Impacts related to dust and particulates would be minimized through compliance with local air district regulations. Impacts related to hazardous materials would be minimized through compliance with local, state, and federal regulations regarding the handling of hazardous materials. The project site is not located within an area that is subject to unusual hazards from seismic or flood events. Consequently, the proposed project is not anticipated to have environmental effects, which have adverse effects on human beings, nor would it expose human beings to significant direct safety hazards. Therefore, impacts are considered less than significant.

REFERENCES

In addition to the resources listed below, Initial Study analysis may also be based on on-site field observations, discussions with the affected agencies, analyses of adopted plans and policies, review of existing studies, and specialized environmental studies (geotechnical and traffic). Most resource materials are on file in the office of the Glenn County Planning & Public Works Agency, 777 North Colusa Street, Willows, CA 95988, Phone (530) 934-6540.

Records of, or consultation with, the following:

California Department of Conservation, California Geologic Survey
California Department of Fish and Wildlife
California Department of Transportation, Caltrans
Central Valley Regional Water Quality Control Board
Glenn County Agricultural Commissioner
Glenn County Air Pollution Control District/Certified Unified Program Agency
Glenn County Assessor
Glenn County Environmental Health Department
Glenn County Planning & Public Works Agency, Building Inspection Division
Glenn County Planning & Public Works Agency, Engineering & Surveying Division
Glenn County Planning & Public Works Agency, Solid Waste Division
Glenn County Sheriff's Office
Northeast Information Center (NEIC) of the California Historical Resources Information System
Community Services District
Fire Protection District
Pacific Gas and Electric Company (PG&E)

California Department of Conservation, California Geologic Survey. *Map 49, California Earthquakes, 1800-2000*. http://www.consrv.ca.gov/CGS/rghm/quakes/Pages/index.aspx.

California Department of Conservation, Division of Land Resource Protection. *Farmland Mapping and Monitoring Program*. http://www.conservation.ca.gov/dlrp/fmmp/Pages/Index.aspx.

California Department of Conservation, Division of Oil, Gas, and Geothermal Resources. 2001. *Oil, Gas, and Geothermal Fields in California.*

California Department of Conservation. 1997. *Mined Land Classification Map for Concrete-Grade Aggregate Resources Central Glenn County.*

California Department of Fish and Game. 1994. *A Field Guide to Lake and Streambed Alteration Agreements, Sections 1600-1607, California Fish and Game Code*. Environmental Services Division, Sacramento, CA.

California Department of Fish and Wildlife. *California Central Valley Wetlands and Riparian GIS Data Sets*: https://www.dfg.ca.gov/biogeodata/gis/clearinghouse.asp.

California Department of Fish and Wildlife. *California Natural Diversity Database*. http://www.dfg.ca.gov/biogeodata/cnddb/.

California Department of Forestry and Fire Protection. 2007. *Fire Hazard Severity Zones in State Responsible Areas (SRA*, Fire and Resource Assessment Program (FRAP). http://frap.cdf.ca.gov/webdata/maps/glenn/fhszs_map.11.jpg.

California Department of Justice, Office of the Attorney General. *Global Warming*. http://ag.ca.gov/globalwarming/index.php

California Department of Toxic Substance Control. *Envirostor: Cleanup Sites and Hazardous Waste Permitted Facilities*. http://www.envirostor.dtsc.ca.gov/public/.

California Department of Transportation. *Officially Designated State Scenic Highways and Historic Parkways.* http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/index.htm.

California Environmental Protection Agency, Air Resources Board. *Climate Change Program*. http://www.arb.ca.gov/cc/cc.htm

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Federal Emergency Management Agency. Flood Insurance Rate Maps (FIRM) for Glenn County, as revised to date.

Glenn County Air Pollution Control District. 2010. Draft Indirect Source Review Guidelines: A Technical Guide to Assess the Air Quality Impact on Land Use Projects Under the California Environmental Quality Act.

Glenn County Planning & Public Works Agency. Glenn County Geographic Information System.

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Quad Knopf. May 2005. *Confined Animal Facilities Element of the Glenn County General Plan.*

State of California. September 2006. *Assembly Bill 32 California Global Warming Solutions Act of 2006*, http://www.leginfo.ca.gov/pub/05-06/bill/asm/ab_0001-0050/ab_32_bill_20060927_chaptered.pdf

Title 15 (Unified Development Code) of the Glenn County Code, as revised to date. http://www.countyofglenn.net/govt/county_code/?cc_t_id=17

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United States Department of Agriculture (USDA), Natural Resource Conservation Service. Soil Survey Geographic (SURGO) Database. http://soils.usda.gov/survey/geography/ssurgo/

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United States Fish and Wildlife Service. *National Wetlands Inventory*: http://www.fws.gov/wetlands/Data/Mapper.html.

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United States Geological Survey and California Geologic Survey. *Seismic Shaking Hazards in California*. http://www.consrv.ca.gov/cgs/rghm/psha/Pages/pga.aspx.

GLENN COUNTY
Planning & Public Works Agency

P.O. Box 1070 / 777 N. Colusa Street
Willows, CA 95988
530.934.6530 Fax 530.934.6533
www.gcppwa.net

Ginno Construction Inc.
Attn: Bryan Ginno
297 Convair Ave., Ste 2
Chico, CA 95973

RE: **Pre-Application Review (PAR) 2017-001, Crop Production Services**
SCH# 2017032022

March 28, 2017

To Ginno Construction Inc.,

On February 22, 2017, the Glenn County Planning & Public Works Agency received your documentation for a Pre-Application Review for a Conditional Use Permit. These documents were sent to local and state agencies for an Early Consultation/Request for Review period from approximately March 7 to March 21, 2017.

The comments are provided by the agencies to assist in the development of an application. The responses are a guide and not intended to be a comprehensive summary of all codified or site-specific requirements pertaining to the proposal. The pre-application review process may identify conditions that may need particular attention.

Attached with this letter are the responses received from the pre-application process. Please note that no further staff processing of this proposal will occur until an application and fees for a Conditional Use Permit is submitted. If clarifications of the recommended application information, analysis, or plans are required, contact the corresponding commenting agency or the Planning Division.

Sincerely,

Andy Popper, Associate Planner
apopper@countyofglenn.net

Cc: Crop Production Services, Inc.
3005 Rocky Mountain Ave.
Loveland, CO 80538

Rolls Anderson & Rolls, Keith Doglio
115 Yellowstone Drive
Chico, CA 95973

Print Form

Appendix C

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH #

Project Title: Pre-Application Review (PAR) 2017-001, Crop Production Services

Lead Agency: Glenn County Planning & Public Works Agency
Contact Person: Andy Popper, Associate Planner
Mailing Address: 777 North Colusa Street
Phone: (530) 934-6540
City: Willows, CA
Zip: 95988
County: Glenn

Project Location: County: Glenn
City/Nearest Community: Hamilton City
Cross Streets: 1st Street and County Road Y
Zip Code: 95951
Longitude/Latitude (degrees, minutes and seconds): 39 ° 44 ′ 13.2 ″ N / 122 ° 00 ′ 28.8 ″ W
Total Acres: 51 ± acres (property)
Assessor's Parcel No.: 032-260-006
Section: ____ Twp.: ____ Range: ____ Base: ____
Within 2 Miles: State Hwy #: 45 and 32
Waterways: Stony Creek, Sacramento River
Airports: None
Railways: Cal Northern Railroad
Schools: Hamilton City

Document Type:

CEQA:
- ☐ NOP
- ☒ Early Cons
- ☐ Neg Dec
- ☐ Mit Neg Dec
- ☐ Draft EIR
- ☐ Supplement/Subsequent EIR (Prior SCH No.) ____
- Other: ____

NEPA:
- ☐ NOI
- ☐ EA
- ☐ Draft EIS
- ☐ FONSI

Other:
- ☐ Joint Document
- ☐ Final Document
- ☐ Other: ____

Local Action Type:

- ☐ General Plan Update
- ☐ General Plan Amendment
- ☐ General Plan Element
- ☐ Community Plan
- ☐ Specific Plan
- ☐ Master Plan
- ☐ Planned Unit Development
- ☐ Site Plan
- ☐ Rezone
- ☐ Prezone
- ☒ Use Permit
- ☐ Land Division (Subdivision, etc.)
- ☐ Annexation
- ☐ Redevelopment
- ☐ Coastal Permit
- ☐ Other: ____

Development Type:

- ☐ Residential: Units ____ Acres ____
- ☐ Office: Sq.ft. ____ Acres ____ Employees ____
- ☐ Commercial: Sq.ft. ____ Acres ____ Employees ____
- ☒ Industrial: Sq.ft. 157k Acres 51 Employees 10-30
- ☐ Educational: ____
- ☐ Recreational: ____
- ☐ Water Facilities: Type ____ MGD ____
- ☐ Transportation: Type ____
- ☐ Mining: Mineral ____
- ☐ Power: Type ____ MW ____
- ☐ Waste Treatment: Type ____ MGD ____
- ☐ Hazardous Waste: Type ____
- ☒ Other: Crop Production Services

Project Issues Discussed in Document:

- ☐ Aesthetic/Visual
- ☐ Agricultural Land
- ☐ Air Quality
- ☐ Archeological/Historical
- ☐ Biological Resources
- ☐ Coastal Zone
- ☐ Drainage/Absorption
- ☐ Economic/Jobs
- ☐ Fiscal
- ☐ Flood Plain/Flooding
- ☐ Forest Land/Fire Hazard
- ☐ Geologic/Seismic
- ☐ Minerals
- ☐ Noise
- ☐ Population/Housing Balance
- ☐ Public Services/Facilities
- ☐ Recreation/Parks
- ☐ Schools/Universities
- ☐ Septic Systems
- ☐ Sewer Capacity
- ☐ Soil Erosion/Compaction/Grading
- ☐ Solid Waste
- ☐ Toxic/Hazardous
- ☐ Traffic/Circulation
- ☐ Vegetation
- ☐ Water Quality
- ☐ Water Supply/Groundwater
- ☐ Wetland/Riparian
- ☐ Growth Inducement
- ☐ Land Use
- ☐ Cumulative Effects
- ☒ Other: To be determined

Present Land Use/Zoning/General Plan Designation:

Prior Sugar Beet Plant / M (Industrial Zone) / Industrial

Project Description: *(please use a separate page if necessary)*

A Pre-Application Review/Early Consultation for a proposed retail agriculture facility offering crop nutrients, crop protection products, seeds and application services. Additional project information/documentation has been included.

Note: The State Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft document) please fill in.

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with and "**X**".
If you have already sent your document to the agency please denote that with an "**S**".

X Air Resources Board
___ Boating & Waterways, Department of
___ California Emergency Management Agency
___ California Highway Patrol
X Caltrans District # 3
___ Caltrans Division of Aeronautics
___ Caltrans Planning
___ Central Valley Flood Protection Board
___ Coachella Valley Mtns. Conservancy
___ Coastal Commission
___ Colorado River Board
___ Conservation, Department of
___ Corrections, Department of
___ Delta Protection Commission
___ Education, Department of
___ Energy Commission
X Fish & Game Region # 2
X Food & Agriculture, Department of
___ Forestry and Fire Protection, Department of
___ General Services, Department of
X Health Services, Department of
___ Housing & Community Development
___ Native American Heritage Commission

X Office of Historic Preservation
___ Office of Public School Construction
___ Parks & Recreation, Department of
X Pesticide Regulation, Department of
___ Public Utilities Commission
X Regional WQCB # 5
___ Resources Agency
___ Resources Recycling and Recovery, Department of
___ S.F. Bay Conservation & Development Comm.
___ San Gabriel & Lower L.A. Rivers & Mtns. Conservancy
___ San Joaquin River Conservancy
___ Santa Monica Mtns. Conservancy
___ State Lands Commission
___ SWRCB: Clean Water Grants
___ SWRCB: Water Quality
___ SWRCB: Water Rights
___ Tahoe Regional Planning Agency
X Toxic Substances Control, Department of
X Water Resources, Department of

___ Other: ___
___ Other: ___

Local Public Review Period (to be filled in by lead agency)

Starting Date Monday, March 6, 2017 Ending Date Tuesday, March 21, 2017

Lead Agency (Complete if applicable):

Consulting Firm: ___
Address: ___
City/State/Zip: ___
Contact: ___
Phone: ___

Applicant: Ginno Construction/Crop Production Services
Address: 297 Convair Ave., Ste 2
City/State/Zip: Chico, CA 95973
Phone: 530-894-6859

Signature of Lead Agency Representative: ___ **Date:** March 3, 2017

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

GLENN COUNTY
Planning & Public Works Agency

P.O. Box 1070 / 777 N. Colusa Street
Willows, CA 95988
530.934.6530 Fax 530.934.6533
www.gcppwa.net

REQUEST FOR REVIEW-EARLY CONSULTATION

COUNTY DEPARTMENTS/DISTRICTS

- ☒ Glenn County Agricultural Commissioner
- ☒ Glenn County Air Pollution Control District/CUPA
- ☒ Glenn County Assessor
- ☒ Glenn County Building Inspector
- ☒ Glenn County Engineering & Surveying Division
- ☒ Glenn County Environmental Health Department
- ☒ Glenn County Sheriff's Department
- ☐ Glenn County Board of Supervisors
- ☐ Glenn County Counsel
- ☐ Glenn County Planning Commission
- ☐ Glenn LAFCO

FEDERAL AGENCIES

- ☐ U.S. Army Corps of Engineers
- ☐ U.S. Fish and Wildlife Service
- ☐ U.S. Department of Agriculture
- ☐ U.S. Bureau of Reclamation - Willows

STATE AGENCIES

- ☐ Central Valley Flood Protection Board
- ☒ Central Valley Regional Water Quality Control Board (RWQCB)
- ☐ CHP – Willows Office (GPA's, ZC's, and TSM's)
- ☐ Department of Alcoholic Beverage Control (ABC)
- ☐ Department of Conservation, Division of Land Resource Protection
- ☐ Department of Conservation, Office of Mine Reclamation (OMR)
- ☐ Department of Conservation, Division of Oil, Gas, and Geothermal Resources
- ☒ Department of Fish and Wildlife
- ☒ Department of Food and Agriculture
- ☐ Department of Forestry and Fire Protection (Cal Fire)
- ☐ Department of Housing and Community Development (HCD)
- ☒ Department of Public Health
- ☒ Department of Toxic Substances Control (DTSC)
- ☒ Department of Transportation (Caltrans)
- ☐ Department of Water Resources (DWR)
- ☒ Office of Historic Preservation
- ☐ Office of the State Fire Marshall
- ☐ Public Utilities Commission

OTHER

- ☐ AT&T
- ☒ California Water Service Co. (Chico)
- ☐ California Association of RC&D
- ☐ City of Willows
- ☐ Comcast Cable (Chico Office)
- ☒ Community Services District: Hamilton City
- ☐ Drainage District:
- ☐ Enterprise Rancheria of Maidu Indians
- ☒ Fire Protection District: Hamilton City
- ☐ Glenn County Resource Conservation District
- ☐ Grindstone Rancheria of Wintun-Wailaki
- ☐ Northeast Center of the California Historical Resources Information System
- ☒ Pacific Gas and Electric Company (PG&E)
- ☐ Paskenta Band of Nomlaki Indians
- ☒ Railroad: California Northern Railroad Company
- ☐ Reclamation District:
- ☒ School District: Hamilton City
- ☐ Special District:
- ☐ Tehama-Colusa Canal Authority
- ☐ UC Cooperative Extension Office
- ☐ Water/Irrigation District:

DATE: March 3, 2017

PROJECT: Pre-Application Review 2017-001, Crop Production Services

PLANNER: Andy Popper, Associate Planner; apopper@countyofglenn.net

GLENN COUNTY
Planning & Public Works Agency

P.O. Box 1070 / 777 N. Colusa Street
Willows, CA 95988
530.934.6530 Fax 530.934.6533
www.gcppwa.net

EARLY CONSULTATION-REQUEST FOR REVIEW

DATE: March 3, 2017

PROJECT: **Pre-Application Review (PAR) 2017-001, Crop Production Services**

PLANNER: Andy Popper, Associate Planner; apopper@countyofglenn.net

APPLICANT: Ginno Construction Inc., Bryan Ginno
297 Convair Ave., Ste 2
Chico, CA 95973
Business: 530-894-6859
Fax: 530-894-6061
E-mail: bryan@ginnoconstruction.net

LANDOWNER: Crop Production Services, Inc.*
3005 Rocky Mountain Ave.
Loveland, CO 80538
Phone: (Business) 970-685-3300
E-mail: g.rey.reinhardt@cpsagu.com

ENGINEER: Rolls Anderson & Rolls, Keith Doglio
115 Yellowstone Drive
Chico, CA 95973
Phone: 530-895-1422
Fax: 530-895-1409
E-mail: kdoglio@rarcivil.com

*Note: *The current property owner is Bains Properties L.P. Crop Production Services, Inc. (CPS) has signed a purchase and sale agreement with Bains Properties, L.P. to acquire the site, subject to additional due diligence including the attainability of necessary permits. For purposes of this application, CPS is identified as the "Property Owner".*

PROPOSAL: The project is a Pre-Application Review/Early Consultation for a retail agriculture facility offering crop nutrients, crop protection products, seeds and application services.

Following the Pre-Application Review/Early Consultation, a formal application is required to be subsequently provided by the applicant. Additional project information/documentation has been included.

PAR 2017-001, Crop Production Services:

The project proposes an agricultural crop protection chemical/fertilizer storage facility for retail to local farmers. The property was formerly operated as a Sugar Beet Plant and contains several existing buildings as shown on the site plans. Site plans show proposed new construction and demolition.

Demolish five (5) existing buildings.

Building 1 to be demolished is 10' by 10' and located on the West side of the West entrance near the front gate. Building 2 to be demolished is 40' x l26' and is located just South of the East entrance. Buildings 3 and 4 to be demolished are 10' x 10' noted on plans as existing well buildings. Building 5 to be demolished is 50' x 109' and is located on the far south end of the property. We plan on remodeling the A-frame Structure called the Mixing Building (39,000 sq. ft.), concrete masonry unit building called the Package Warehouse (l6, 170 sq. ft.), Front office (2,290 sq. ft.) and East Scale House (120 sq. ft.). The intended uses for the new site are detailed in Appendix A to this application. The owners have decided to preserve the historic aspects of the site, which include the Holy Sugar plant sign at the entrance and the two (2) 300' concrete silos and the North face of the Package Warehouse.

New Structures:

Please refer to the attached application, project narrative, and site plans for more information.

APN: 032-260-006

LOCATION:

The project site is located at 555 West 1ST Street, Hamilton City, CA, 95951. This site is located on the south side of 1st Street, east of State Highway 45, east of County Road Y, Hamilton City, in Glenn County, California.

Latitude 39.737, Longitude -122.008 Decimal Degrees

ZONING: "M" (Industrial)

GENERAL PLAN: "Industrial"

FLOOD ZONE: Flood Zone "X" according to Flood Insurance Rate Map (FIRM) No. 06021C 0425D, dated August 5, 2010, issued by the Federal Emergency Management Agency (FEMA). Flood Zone "X" (shaded) consists of moderate flood hazard areas, and are the areas between the limits of the base flood and the 0.2-percent-annual-chance (or 500-year) flood. No base flood elevations or base flood depths are shown within this zone.

REQUEST:
The Glenn County Planning Division is requesting comments on this **pre-application** proposal for determination of completeness, potential constraints, proposed mitigations, and/or conditions of approval.

If **preliminary** comments are not received by **TUESDAY, MARCH 21, 2017,** it is assumed that there are no specific comments to be included in the analysis of the project. Comments submitted by e-mail are acceptable. Thank you for considering this matter.

AGENCY COMMENTS:

Please consider the following:

1. Is the information in the application complete enough to analyze impacts and conclude review?

2. Comments may include project-specific code requirements unique to the project. Cite code section and document (i.e. General Plan, Subdivision Map Act, etc.).

3. What are the recommended Conditions of Approval for this project and justification for each Condition? When should each Condition be accomplished (i.e. prior to any construction at the site, prior to recording the parcel map, filing the Final Map, or issuance of a Certificate of Occupancy, etc.)?

4. Are there significant environmental impacts? What mitigation(s) would bring the impacts to a less than significant level? When should mitigation(s) be accomplished (i.e. prior to recording parcel map, filing Final Map, or Certificate of Occupancy, etc.)?

STATE OF CALIFORNIA

GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH

STATE CLEARINGHOUSE AND PLANNING UNIT

EDMUND G. BROWN JR.
GOVERNOR

KEN ALEX
DIRECTOR

RECEIVED
MAR 09 2017
Glenn County
PBWA

Request for Early Consultation

March 7, 2017

To: Reviewing Agencies

Re: Pre-Application Review (PAR) 2017-001, Crop Production Services
SCH# 2017032022

Prior to determining whether a Negative Declaration or an Environmental Impact Report (EIR) is required for a project under CEQA, a Lead Agency is required to consult with all responsible and trustee agencies. This notice and attachment fulfill the early consultation requirement. Recommendations on the appropriate type of environmental document for this project, as well as comments on its scope and content, should be transmitted to the Lead Agency at the address below. You do not have to be a responsible or trustee agency to comment on the project. All agencies are encouraged to comment in a manner that will assist the Lead Agency to prepare a complete and adequate environmental document.

Please direct your comments to:

Andy Popper
Glenn County
777 North Colusa St
Willows, CA 95988

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to SCH Number 2017032022 in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan
Director, State Clearinghouse

Attachment
cc: Lead Agency

1400 10th Street P.O. Box 3044 Sacramento, California 95812-3044
(916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

Document Details Report
State Clearinghouse Data Base

SCH# 2017032022
Project Title Pre-Application Review (PAR) 2017-001, Crop Production Services
Lead Agency Glenn County

Type CON Early Consultation

Description A pre application review/early consultation for a proposed retail agriculture facility offering crop nutrients, crop protection products, seeds and application services. Additional project information/documentation has been included.

Lead Agency Contact

Name Andy Popper
Agency Glenn County
Phone (530) 934-6540 **Fax**
email
Address 777 North Colusa St
City Willows **State** CA **Zip** 95988

Project Location

County Glenn
City
Region
Cross Streets 1st St and County Rd Y
Lat / Long 39° 44' 13.2" N / 122° 00' 28.8" W
Parcel No. 032-260-006
Township **Range** **Section** **Base**

Proximity to:

Highways 45, 32
Airports
Railways Cal Northern RR
Waterways Stony Creek, Sacramento River
Schools Hamilton City
Land Use Prior sugar beet plant/M /Industrial

Project Issues Other Issues

Reviewing Agencies Resources Agency; Department of Fish and Wildlife, Region 2; Department of Parks and Recreation; Department of Water Resources; California Highway Patrol; Caltrans, District 3 N; Regional Water Quality Control Bd., Region 5 (Redding); Native American Heritage Commission; Public Utilities Commission

---

Date Received 03/07/2017 **Start of Review** 03/07/2017 **End of Review** 03/21/2017

Note: Blanks in data fields result from insufficient information provided by lead agency.

Print Form

Appendix C

Notice of Completion & Environmental Document Transmittal

2017032022

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH #

Project Title: Pre-Application Review (PAR) 2017-001, Crop Production Services

Lead Agency: Glenn County Planning & Public Works Agency — Contact Person: Andy Popper, Associate Planner
Mailing Address: 777 North Colusa Street — Phone: (530) 934-6540
City: Willows, CA — Zip: 95988 — County: Glenn

Project Location: County: Glenn — City/Nearest Community: Hamilton City
Cross Streets: 1st Street and County Road Y — Zip Code: 95951
Longitude/Latitude (degrees, minutes and seconds): 39 ° 44 ' 13.2 " N / 122 ° 00 ' 28.8 " W — Total Acres: 51 ± acres (property)
Assessor's Parcel No.: 032-260-006 — Section: ____ Twp.: ____ Range: ____ Base: ____
Within 2 Miles: State Hwy #: 45 and 32 — Waterways: Stony Creek, Sacramento River
Airports: None — Railways: Cal Northern Railroad — Schools: Hamilton City

Document Type:

CEQA: ☐ NOP ☐ Draft EIR ☒ Early Cons ☐ Supplement/Subsequent EIR ☐ Neg Dec (Prior SCH No.) ____ ☐ Mit Neg Dec Other: ____

NEPA: ☐ NOI ☐ EA ☐ Draft EIS ☐ FONSI

Other: ☐ Joint Document ☐ Final Document ☐ Other: ____

Governor's Office of Planning & Research
MAR 06 2017
STATE CLEARINGHOUSE

Local Action Type:

☐ General Plan Update ☐ General Plan Amendment ☐ General Plan Element ☐ Community Plan
☐ Specific Plan ☐ Master Plan ☐ Planned Unit Development ☐ Site Plan
☐ Rezone ☐ Prezone ☒ Use Permit ☐ Land Division (Subdivision, etc.)
☐ Annexation ☐ Redevelopment ☐ Coastal Permit ☐ Other: ____

Development Type:

☐ Residential: Units ____ Acres ____
☐ Office: Sq.ft. ____ Acres ____ Employees ____
☐ Commercial: Sq.ft. ____ Acres ____ Employees ____
☒ Industrial: Sq.ft. 157k Acres 51 Employees 10-30
☐ Educational: ____
☐ Recreational: ____
☐ Water Facilities: Type ____ MGD ____
☐ Transportation: Type ____
☐ Mining: Mineral ____
☐ Power: Type ____ MW ____
☐ Waste Treatment: Type ____ MGD ____
☐ Hazardous Waste: Type ____
☒ Other: Crop Production Services

Project Issues Discussed in Document:

☐ Aesthetic/Visual
☐ Agricultural Land
☐ Air Quality
☐ Archeological/Historical
☐ Biological Resources
☐ Coastal Zone
☐ Drainage/Absorption
☐ Economic/Jobs
☐ Fiscal
☐ Flood Plain/Flooding
☐ Forest Land/Fire Hazard
☐ Geologic/Seismic
☐ Minerals
☐ Noise
☐ Population/Housing Balance
☐ Public Services/Facilities
☐ Recreation/Parks
☐ Schools/Universities
☐ Septic Systems
☐ Sewer Capacity
☐ Soil Erosion/Compaction/Grading
☐ Solid Waste
☐ Toxic/Hazardous
☐ Traffic/Circulation
☐ Vegetation
☐ Water Quality
☐ Water Supply/Groundwater
☐ Wetland/Riparian
☐ Growth Inducement
☐ Land Use
☐ Cumulative Effects
☒ Other: To be determined

Present Land Use/Zoning/General Plan Designation:
Prior Sugar Beet Plant / M (Industrial Zone) / Industrial

Project Description: *(please use a separate page if necessary)*

A Pre-Application Review/Early Consultation for a proposed retail agriculture facility offering crop nutrients, crop protection products, seeds and application services. Additional project information/documentation has been included.

State Clearinghouse Contact: (916) 445-0613

State Review Began: 3 - 7 - 2017

EARLY CONSULTATION

SEND COMMENTS DIRECTLY TO LEAD AGENCY BY: 3 - 21 - 17

Please note State Clearinghouse Number (SCH#) on all Comments

SCH#: **2017032022**

Please forward late comments directly to the Lead Agency

AQMD/APCD 8

(Resources: 3 / 11)

Project Sent to the following State Agencies

X Resources
____ Boating & Waterways
____ Coastal Comm
____ Colorado Rvr Bd
____ Conservation
X CDFW # 2
____ Delta Protection Comm
____ Cal Fire
____ Historic Preservation
X Parks & Rec
____ Central Valley Flood Prot.
____ Bay Cons & Dev Comm.
X DWR
____ OES
____ Resources, Recyc. & Recovery

CalSTA
____ Aeronautics
X CHP
X Caltrans # 3N
____ Trans Planning

Other
____ Housing & Comm. Dev
____ Food & Agriculture.

State/Consumer Svcs
____ General Services

Cal EPA
____ ARB: Airport & Freight
____ ARB: Transportation Projects
____ ARB: Major Industrial/Energy
____ SWRCB: Div. of Drinking Water
____ **SWRCB: Div Drinking Wtr #** ____
____ SWRCB: Div. Financial Assist.
____ SWRCB: Wtr Quality
____ SWRCB: Wtr Rights
X Reg. WQCB # 5V
____ Toxic Sub Ctrl-CTC

Yth/Adlt Corrections
____ Corrections

Independent Comm
____ Energy Commission
X NAHC
X Public Utilities Comm
____ State Lands Comm
____ Tahoe Rgl Plan Agency

____ ____ Conservancy

____ Other: ____

DEPARTMENT OF TRANSPORTATION
DISTRICT 3
703 B STREET
MARYSVILLE, CA 95901
PHONE (530) 741-4286
FAX (530) 741-4245
TTY 711
www.dot.ca.gov/dist3

Serious Drought.
Serious drought.
Help save water!

March 17, 2017

GTS# 03-GLE-2017-00013
03-GLE-45 PM 22.55

Andy Popper
Associate Planner
Glenn County
777 North Colusa Street
Willows, CA 95988

Crop Production Services

Dear Andy Popper:

Thank you for including California Department of Transportation (Caltrans) in the application review for the Crop Production Services project. Caltrans' new mission, vision, and goals signal a modernization of our approach to California's transportation system. We review this local development for impacts to the State Highway System in keeping with our mission, vision and goals for sustainability/livability/economy, and safety/heath. We provide these comments consistent with the state's mobility goals that support a vibrant economy, and build communities, not sprawl.

The project is for a retail agriculture facility offering crop nutrients, crop protection products, seeds and application services to local farmers. The property was formerly operated as a Sugar Beet Plant. The project site is located at 555 West 1st Street, Hamilton City, CA, 95951. This site is located on the south side of 1st Street, east of State Highway 45, east of County Road Y, Hamilton City, in Glenn County, California. The following comments are based on the pre-application received.

VMT

In response to the provisions of Senate Bill 743, we encourage the integration of transportation and land use in a way that reduces Vehicle Miles Traveled (VMT) and Greenhouse Gas (GHG) emissions by facilitating the provision of more proximate goods and services to shorten trip lengths, as well as achieve a high level of non-motorized travel and transit use. As such, we encourage the evaluation the potential of Transportation Demand Management (TDM) strategies and Intelligent Transportation System (ITS) applications in order to better manage the transportation network, as well as transit service and bicycle or pedestrian connectivity improvements. The Department also seeks to reduce serious injuries and fatalities, as well as provide equitable mobility options for people who are economically, socially, or physically

disadvantaged. Therefore, we encourage the evaluation of the project site for access problems, VMT, and service needs that may need to be addressed.

Traffic Operations/Forecasting and Modeling

Based on the information provided, this project will be accessed from State Route 32. If that is the case, there should not be significant impact to State Route 32.

If trucks will be accessing the project via State Route 45, a southbound left turn lane should be installed to allow the trucks to make the turn without impacting through traffic.

Please provide our office with copies of any further actions regarding this project. We would appreciate the opportunity to review and comment on any changes related to this development.

If you have any question regarding these comments or require additional information, please contact David Smith, Intergovernmental Review Coordinator for Glenn County, by phone (530) 634-7799 or via email to david.j.smith@dot.ca.gov.

Sincerely,

KEVIN YOUNT, Branch Chief
Office of Transportation Planning
Regional Planning Branch—North

Andy Popper

From: Low, George@Waterboards <George.Low@waterboards.ca.gov>
Sent: Friday, March 17, 2017 11:32 AM
To: Andy Popper
Subject: Pre-Application Review (PAR) 2017-001, Crop Production Services, SCH#20170322022

Importance: High

Mr. Popper,

On the 9 March 2017 our office received a Request for Early Consultation for a Pre-Application Review (PAR) 2017-001, Crop Production Services, SCH#20170322022.
The review period for this document was between 7 March and 21 March 2017. Unfortunately, due to the short review period and other priorities here in our office we have not been able to fully review the document that was provided. We plan on issuing a formal comment letter in response to your submittal; however, you may not receive it by your requested submittal date.
Below is a brief summary of a few of our concerns pertaining to the subject proposal:

The subject property located at APN 032-260-006 is currently regulated under Waste Discharge Requirements Order (WDR) 5-00-184, which was issued in part for the removal of waste materials that were associated with operations at the former Holly Sugar Plant.
Conditions of WDR Order 5-00-184, which includes the removal of waste materials, has not been fully reconciled. As such additional actions to comply with the WDR Order are currently still required.
Additionally the acquisition of the property by the new entity may also require that a change in ownership form be submitted to add the new property owner to the WDR Order as a responsible party.
Proposed development of the facility could affect currently waste material that is currently stockpiled onsite and which is subject to WDR 5-00-184.

Additionally development of the site may also be subject our office's General Permit for Construction and Land Disturbance activities.

Once we have drafted our formal response letter we will mail you a hard copy. In efforts to expedite receipt I will email a pdf of the letter as well.
If you have any questions or comments regarding this email please contact me.

Regards,

George Low, P.G.
Senior Engineering Geologist
Waste Discharge Requirement Unit
Central Valley Regional Water Quality Control Board
364 Knollcrest Drive, Suite 205
Redding, CA 96002
530.224.3208

Total Control Panel Login

To: apopper@countyofglenn.net

CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Central Valley Regional Water Quality Control Board

24 March 2017

Mr. Andy Popper
Glenn County Planning & Public Works Agency
777 North Colusa St.
Willows, CA 95988

COMMENTS ON THE PRE-APPLICATION REVIEW (PAR) 2017-001, CROP PRODUCTION SERVICES, SCH# 2017032022, HAMILTON CITY, GLENN COUNTY

The Central Valley Regional Water Quality Control Board (Central Valley Water Board) is a responsible agency for this project, as defined by the California Environmental Quality Act (CEQA). On 9 March 2017, we received your request for comments on the Pre-Application (PAR) 2017-001 for Crop Productions Services project in Hamilton City, Glenn County. Crop Production Services, Inc. proposes to purchase the subject property and to construct and operate a retail agriculture facility offering crop nutrients, crop protection products, seeds and application services.

The following comments are provided to help outline current and potential permitting which may be required by the Central Valley Water Board as Crop Production Services, Inc. continues with development:

Waste Discharge Requirements (WDRs)
The subject property located at APN 032-260-006 was historically associated with the former Holly Sugar Hamilton City Facility (Facility) and is currently owned by Wantjas, LLC. The former Facility which includes the subject property is currently regulated under Waste Discharge Requirements (WDRs) Order 5-00-184 which was adopted by the Central Valley Water Board on 4 August 2000. These WDRs prescribe requirements for the removal of precipitated calcium carbonate (PCC) and for closure of the former PCC ponds at the Facility. To date PCC material is still present on the subject property and is still subject to requirements prescribed in the WDRs.

Purchase of the subject property would make the new property owner a responsible party. As a responsible party the property owner may be partially or fully liable for ensuring compliance with the Facility's WDRs. Any change in ownership could require revisions to the current WDRs to reflect changes in property ownership. The WDRs would also likely need to be amended to add the new property owner to the WDRs as a responsible party.

Additionally, development of the subject property has the potential to affect PCC material currently stockpiled onsite. Any changes to the current disposition of the PCC material, including but not limited to removal, transportation, and disposal shall be approved by the Central Valley Water Board.

General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (CGP)
Construction activity, including demolition, resulting in a land disturbance of one acre or more must obtain coverage under the CGP. The Crop Production Services project must be conditioned to implement storm water pollution controls during construction and post-construction as required by the CGP. To apply for coverage under the CGP the property owner must submit Permit Registration Documents electronically prior to construction. Detailed information on the CGP can be found on the State Water Board website:

http://www.waterboards.ca.gov/water_issues/programs/stormwater/gen_const.shtml

Industrial Storm Water
Regulations published by U.S. Environmental Protection Agency (U.S. EPA) in 1992 require the operators of certain industrial facilities to obtain a permit (National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Industrial Activities (General Permit), Order number 2014-0057-DWQ) to discharge storm water from their facility. The regulations primarily refer to Standard Industrial Classification (SIC) codes to define the industrial activities that must be permitted. Your proposed facility may be defined by SIC code **2879**, "establishments primarily engaged in the formulation and preparation of ready to use agricultural and household pest control chemicals, including insecticides, fungicides, and herbicides, from technical chemicals and concentrates; and the production of concentrates which require further processing before use as agricultural pesticides. This industry also includes establishments primarily engaged in manufacturing or formulating agricultural chemicals not elsewhere classified." Establishments engaged in formulation and preparation of ready to use agricultural and household pest control chemicals and manufacturing or formulating agricultural chemicals not elsewhere classified are required to obtain coverage under the General Permit.

To apply for coverage under the General Permit, you must sign up for a Storm Water Multiple Application and Report Tracking System (SMARTS) user account at

https://smarts.waterboards.ca.gov/smarts/faces/SwSmartsLogin.jsp

and follow the application instructions for a Notice of Intent, including payment of the permit fee. For application assistance, please contact the Storm Water Help Desk at 1-866-563-3107, Monday through Friday, 8:00 a.m. to 5:00 p.m. or via email at stormwater@waterboards.ca.gov.

You may be required to submit all Permit Registration Documents (PRDs) via SMARTS, which consists of 1) A completed Notice of Intent (NOI) and signed certification statement; 2) A copy of a current Site Map from the Storm Water Pollution Prevention Plan (SWPPP); 3) A SWPPP; and, 4) The appropriate Annual Fee in accordance with California Code of Regulations, title 23, section 2200 et seq (annual fees must be mailed or sent electronically using the State Water Boards' Electronic Funds Transfer (EFT) system in SMARTS).

Additional information about the industrial storm water program is available at

http://www.waterboards.ca.gov/water_issues/programs/stormwater/industrial.shtml

If you have any questions or comments regarding existing WDRs please contact Rebecca Tabor at (530) 226.3458, or by email at Rebecca.Tabor@waterboards.ca.gov. For questions or comments regarding storm water requirements please contact Scott Zaitz at (530) 224-4784, or by email at Scott.Zaitz@waterboards.ca.gov. Both can also be contacted at the footer address.

George Low, P.G.
Senior Engineering Geologist
Waste Discharge Requirements Unit

GRL:reb

March 21, 2017

Andy Popper

Associate Planner

Attached are my comments regarding Pre-Application (PAR 2017-001) for Crop Production Services.

I have reviewed records on file at the Hamilton City Community Services District (HCCSD) office regarding the "Holly Sugar" property and have found that this property is not annexed to the District.

From my review of the minutes of the HCCSD Board of Directors, the history of the service to the Holly Sugar property is as follows: In 1976 the District was approached by representatives from Holly Sugar Corporation to hook up to the District's sewer system to treat their non-industrial waste water. The HCCSD Board of Directors agreed to allow Holly Sugar to connect to the HCCSD sanitary sewer system provided that Holly Sugar bear the costs associated with extending their new line to connect to the District's main line on Walsh Avenue. The agreement was to be on a contract basis, subject to a 5 to 7 year review/revision. Further, Holly Sugar was responsible for the maintenance of said line. No written contract is on file.

It is my understanding, having spoken with the previous General Manager of the District, only the agricultural building, located at the front of the property, was to be connected to the HCCSD system. The main office and the other bathrooms were to remain serviced by Holly Sugar's existing waste water system.

Please note that the HCCSD Board of Directors may choose to revisit the original agreement to determine whether to continue with the agreement or require that the parcel be annexed to the District. One reason for annexation being that the onsite wastewater treatment plant is no longer in operation. As such, without construction of their own waste water treatment plant, there is no legal means for them to discharge waste water. Also, the main office is situated within 250 feet of an available District sewer connection and, under HCCSD's ordinance, must be connected to the District's sewer line (reference: HCCSD Ordinance 82-9).

Regarding the storage and mixing of chemicals, we are concerned about odors emanating from this process, as the prevailing winds in our area are south to north.

The District reserves the right to make additional comments once an application has been submitted.

Jose Puente

HCCSD General Manager

COUNTY OF GLENN
HEALTH & HUMAN SERVICES AGENCY

Christine Zoppi
Director

Erin Valdez
Deputy Director
Administration

Amy Lindsey
Deputy Director
Behavioral Health

Bill Wathen
Deputy Director
Social Services

Grinnell Norton
Deputy Director Public Health
Director of Nursing

Vacant
Deputy Director
Community Action

March 24, 2017

To: Andy Popper, Associate Planner
Glenn County Planning & Public Works
(via email)

From: John H Wells, REHS
Glenn County Environmental Health

Re: Pre-Application Review 2017-001, Crop Production Services (APN 032-260-006)

We have reviewed the request for pre-application review to issue a future conditional use permit at the abovementioned parcel. The application seeks to convert the former Holly Sugar plant to an agricultural products production facility. Our office finds the pre-application complete for further processing, with the following comments:

- The majority of the site will be served by both city water and city sewer. One building, described in the application package as the *mixing building*, will be served by an onsite sewage disposal system (i.e. septic system). This new septic system will require the applicant to obtain a permit from our office.

- The site may have additional septic systems and/or wells that the applicant does not plan to use for the new facility. Environmental Health approval is contingent upon the applicant thoroughly investigating the property, locating and/or identifying any pre-existing wells or septic systems not intended for use, and destroying these abandoned wells and septic systems through permits obtained from our office.

Please contact our office at (530) 934-6102 if you have any questions pertaining to this matter.

Equal opportunity employer/program. Auxiliary aids and services available upon request to individuals with disabilities

COUNTY OF GLENN
Air Pollution Control District

Marcie Skelton, Air Pollution Control Officer/CUPA Director
720 N. Colusa Street ◆ P.O. Box 351 ◆ Willows, CA 95988
(530) 934-6500 ◆ Fax (530) 934-6503
www.countyofglenn.net

March 21, 2017

Project: Pre-Application Review 2017-001, Crop Production Services
Applicant: Ginno Construction Inc.
Planner: Andy Popper

Mr. Popper,

The Glenn County Air Pollution Control District has the following comments regarding Pre-Application Review 2017-001, Crop Production Services:

1. Construction and fugitive related Particulate Matter (Dust) must be mitigated. All unpaved roads must be watered to the point that Particulate Matter emissions are prevented from leaving the property boundary. All disturbed surfaces must have the soil stabilized to the point that fugitive dust emissions are prevented from leaving the property boundary. All vehicle traffic on unpaved roads must be limited to 15mph. Any grading or demolition activities must be suspended when winds are sustained above 15 mph.

2. All efforts should be made to prevent odor generated from this operation impacting local residents. The facility may be required to submit and maintain a District approved Odor Management Program.

3. The facility will be monitored for potential dust impacts on local residents. All efforts should be made to prevent dust from generated from this operation leaving the property and impacting local residents. The facility may be required to submit and maintain a District approved Dust Management Program.

4. The facility will be required to apply for an Authorization to Construct (ATC) and subsequent Permit to Operate (PTO) if the facility utilizes equipment subject to District Regulations such as diesel generators, boilers, screens, conveyors, shredders, separators, crushers, flares, etc.

The District looks forward to working with the county, local community, and the facility to address any issues that may arise. Please let me know if you or anyone else has any questions or comments.

Regards,

Ian Ledbetter
Environmental Program Manager

Conditions of Approval

Pre-Application Review No. 2017-001

Crop Production Services

Comments

That prior to any work being done in the County Right-of-Way an Encroachment Permit shall be applied for and received from the Glenn County Planning and Public Works Agency.

That the applicant shall construct off-street parking in accordance with the requirements of Title 15.610 of the Glenn County Code. Said parking areas shall be designed to accommodate all employees and customers.

This project will increase truck traffic in the area. It is recommended that a Road Maintenance Agreement is added. A similar fee-based formula that we have used recently on other truck traffic generating Conditional Use Permits is recommended. The fee would be based on the weight of the product exported from the site. The applicant should give us the route used by their trucks so that we can apply the fees collected to those roads.

Conditions

That no off-site parking associated with this development shall be allowed on First Street.

That all truck traffic shall use designated truck routes only.

The County reserves the right to make additional comments when an application for a Conditional Use Permit has been submitted.

Michael R. Biggs
Engineering Technician III
3/23/2017

Andy Popper

From: Rich Warren
Sent: Wednesday, March 22, 2017 10:24 AM
To: Andy Popper
Subject: RE: PAR 2017-001, Crop Production Services

Good Morning,

I have reviewed the pre-application review, and I believe the project would have minimal impact on law enforcement services. There are some minor impacts on Emergency Services, but they are no greater than the impacts of other similar existing businesses.

I would have no objections or concerns with the project.

Rich

Richard L. Warren Jr.
Sheriff / Coroner
(530) 934-6441 fax (530) 934-6473
rwarren@countyofglenn.net

From: Andy Popper
Sent: Wednesday, March 22, 2017 9:59 AM
To: Ian Ledbetter <ILedbetter@countyofglenn.net>; Eric Scott <EScott@countyofglenn.net>
Cc: Dan James <danfromord@yahoo.com> (danfromord@yahoo.com) <danfromord@yahoo.com>; Laura Niehues <LNiehues@countyofglenn.net>; Dean Miller <DMiller@countyofglenn.net>; Michael Biggs <MBiggs@countyofglenn.net>; John Wells <JWells@countyofglenn.net>; Kevin Backus <KBackus@countyofglenn.net>; Rich Warren <RWarren@countyofglenn.net>; Mardy Thomas <mthomas@countyofglenn.net>
Subject: PAR 2017-001, Crop Production Services

Local Agencies, et al

Comment letters will be forwarded to Crop Production Services soon; therefore, if you would like to comment on the Pre-App please feel free to reply to this email.

PAR 2017-001, Crop Production Services:
The project proposes an agricultural crop protection chemical/fertilizer storage facility for retail to local farmers. The property was formerly operated as a Sugar Beet Plant and contains several existing buildings as shown on the site plans. Site plans show proposed new construction and demolition.

Comments received to date are attached above for reference.

Sincerely,

Andy Popper
Associate Planner
Glenn County Planning

COUNTY OF GLENN
Air Pollution Control District

Marcie Skelton, Air Pollution Control Officer/CUPA Director
720 N. Colusa Street ◆ P.O. Box 351 ◆ Willows, CA 95988
(530) 934-6500 ◆ Fax (530) 934-6503
www.countyofglenn.net

March 27, 2017

Project: Pre-Application Review 2017-001, Crop Production Services
Applicant: Ginno Construction Inc.
Planner: Andy Popper

Mr. Popper,

The Glenn County Air Pollution Control District/ Certified Unified Program Agency has the following comments regarding Pre-Application Review 2017-001, Crop Production Services:

Re: Notice of Cal ARP and Risk Management Plan (RMP) Requirements

Based upon the projected inventory of Aqua Ammonia at your facility in Hamilton City, your facility has been identified by this office as a candidate to be subject to the California Accidental Release Prevention Program (Cal ARP). This program will involve, among other requirements, the submission of a Risk Management Plan (RMP) to both the Federal EPA and to our agency (the local Certified Unified Program Agency or CUPA)

The Cal ARP regulations are a merging of the federal and state risk management and prevention programs for accidental release prevention. The listed regulated substances that are included in this program are toxic and flammable substances (e.g.; anhydrous ammonia, gaseous chlorine, propane, etc.) which pose the greatest risk of causing death, injury, or seriously affecting human health or the environment if accidentally released. A list of the substances regulated by this program is enclosed with this letter for your reference. The threshold quantity for each substance is listed on the same table. Please review for any chemicals subject to these requirements in addition to the Aqua Ammonia.

The rule requires certain facilities to develop and implement an integrated system to identify hazards and manage risks associated with these regulated substances. Since your facility appears to be subject to this rule, you will be required to analyze worst-case releases; document a five year history of serious accidents at the facility; coordinate with local emergency responders; develop and implement a prevention program that

COUNTY OF GLENN
Air Pollution Control District

Marcie Skelton, Air Pollution Control Officer/CUPA Director
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includes, among other steps, identification of hazards, written operating procedures, training, maintenance, and accident investigation. If your employees also respond to accidental releases, you must also implement an integrated local emergency response program.

The Risk Management Plan must be completed and submitted by the he date on which the regulated substance is first present in a process, above the threshold quantity.

A Cal Arp Registration and Hazardous Materials Inventory form have been included. Please submit one registration form and hazardous materials inventory form for each regulated substance per each process.

Please contact me at (530) 934-6500 should you have any question regarding this program.

Sincerely,

Eric Scott
Environmental Program Manager
Glenn County Air Pollution Control District/Certified Unified Program Agency

Encl.:

1. List of Regulated Substances
2. CalARP Registration form
3. Hazardous Materials Inventory form

§ 2770.5. List of Substances.
19 CA ADC § 2770.5
BARCLAYS OFFICIAL CALIFORNIA CODE OF REGULATIONS

Barclays Official California Code of Regulations Currentness
Title 19. Public Safety
Division 2. California Governor's Office of Emergency Services
Chapter 4.5. California Accidental Release Prevention (CalARP) Program Detailed Analysis
Article 8. Regulated Substances for Accidental Release Prevention.

19 CCR § 2770.5

§ 2770.5. List of Substances.

Regulated toxic and flammable substances under Section 112(r) of the federal CAA are the substances listed in Tables 1 and 2. Table 3 lists those regulated substances pursuant to Section 25532(g)(2) of HSC. Threshold quantities for listed toxic and flammable substances are specified in the tables.

Table 1. Federal Regulated Substances List and Threshold Quantities for Accidental Release Prevention

Chemical Name	*Also on Table 3[f]*	*CAS Number*	*Threshold quantity (lbs)*	*Basis for listing*
Acrolein [2-Propenal]	yes	107-02-8	5,000	b
Acrylonitrile [2-Propenenitrile]	yes	107-13-1	20,000	b
Acrylyl chloride [2-Propenoyl chloride]	yes	814-68-6	5,000	b
Allyl alcohol [2-Propen-l-ol]	yes	107-18-6	15,000	b
Allylamine [2-Propen-l-amine]	yes	107-11-9	10,000	b
Ammonia (anhydrous)	yes	7664-41-7	10,000	a,b
Ammonia (conc 20% orgreater)	yes	7664-41-7	20,000	a,b
Arsenous trichloride	yes	7784-34-1	15,000	b
Arsine	yes	7784-42-1	1,000	b
Boron trichloride [Borane, trichloro-]	yes	10294-34-5	5,000	b
Boron trifluoride [Borane, trifluoro-]	yes	7637-07-2	5,000	b
Boron trifluoride compound with methyl ether (1:1) [Boron, trifluoro [oxybis[metane]]]-, T-4-	yes	353-42-4	15,000	b
Bromine	yes	7726-95-6	10,000	a,b
Carbon disulfide	yes	75-15-0	20,000	b
Chlorine	yes	7782-50-5	2,500	a,b
Chlorine dioxide [Chlorine oxide(ClO2)]	no	10049-04-4	1,000	c
Chloroform [Methane,trichloro-]	yes	67-66-3	20,000	b
Chloromethyl ether [Methane, oxybis[chloro-]]	yes	542-88-1	1,000	b
Chloromethyl methyl ether [Methane, chloromethoxy-]	yes	107-30-2	5,000	b
Crotonaldehyde[2-Butenal]	yes	4170-30-3	20,000	b
Crotonaldehyde,(E)- [2-Butenal,(E)-]	yes	123-73-9	20,000	b
Cyanogen chloride	no	506-77-4	10,000	c
Cyclohexylamine [Cyclohexanamine]	yes	108-91-8	15,000	b
Diborane	yes	19287-45-7	2,500	b
Dimethyldichlorosilane [Silane, dichlorodimethyl-]	yes	75-78-5	5,000	b
1,1-Dimethylhydrazine [Hydrazine,1,1-dimethyl-]	yes	57-14-7	15,000	b
Epichlorohydrin [Oxirane,(chloromethyl)-]	yes	106-89-8	20,000	b

Ethylenediamine [1,2-Ethanediamine]	yes	107-15-3	20,000	b
Ethyleneimine [Aziridine]	yes	151-56-4	10,000	b
Ethyleneoxide [Oxirane]	yes	75-21-8	10,000	a,b
Fluorine	yes	7782-41-4	1,000	b
Formaldehyde (solution)	yes	50-00-0	15,000	b
Furan	yes	110-00-9	5,000	b
Hydrazine	yes	302-01-2	15,000	b
Hydrochloric acid (conc 37% or greater)	no	7647-01-0	15,000	d
Hydrocyanic acid	yes	74-90-8	2,500	a,b
Hydrogen chloride (anhydrous) [Hydrochloric acid]	yes	7647-01-0	5,000	a
Hydrogen fluoride/Hydrofluoric acid (conc 50% or greater) [Hydrofluoric acid]	yes	7664-39-3	1,000	a,b
Hydrogen selenide	yes	7783-07-5	500	b
Hydrogen sulfide	yes	7783-06-4	10,000	a,b
Iron, pentacarbonyl-[Iron carbonyl (Fe(CO)5),(TB-5-11)-]	yes	13463-40-6	2,500	b
Isobutyronitrile [Propanenitrile, 2-methyl-]	yes	78-82-0	20,000	b
Isopropyl chloroformate [Carbonochloridic acid, 1-methylethyl ester]	yes	108-23-6	15,000	b
Methacrylonitrile [2-Propenenitrile, 2-methyl-]	yes	126-98-7	10,000	b
Methyl chloride [Methane, chloro-]	no	74-87-3	10,000	a
Methyl chloroformate [Carbonochloridic acid, methylester]	yes	79-22-1	5,000	b
Methyl hydrazine [Hydrazine, methyl-]	yes	60-34-4	15,000	b
Methyl isocyanate [Methane, isocyanato-]	yes	624-83-9	10,000	a,b
Methyl mercaptan [Methanethiol]	yes	74-93-1	10,000	b
Methyl thiocyanate [Thiocyanic acid, methyl ester]	yes	556-64-9	20,000	b
Methyltrichlorosilane [Silane, trichloromethyl-]	yes	75-79-6	5,000	b
Nickel carbonyl	yes	13463-39-3	1,000	b
Nitric acid (conc 80% or greater)	yes	7697-37-2	15,000	b
Nitric oxide [Nitrogen oxide (NO)]	yes	10102-43-9	10,000	b
Oleum (Fuming Sulfuric acid) [Sulfuric acid, mixture with sulfur trioxide] [1]	no	8014-95-7	10,000	e
Peracetic acid [Ethaneperoxoic acid]	yes	79-21-0	10,000	b
Perchloromethylmercaptan [Methanesulfenyl chloride, trichloro-]	yes	594-42-3	10,000	b
Phosgene [Carbonic dichloride]	yes	75-44-5	500	a,b
Phosphine	yes	7803-51-2	5,000	b
Phosphorus oxychloride [Phosphoryl chloride]	yes	10025-87-3	5,000	b
Phosphorus trichloride [Phosphorous trichloride]	yes	7719-12-2	15,000	b
Piperidine	yes	110-89-4	15,000	b
Propionitrile [Propanenitrile]	yes	107-12-0	10,000	b
Propyl chloroformate [Carbonochloridic acid, propylester]	yes	109-61-5	15,000	b
Propyleneimine [Aziridine,2-methyl-]	yes	75-55-8	10,000	b
Propylene oxide [Oxirane, methyl-]	yes	75-56-9	10,000	b
Sulfur dioxide (anhydrous)	yes	7446-09-5	5,000	a,b
Sulfur tetrafluoride [Sulfur fluoride (SF4), (T-4)-]	yes	7783-60-0	2,500	b
Sulfur trioxide	yes	7446-11-9	10,000	a,b
Tetramethyllead [Plumbane, tetramethyl-]	yes	75-74-1	10,000	b
Tetranitromethane [Methane, tetranitro-]	yes	509-14-8	10,000	b
Titanium tetrachloride [Titanium chloride (TiCl4) (T-4)-]	yes	7550-45-0	2,500	b
Toluene 2,4-diisocyanate [Benzene, 2,4-diisocyanato-1-methyl-] [1]	yes	584-84-9	10,000	a
Toluene 2,6-diisocyanate [Benzene, 1,3-diisocyanato-2-methyl-] [1]	yes	91-08-7	10,000	a
Toluene diisocyanate (unspecified isomer) [Benzene,1,3-diisocyanatomethyl-] [1]	no	26471-62-5	10,000	a
Trimethylchlorosilane [Silane, chlorotrimethyl-]	yes	75-77-4	10,000	b

Vinyl acetate monomer [Acetic acid ethenyl ester]	yes	108-05-4	15,000	b

1 The exemption in Section 2770.2(b)(1)(B) regarding portions of a process where this regulated substance is handled at partial pressures below 10mm Hg does not apply to this substance.
Note - Basis for Listing:

a Mandated for listing by Congress.

b On EHS list, vapor pressure 10 mmHg or greater.

c Toxic gas.

d Toxicity of hydrogen chloride, potential to release hydrogen chloride, and history of accidents.

e Toxicity of sulfur trioxide and sulfuric acid, potential to release sulfur trioxide, and history of accidents.

f This column identifies substances which may appear on Table 3. Table 3 may not have concentration limitations.

Table 2. Federal Regulated Flammable Substances List [1] and Threshold Quantities for Accidental Release Prevention

Chemical Name	*CAS Number*	*Threshold quantity (lbs)*	*Basis for listing*
Acetaldehyde	75-07-0	10,000	g
Acetylene [Ethyne]	74-86-2	10,000	f
Bromotrifluorethylene [Ethene, bromotrifluoro-]	598-73-2	10,000	f
1,3-Butadiene	106-99-0	10,000	f
Butane	106-97-8	10,000	f
1-Butene	106-98-9	10,000	f
2-Butene	107-01-7	10,000	f
Butene	25167-67-3	10,000	f
2-Butene-cis	590-18-1	10,000	f
2-Butene-trans [2-Butene, (E)]	624-64-6	10,000	f
Carbon oxysulfide [Carbon oxide sulfide (COS)]	463-58-1	10,000	f
Chlorine monoxide [Chlorine oxide]	7791-21-1	10,000	f
2-Chloropropylene [1-Propene, 2-chloro-]	557-98-2	10,000	g
1-Chloropropylene [1-Propene, 1-chloro-]	590-21-6	10,000	g
Cyanogen [Ethanedinitrile]	460-19-5	10,000	f
Cyclopropane	75-19-4	10,000	f
Dichlorosilane [Silane, dichloro-]	4109-96-0	10,000	f
Difluoroethane [Ethane,1,1-difluoro-]	75-37-6	10,000	f
Dimethylamine [Methanamine, N-methyl-]	124-40-3	10,000	f
2,2-Dimethylpropane [Propane, 2,2-dimethyl-]	463-82-1	10,000	f
Ethane	74-84-0	10,000	f
Ethyl acetylene [1-Butyne]	107-00-6	10,000	f
Ethylamine [Ethanamine]	75-04-7	10,000	f
Ethyl chloride [Ethane, chloro-]	75-00-3	10,000	f
Ethylene [Ethene]	74-85-1	10,000	f
Ethyl ether [Ethane,1,1'-oxybis-]	60-29-7	10,000	g
Ethyl mercaptan [Ethanethiol]	75-08-1	10,000	g
Ethyl nitrite [Nitrous acid, ethyl ester]	109-95-5	10,000	f
Hydrogen	1333-74-0	10,000	f
Isobutane [Propane, 2-methyl]	75-28-5	10,000	f
Isopentane [Butane, 2-methyl-]	78-78-4	10,000	g
Isoprene [1,3-Butadinene, 2-methyl-]	78-79-5	10,000	g
Isopropylamine [2-Propanamine]	75-31-0	10,000	g
Isopropyl chloride [Propane, 2-chloro-]	75-29-6	10,000	g
Methane	74-82-8	10,000	f
Methylamine [Methanamine]	74-89-5	10,000	f
3-Methyl-1-butene	563-45-1	10,000	f

2-Methyl-1-butene	563-46-2	10,000	g
Methyl ether [Methane, oxybis-]	115-10-6	10,000	f
Methyl formate [Formic acid, methyl ester]	107-31-3	10,000	g
2-Methylpropene [1-Propene, 2-methyl-]	115-11-7	10,000	f
1,3-Pentadinene	504-60-9	10,000	f
Pentane	109-66-0	10,000	g
1-Pentene	109-67-1	10,000	g
2-Pentene, (E)-	646-04-8	10,000	g
2-Pentene, (Z)-	627-20-3	10,000	g
Propadiene [1,2-Propadiene]	463-49-0	10,000	f
Propane	74-98-6	10,000	f
Propylene [1-Propene]	115-07-1	10,000	f
Propyne [1-Propyne]	74-99-7	10,000	f
Silane	7803-62-5	10,000	f
Tetrafluoroethylene [Ethene, tetrafluoro-]	116-14-3	10,000	f
Tetramethylsilane [Silane, tetramethyl-]	75-76-3	10,000	g
Trichlorosilane [Silane, trichloro-]	10025-78-2	10,000	g
Trifluorochloroethylene [Ethene, chlorotrifluoro-]	79-38-9	10,000	f
Trimethylamine [Methanamine, N,N-dimethyl-]	75-50-3	10,000	f
Vinyl acetylene [1-Buten-3-yne]	689-97-4	10,000	f
Vinyl chloride [Ethene, chloro-]	75-01-4	10,000	a,f
Vinyl ethyl ether [Ethene, ethoxy-]	109-92-2	10,000	g
Vinyl fluoride [Ethene, fluoro-]	75-02-5	10,000	f
Vinylidene chloride [Ethene, 1,1-dichloro-]	75-35-4	10,000	g
Vinylidene fluoride [Ethene, 1,1-difluoro-]	75-38-7	10,000	f
Vinylmethyl ether [Ethene, methoxy-]	107-25-5	10,000	f

[1] A flammable substance when used as a fuel or held for sale as a fuel at a retail facility is excluded from all provisions of this chapter (see Section 2770.4.1).

Note - Basis for Listing:

a Mandated for listing by Congress.

f Flammable gas.

g Volatile flammable liquid.

Table 3. State Regulated Substances List and Threshold Quantities for Accidental Release Prevention

Chemical Name	*Also on Table 1*[1]	*CAS Number*	*State Threshold quantity (lbs)*
Acetone Cyanohydrin[2]	no	75-86-5	1,000
Acetone Thiosemicarbazide	no	1752-30-3	1,000/10,000[3]
Acrolein	yes	107-02-8	500
Acrylamide	no	79-06-1	1,000/10,000[3]
Acrylonitrile	yes	107-13-1	10,000
Acrylyl Chloride	yes	814-68-6	100
Aldicarb	no	116-06-3	100/10,000[3]
Aldrin	no	309-00-2	500/10,000[3]
Allyl Alcohol	yes	107-18-6	1,000
Allylamine	yes	107-11-9	500
Aluminum Phosphide[4]	no	20859-73-8	500
Aminopterin	no	54-62-6	500/10,000[3]
Amiton Oxalate	no	3734-97-2	100/10,000[3]
Ammonia[5]	yes	7664-41-7	500
Aniline[2]	no	62-53-3	1,000

Antimycin A	no	1397-94-0	1,000/10,000[3]
ANTU	no	86-88-4	500/10,000[3]
Arsenic Pentoxide	no	1303-28-2	100/10,000[3]
Arsenous Oxide	no	1327-53-3	100/10,000[3]
Arsenous Trichloride	yes	7784-34-1	500
Arsine	yes	7784-42-1	100
Azinphos-Ethyl	no	2642-71-9	100/10,000[3]
Azinphos-Methyl	no	86-50-0	10/10,000[3]
Benzene, 1-(Chloromethyl)-4-Nitro-	no	100-14-1	500/10,000[3]
Benzenearsonic Acid	no	98-05-5	10/10,000[3]
Benzimidazole, 4,5-Dichloro-2-(Trifluoromethyl)-	no	3615-21-2	500/10,000[3]
Benzotrichloride[2]	no	98-07-7	100
Bicyclo[2.2.1] Heptane-2-Carbonitrile, 5-Chloro- 6-((((Methylamino) Carbonyl)Oxy)Imino)-, (1s-(1-alpha, 2-beta, 4-alpha, 5-alpha, 6E))-.	no	15271-41-7	500/10,000[3]
Bis(Chloromethyl) Ketone	no	534-07-6	10/10,000[3]
Bitoscanate	no	4044-65-9	500/10,000[3]
Boron Trichloride	yes	10294-34-5	500
Boron Trifluoride	yes	7637-07-2	500
Boron Trifluoride Compound w/ Methyl Ether (1:1)	yes	353-42-4	1,000
Bromadiolone	no	28772-56-7	100/10,000[3]
Bromine	yes	7726-95-6	500
Cadmium Oxide	no	1306-19-0	100/10,000[3]
Cadmium Stearate	no	2223-93-0	1,000/10,000[3]
Calcium Arsenate	no	7778-44-1	500/10,000[3]
Camphechlor	no	8001-35-2	500/10,000[3]
Cantharidin	no	56-25-7	100/10,000[3]
Carbachol Chloride	no	51-83-2	500/10,000[3]
Carbamic Acid, Methyl-,o-(((2,4-Dimethyl-1, 3-Dithiolan-2-yl)Methylene) Amino)-.	no	26419-73-8	100/10,000[3]
Carbofuran	no	1563-66-2	10/10,000[3]
Carbon Disulfide	yes	75-15-0	10,000
Chlorine	yes	7782-50-5	100
Chlormequat Chloride	no	999-81-5	100/10,000[3]
Chloroacetic Acid	no	79-11-8	100/10,000[3]
Chloroform	yes	67-66-3	10,000
Chloromethyl Ether	yes	542-88-1	100
Chloromethyl Methyl Ether	yes	107-30-2	100
Chlorophacinone	no	3691-35-8	100/10,000[3]
Chloroxuron	no	1982-47-4	500/10,000[3]
Chromic Chloride	no	10025-73-7	1/10,000[3]
Cobalt Carbonyl	no	10210-68-1	10/10,000[3]
Cobalt, ((2,2'-(1,2-Ethanediylbis (Nitrilomethylidyne)) Bis(6-Fluorophenolato))(2-)-N,N',O,O')-.	no	62207-76-5	100/10,000[3]
Colchicine	no	64-86-8	10/10,000[3]
Coumaphos	no	56-72-4	100/10,000[3]
Coumatetralyl	no	5836-29-3	500/10,000[3]
Cresol, o-	no	95-48-7	1,000/10,000[3]
Crimidine	no	535-89-7	100/10,000[3]
Crotonaldehyde	yes	4170-30-3	1,000
Crotonaldehyde, (E)-	yes	123-73-9	1,000
Cyanogen Bromide	no	506-68-3	500/10,000[3]
Cyanogen Iodide	no	506-78-5	1,000/10,000[3]
Cyanuric Fluoride	no	675-14-9	100
Cycloheximide	no	66-81-9	100/10,000[3]
Cyclohexylamine	yes	108-91-8	10,000
Decaborane(14)	no	17702-41-9	500/10,000[3]
Dialifor	no	10311-84-9	100/10,000[3]

Diborane	yes	19287-45-7	100
Diepoxybutane[2]	no	1464-53-5	500
Digitoxin	no	71-63-6	100/10,000[3]
Digoxin	no	20830-75-5	10/10,000[3]
Dimethoate	no	60-51-5	500/10,000[3]
Dimethyldichlorosilane	yes	75-78-5	500
Dimethylhydrazine	yes	57-14-7	1,000
Dimethyl-p-Phenylenediamine	no	99-98-9	10/10,000[3]
Dimethyl Sulfate[2]	no	77-78-1	500
Dimetilan	no	644-64-4	500/10,000[3]
Dinitrocresol	no	534-52-1	10/10,000[3]
Dinoseb	no	88-85-7	100/10,000[3]
Dinoterb	no	1420-07-1	500/10,000[3]
Diphacinone	no	82-66-6	10/10,000[3]
Disulfoton[2]	no	298-04-4	500
Dithiazanine Iodide	no	514-73-8	500/10,000[3]
Dithiobiuret	no	541-53-7	100/10,000[3]
Emetine, Dihydrochloride	no	316-42-7	1/10,000
Endosulfan	no	115-29-7	10/10,000[3]
Endothion	no	2778-04-3	500/10,000[3]
Endrin	no	72-20-8	500/10,000[3]
Epichlorohydrin	yes	106-89-8	1,000
EPN	no	2104-64-5	100/10,000[3]
Ergocalciferol	no	50-14-6	1,000/10,000[3]
Ergotamine Tartrate	no	379-79-3	500/10,000[3]
Ethylenediamine	yes	107-15-3	10,000
Ethylene Fluorohydrin	no	371-62-0	10
Ethyleneimine	yes	151-56-4	500
Ethylene Oxide	yes	75-21-8	1,000
Fenamiphos	no	22224-92-6	10/10,000[3]
Fluenetil	no	4301-50-2	100/10,000[3]
Fluorine	yes	7782-41-4	500
Fluoroacetamide	no	640-19-7	100/10,000[3]
Fluoroacetic Acid	no	144-49-0	10/10,000[3]
Fluoroacetyl Chloride	no	359-06-8	10
Fluorouracil	no	51-21-8	500/10,000[3]
Formaldehyde[5]	yes	50-00-0	500
Formetanate Hydrochloride	no	23422-53-9	500/10,000[3]
Formparanate	no	17702-57-7	100/10,000[3]
Fuberidazole	no	3878-19-1	100/10,000[3]
Furan	yes	110-00-9	500
Gallium Trichloride	no	13450-90-3	500/10,000[3]
Hydrazine	yes	302-01-2	1,000
Hydrocyanic Acid	yes	74-90-8	100
Hydrogen Chloride (gas only)	yes	7647-01-0	500
Hydrogen Fluoride	yes	7664-39-3	100
Hydrogen Selenide	yes	7783-07-5	10
Hydrogen Sulfide	yes	7783-06-4	500
Hydroquinone[6]	no	123-31-9	500/10,000[3]
Iron, Pentacarbonyl-	yes	13463-40-6	100
Isobenzan	no	297-78-9	100/10,000[3]
Isobutyronitrile	yes	78-82-0	1,000
Isocyanic Acid, 3,4-Dichlorophenyl Ester	no	102-36-3	500/10,000[3]
Isodrin	no	465-73-6	100/10,000[3]
Isophorone Diisocyanate	no	4098-71-9	100
Isopropyl Chloroformate	yes	108-23-6	1,000

Leptophos	no	21609-90-5	500/10,000[3]
Lewisite[2]	no	541-25-3	10
Lindane	no	58-89-9	1,000/10,000[3]
Lithium Hydride[4]	no	7580-67-8	100
Malononitrile	no	109-77-3	500/10,000[3]
Manganese, Tricarbonyl Methylcyclopentadienyl[2]	no	12108-13-3	100
Mechlorethamine[2]	no	51-75-2	10
Mercuric Acetate	no	1600-27-7	500/10,000[3]
Mercuric Chloride	no	7487-94-7	500/10,000[3]
Mercuric Oxide	no	21908-53-2	500/10,000[3]
Methacrylonitrile	yes	126-98-7	500
Methacryloyl Chloride	no	920-46-7	100
Methacryloyloxyethyl Isocyanate	no	30674-80-7	100
Methamidophos	no	10265-92-6	100/10,000[3]
Methanesulfonyl Fluoride	no	558-25-8	1,000
Methidathion	no	950-37-8	500/10,000[3]
Methiocarb	no	2032-65-7	500/10,000[3]
Methomyl	no	16752-77-5	500/10,000[3]
Methoxyethylmercuric Acetate	no	151-38-2	500/10,000[3]
Methyl Bromide	no	74-83-9	1,000
Methyl 2-Chloroacrylate	no	80-63-7	500
Methyl Chloroformate	yes	79-22-1	500
Methyl Hydrazine	yes	60-34-4	500
Methyl Isocyanate	yes	624-83-9	500
Methyl Isothiocyanate[4]	no	556-61-6	500
Methyl Mercaptan	yes	74-93-1	500
Methylmercuric Dicyanamide	no	502-39-6	500/10,000[3]
Methyl Phosphonic Dichloride[4]	no	676-97-1	100
Methyl Thiocyanate	yes	556-64-9	10,000
Methyltrichlorosilane	yes	75-79-6	500
Methyl Vinyl Ketone	no	78-94-4	10
Metolcarb	no	1129-41-5	100/10,000[3]
Mexacarbate	no	315-18-4	500/10,000[3]
Mitomycin C	no	50-07-7	500/10,000[3]
Monocrotophos	no	6923-22-4	10/10,000[3]
Muscimol	no	2763-96-4	500/10,000[3]
Mustard Gas[2]	no	505-60-2	500
Nickel Carbonyl	yes	13463-39-3	1
Nicotine Sulfate	no	65-30-5	100/10,000[3]
Nitric Acid	yes	7697-37-2	1,000
Nitric Oxide	yes	10102-43-9	100
Nitrobenzene[2]	no	98-95-3	10,000
Nitrogen Dioxide	no	10102-44-0	100
Norbormide	no	991-42-4	100/10,000[3]
Organorhodium Complex (PMN-82-147)	no	MIXTURE	10/10,000[3]
Ouabain	no	630-60-4	100/10,000[3]
Oxamyl	no	23135-22-0	100/10,000[3]
Ozone	no	10028-15-6	100
Paraquat Dichloride	no	1910-42-5	10/10,000[3]
Paraquat Methosulfate	no	2074-50-2	10/10,000[3]
Parathion-Methyl	no	298-00-0	100/10,000[3]
Paris Green	no	12002-03-8	500/10,000[3]
Pentaborane	no	19624-22-7	500
Pentadecylamine	no	2570-26-5	100/10,000[3]
Peracetic Acid	yes	79-21-0	500
Perchloromethylmercaptan	yes	594-42-3	500

Phenol	no	108-95-2	500/10,000[3]
Phenol, 2,2'-Thiobis(4-Chloro-6-Methyl)-	no	4418-66-0	100/10,000[3]
Phenol, 3-(1-Methylethyl)-, Methylcarbamate	no	64-00-6	500/10,000[3]
Phenoxarsine, 10, 10' - Oxydi-	no	58-36-6	500/10,000[3]
Phenyl Dichloroarsine[2]	no	696-28-6	500
Phenylhydrazine Hydrochloride	no	59-88-1	1,000/10,000[3]
Phenylmercury Acetate	no	62-38-4	500/10,000[3]
Phenylsilatrane	no	2097-19-0	100/10,000[3]
Phenylthiourea	no	103-85-5	100/10,000[3]
Phorate	no	298-02-2	10
Phosacetim	no	4104-14-7	100/10,000[3]
Phosfolan	no	947-02-4	100/10,000[3]
Phosgene	yes	75-44-5	10
Phosmet	no	732-11-6	10/10,000[3]
Phosphine	yes	7803-51-2	500
Phosphonothioic Acid, Methyl-, S-(2-(Bis(1-Methylethyl)Amino)Ethyl) O-Ethyl Ester.[2]	no	50782-69-9	100
Phosphorus[4]	no	7723-14-0	100
Phosphorus Oxychloride	yes	10025-87-3	500
Phosphorus Pentachloride[4]	no	10026-13-8	500
Phosphorus Trichloride	yes	7719-12-2	1,000
Physostigmine	no	57-47-6	100/10,000[3]
Physostigmine, Salicylate (1:1)	no	57-64-7	100/10,000[3]
Picrotoxin	no	124-87-8	500/10,000[3]
Piperidine	yes	110-89-4	1,000
Potassium Arsenite	no	10124-50-2	500/10,000[3]
Potassium Cyanide[4]	no	151-50-8	100
Potassium Silver Cyanide[4]	no	506-61-6	500
Promecarb	no	2631-37-0	500/10,000[3]
Propargyl Bromide	no	106-96-7	10
Propiolactone, Beta-[2]	no	57-57-8	500
Propionitrile	yes	107-12-0	500
Propiophenone, 4-Amino-	no	70-69-9	100/10,000[3]
Propyl Chloroformate	yes	109-61-5	500
Prothoate	no	2275-18-5	100/10,000[3]
Pyrene	no	129-00-0	1,000/10,000[3]
Pyridine, 4-Amino-	no	504-24-5	500/10,000[3]
Pyridine, 4-Nitro-, 1-Oxide	no	1124-33-0	500/10,000[3]
Pyriminil	no	53558-25-1	100/10,000[3]
Salcomine	no	14167-18-1	500/10,000[3]
Sarin[2]	no	107-44-8	10
Selenious Acid	no	7783-00-8	1,000/10,000[3]
Semicarbazide Hydrochloride	no	563-41-7	1,000/10,000[3]
Sodium Arsenate	no	7631-89-2	1,000/10,000[3]
Sodium Arsenite	no	7784-46-5	500/10,000[3]
Sodium Azide (Na (N3))[4]	no	26628-22-8	500
Sodium Cacodylate	no	124-65-2	100/10,000[3]
Sodium Cyanide (Na (CN))[4]	no	143-33-9	100
Sodium Fluoroacetate	no	62-74-8	10/10,000[3]
Sodium Selenate	no	13410-01-0	100/10,000[3]
Sodium Selenite	no	10102-18-8	100/10,000[3]
Sodium Tellurite	no	10102-20-2	500/10,000[3]
Stannane, Acetoxytriphenyl-	no	900-95-8	500/10,000[3]
Strychnine	no	57-24-9	100/10,000[3]
Strychnine Sulfate	no	60-41-3	100/10,000[3]
Sulfur Dioxide	yes	7446-09-5	500

Sulfuric Acid[7]	no	7664-93-9	1,000
Sulfur Tetrafluoride	yes	7783-60-0	100
Sulfur Trioxide[4]	yes	7446-11-9	100
Tabun[2]	no	77-81-6	10
Tellurium Hexafluoride	no	7783-80-4	100
Tetramethyllead	yes	75-74-1	100
Tetranitromethane	yes	509-14-8	500
Thallium Sulfate	no	10031-59-1	100/10,000[3]
Thallous Carbonate	no	6533-73-9	100/10,000[3]
Thallous Chloride	no	7791-12-0	100/10,000[3]
Thallous Malonate	no	2757-18-8	100/10,000[3]
Thallous Sulfate	no	7446-18-6	100/10,000[3]
Thiocarbazide	no	2231-57-4	1,000/10,000[3]
Thiofanox	no	39196-18-4	100/10,000[3]
Thiosemicarbazide	no	79-19-6	100/10,000[3]
Thiourea, (2-Chlorophenyl)-	no	5344-82-1	100/10,000[3]
Thiourea, (2-Methylphenyl)-	no	614-78-8	500/10,000[3]
Titanium Tetrachloride	yes	7550-45-0	100
Toluene-2,4-Diisocyanate[8]	yes	584-84-9	500
Toluene-2,6-Diisocyanate[8]	yes	91-08-7	100
Triamiphos	no	1031-47-6	500/10,000[3]
Trichloro(Chloromethyl)Silane	no	1558-25-4	100
Trichloro(Dichlorophenyl)Silane	no	27137-85-5	500
Triethoxysilane	no	998-30-1	500
Trimethylchlorosilane	yes	75-77-4	1,000
Trimethylolpropane Phosphite	no	824-11-3	100/10,000[3]
Trimethyltin Chloride	no	1066-45-1	500/10,000[3]
Triphenyltin Chloride	no	639-58-7	500/10,000[3]
Tris(2-Chloroethyl)Amine[2]	no	555-77-1	100
Valinomycin	no	2001-95-8	1,000/10,000[3]
Vanadium Pentoxide	no	1314-62-1	100/10,000[3]
Vinyl Acetate Monomer	yes	108-05-4	1,000
Warfarin	no	81-81-2	500/10,000[3]
Warfarin Sodium	no	129-06-6	100/10,000[3]
Xylylene Dichloride	no	28347-13-9	100/10,000[3]
Zinc, Dichloro(4,4-Dimethyl-5((((Methylamino) Carbonyl)Oxy)Imino) Pentanenitrile)-, (T-4)-.	no	58270-08-9	100/10,000[3]
Zinc Phosphide[4]	no	1314-84-7	500

1 This column identifies substances which may appear on Table 1. Table 1 may have concentration limitations.

2 Substances that failed the evaluation pursuant to Section 25532(g)(2) of the HSC but remain listed pursuant to potential health impacts. The exemption in Section 2770.2(b)(1)(B) regarding portions of a process where these regulated substances are handled at partial pressures below 10 mm Hg does not apply to these substances.

3 These extremely hazardous substances are solids. The lesser quantity listed applies only if in powdered form and with a particle size of less than 100 microns; or if handled in solution or in molten form; or the substance has an NFPA rating for reactivity of 2, 3, or 4. Otherwise, a 10,000 pound threshold applies. The exemption in Section 2770.2(b)(1)(B) regarding portions of a process where these regulated substances are handled at partial pressures below 10 mm Hg does not apply to these substances.

4 These extremely hazardous substances are reactive solids. The exemption in Section 2770.2(b)(1)(B) regarding portions of a process where these regulated substances are handled at partial pressures below 10 mm Hg does not apply to these substances.

5 Appropriate synonyms or mixtures of extremely hazardous substances with the same CAS number are also regulated, e.g., formalin. The listing of ammonia includes anhydrous and aqueous forms of ammonia pursuant to Section 25532(g)(2).

6 Hydroquinone is exempt in crystalline form.

7 Sulfuric acid fails the evaluation pursuant to Section 25532(g)(2) of the HSC but remains listed as a Regulated Substance only under the following conditions:

a. If concentrated with greater than 100 pounds of sulfur trioxide or the acid meets the definition of oleum. (The Table 3 threshold for sulfur trioxide is 100 pounds.) (The Table 1 threshold for oleum is 10,000 pounds.)

b. If in a container with flammable hydrocarbons (flash point < 73°F).

8 The exemption in Section 2770.2(b)(1)(B) regarding portions of a process where these regulated substances are handled at partial pressures below 10 mm Hg does not apply to these substances.

Note: Authority cited: Sections 25531 and 25534.05, Health and Safety Code. Reference: Sections 25532(g)(2) and 25543.3, Health and Safety Code; and Section 68.130, Part 68, Title 40, Code of Federal Regulations.

HISTORY

1. New section and Tables 1-3 filed 7-10-97 as an emergency; operative 7-10-97 (Register 97, No. 28). A Certificate of Compliance must be transmitted to OAL by 11-7-97 or emergency language will be repealed by operation of law on the following day.

2. New section and Tables 1-3 refiled 10-31-97 as an emergency; operative 11-7-97 (Register 97, No. 44). A Certificate of Compliance must be transmitted to OAL by 3-9-98 or emergency language will be repealed by operation of law on the following day.

3. Editorial correction of Tables 1 and 3 (Register 98, No. 11).

4. New section and Tables 1-3 refiled 3-9-98 as an emergency; operative 3-9-98 (Register 98, No. 11). A Certificate of Compliance must be transmitted to OAL by 7-7-98 or emergency language will be repealed by operation of law on the following day.

5. New section and Tables 1-3 refiled 7-7-98 as an emergency; operative 7-7-98 (Register 98, No. 28). A Certificate of Compliance must be transmitted to OAL by 11-4-98 or emergency language will be repealed by operation of law on the following day.

6. Certificate of Compliance as to 7-7-98 order, including repealer and new section and repealer and new Tables 1-3, transmitted to OAL 10-7-98 and filed 11-16-98 (Register 98, No. 47).

7. Amendment of Table 2 adding new footnote filed 10-10-2002; operative 10-10-2002. Submitted to OAL for printing only pursuant to Health and Safety Code section 25533 (Register 2002, No. 41).

8. Amendment of Table 3 filed 10-8-2014; operative 1-1-2015 (Register 2014, No. 41).

This database is current through 3/10/17 Register 2017, No. 10

19 CCR § 2770.5, 19 CA ADC § 2770.5

END OF DOCUMENT

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UNIFIED PROGRAM CONSOLIDATED FORM

HAZARDOUS MATERIALS

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ADD ☐DELETE ☐REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3

CHEMICAL LOCATION 201

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES ☐ NO

FACILITY ID # 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205

TRADE SECRET ☐ Yes ☐ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207

EHS* ☐ Yes ☐ No 208

CAS# 209

*If EHS is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☐ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes ☐ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☐ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 215

FED HAZARD CATEGORIES (Check all that apply) ☐ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217

MAXIMUM DAILY AMOUNT 218

ANNUAL WASTE AMOUNT 219

STATE WASTE CODE 220

UNITS* (Check one item only) ☐ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 222

STORAGE CONTAINER
☐ a. ABOVE GROUND TANK ☐ e. PLASTIC/NONMETALLIC DRUM ☐ i. FIBER DRUM ☐ m. GLASS BOTTLE ☐ q. RAIL CAR
☐ b. UNDERGROUND TANK ☐ f. CAN ☐ j. BAG ☐ n. PLASTIC BOTTLE ☐ r. OTHER
☐ c. TANK INSIDE BUILDING ☐ g. CARBOY ☐ k. BOX ☐ o. TOTE BIN
☐ d. STEEL DRUM ☐ h. SILO ☐ l. CYLINDER ☐ p. TANK WAGON 223

STORAGE PRESSURE ☐ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☐ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1 226	227	☐ Yes ☐ No 228	229
2 230	231	☐ Yes ☐ No 232	233
3 234	235	☐ Yes ☐ No 236	237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION 246

If EPCRA, Please Sign Here

Hazardous Materials Inventory - Chemical Description

You must complete a separate Hazardous Materials Inventory - Chemical Description page for each hazardous material (hazardous substances and hazardous waste) that you handle at your facility in aggregate quantities equal to or greater than 500 pounds, 55 gallons, 200 cubic feet of gas (calculated at standard temperature and pressure) or the federal threshold planning quantity for Extremely Hazardous Substances, whichever is less. Also complete a page for each radioactive material handled over quantities for which an emergency plan is required to be adopted pursuant to 10 CFR Parts 30, 40, or 70. The completed inventory should reflect all reportable quantities of hazardous materials at your facility, reported **separately** for each building or outside adjacent area, with **separate** pages for unique occurrences of physical state, storage temperature and storage pressure. (Note: the numbering of the instructions follows the data element numbers that are on the UPCF pages. These data element numbers are used for electronic submission and are the same as the numbering used in 27 CCR, Appendix C, the Business Section of the Unified Program Data Dictionary.) Please number all pages of your submittal. This helps your CUPA or AA identify whether the submittal is complete and if any pages are separated.

1. FACILITY ID NUMBER - This number is assigned by the CUPA or AA. This is the unique number which identifies your facility.
3. BUSINESS NAME - Enter the full legal name of the business.
200. ADD/DELETE/ REVISE - Indicate if the material is being added to the inventory, deleted from the inventory, or if the information previously submitted is being revised. NOTE: You may choose to leave this blank if you resubmit your entire inventory annually.
201. CHEMICAL LOCATION - Enter the building or outside/ adjacent area where the hazardous material is handled. A chemical that is stored at the same pressure and temperature, in multiple locations within a building, can be reported on a single page. NOTE: This information is not subject to public disclosure pursuant to HSC э25506.
202. CHEMICAL LOCATION CONFIDENTIAL - EPCRA - All businesses which are subject to the Emergency Planning and Community Right to Know Act (EPCRA) must check AYes≅ to keep chemical location information confidential. If the business does not wish to keep chemical location information confidential check ANo≅.
203. MAP NUMBER - If a map is included, enter the number of the map on which the location of the hazardous material is shown.
204. GRID NUMBER - If grid coordinates are used, enter the grid coordinates of the map that correspond to the location of the hazardous material. If applicable, multiple grid coordinates can be listed.
205. CHEMICAL NAME - Enter the proper chemical name associated with the Chemical Abstract Service (CAS) number of the hazardous material. This should be the International Union of Pure and Applied Chemistry (IUPAC) name found on the Material Safety Data Sheet (MSDS). NOTE: If the chemical is a mixture, do not complete this field; complete the ACOMMON NAME" field instead.
206. TRADE SECRET - Check "Yes" if the information in this section is declared a trade secret, or "No" if it is not.
State requirement: If yes, and business is not subject to EPCRA, disclosure of the designated trade secret information is bound by HSC э25511.
Federal requirement: If yes, and business is subject to EPCRA, disclosure of the designated Trade Secret information is bound by 40 CFR and the business must submit a ASubstantiation to Accompany Claims of Trade Secrecy≅ form (40 CFR 350.27) to USEPA.
207. COMMON NAME - Enter the common name or trade name of the hazardous material or mixture containing a hazardous material.
208. EHS - Check "Yes" if the hazardous material is an Extremely Hazardous Substance (EHS), as defined in 40 CFR, Part 355, Appendix A. If the material is a mixture containing an EHS, leave this section blank and complete the section on hazardous components below.
209. CAS # - Enter the Chemical Abstract Service (CAS) number for the hazardous material. For mixtures, enter the CAS number of the mixture if it has been assigned a number distinct from its components. If the mixture has no CAS number, leave this column blank and report the CAS numbers of the individual hazardous components in the appropriate section below.
210. FIRE CODE HAZARD CLASSES - Fire Code Hazard Classes describe to first responders the type and level of hazardous materials which a business handles. This information shall only be provided if the local fire chief deems it necessary and requests the CUPA or AA to collect it. A list of the hazard classes and instructions on how to determine which class a material falls under are included in the appendices of Article 80 of the Uniform Fire Code. If a material has more than one applicable hazard class, include all. Contact CUPA or AA for guidance.
211. HAZARDOUS MATERIAL TYPE - Check the one box that best describes the type of hazardous material: pure, mixture or waste. If waste material, check only that box. If mixture or waste, complete hazardous components section.
212. RADIOACTIVE - Check "Yes" if the hazardous material is radioactive or ANo≅ if it is not.
213. CURIES - If the hazardous material is radioactive, use this area to report the activity in curies. You may use up to nine digits with a floating decimal point to report activity in curies.
214. PHYSICAL STATE - Check the one box that best describes the state in which the hazardous material is handled: solid, liquid or gas.
215. LARGEST CONTAINER - Enter the total capacity of the largest container in which the material is stored.
216. FEDERAL HAZARD CATEGORIES - Check all categories that describe the physical and health hazards associated with the hazardous material.

PHYSICAL HAZARDS	HEALTH HAZARDS
Fire: Flammable Liquids and Solids, Combustible Liquids, Pyrophorics, Oxidizers	**Acute Health (Immediate):** Highly Toxic, Toxic, Irritants, Sensitizers, Corrosives, other hazardous chemicals with an adverse effect with short term exposure
Reactive: Unstable Reactive, Organic Peroxides, Water Reactive, Radioactive	
Pressure Release: Explosives, Compressed Gases, Blasting Agents	**Chronic Health (Delayed):** Carcinogens, other hazardous chemicals with an adverse effect with long term exposure

217. AVERAGE DAILY AMOUNT - Calculate the average daily amount of the hazardous material or mixture containing a hazardous material, in each building or adjacent/ outside area. Calculations shall be based on the previous years inventory of material reported on this page. Total all daily amounts and divide by the number of days the chemical will be on site. If this is a material that has not previously been present at this location, the amount shall be the average daily amount you project to be on hand during the course of the year. This amount should be consistent with the units reported in box 221 and should not exceed that of maximum daily amount.
218. MAXIMUM DAILY AMOUNT - Enter the maximum amount of each hazardous material or mixture containing a hazardous material, which is handled in a building or adjacent/outside area at any one time over the course of the year. This amount must contain at a minimum last years inventory of the material reported on this page, with the reflection of additions, deletions, or revisions projected for the current year. This amount should be consistent with the units reported in box 221.
219. ANNUAL WASTE AMOUNT - If the hazardous material being inventoried is a waste, provide an estimate of the annual amount handled.
220. STATE WASTE CODE - If the hazardous material is a waste, enter the appropriate California 3-digit hazardous waste code as listed on the back of the Uniform Hazardous Waste Manifest.
221. UNITS - Check the unit of measure that is most appropriate for the material being reported on this page: gallons, pounds, cubic feet or tons. NOTE: If the material is a federally defined Extremely Hazardous Substance (EHS), all amounts must be reported in pounds. If material is a mixture containing an EHS, report the units that the material is stored in (gallons, pounds, cubic feet, or tons).
222. DAYS ON SITE - List the total number of days during the year that the material is on site.
223. STORAGE CONTAINER - Check all boxes that describe the type of storage containers in which the hazardous material is stored. NOTE: If appropriate, you may choose more than one.
224. STORAGE PRESSURE - Check the one box that best describes the pressure at which the hazardous material is stored.
225. STORAGE TEMPERATURE - Check the one box that best describes the temperature at which the hazardous material is stored.
226. HAZARDOUS COMPONENTS 1-5 (% BY WEIGHT) - Enter the percentage weight of the hazardous component in a mixture. If a range of percentages is available, report the highest percentage in that range. (Report for components 2 through 5 in 230, 234, 238, and 242.)
227. HAZARDOUS COMPONENTS 1-5 NAME - When reporting a hazardous material that is a mixture, list up to five chemical names of hazardous components in that mixture by percent weight (refer to MSDS or, in the case of trade secrets, refer to manufacturer). All hazardous components in the mixture present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, should be reported. If more than five hazardous components are present above these percentages, you may attach an additional sheet of paper to capture the required information. When reporting waste mixtures, mineral and chemical composition should be listed. (Report for components 2 through 5 in 231, 235, 239, and 243.)
228. HAZARDOUS COMPONENTS 1-5 EHS - Check "Yes" if the component of the mixture is considered an Extremely Hazardous Substance as defined in 40 CFR, Part 355, or "No" if it is not. (Report for components 2 through 5 in 232, 236, 240, and 244.)
229. HAZARDOUS COMPONENTS 1-5 CAS - List the Chemical Abstract Service (CAS) numbers as related to the hazardous components in the mixture. (Repeat for 2-5.)
246. LOCALLY COLLECTED INFORMATION - This space may be used by the CUPA or AA to collect any additional information necessary to meet the requirements of their individual programs. Contact the CUPA or AA for guidance.

Northeast Center of the
California Historical Resources
Information System

BUTTE
GLENN
LASSEN
MODOC
PLUMAS
SHASTA
SIERRA
SISKIYOU
SUTTER
TEHAMA
TRINITY

123 West 6th Street, Suite 100
Chico CA 95928
Phone (530) 898-6256
neinfocntr@csuchico.edu

RECEIVED
SEP 05 2017
Glenn County
PPWA

August 24, 2017

Glenn County Planning &
Public Works Agency
P.O. Box 1070
Willows, CA 95988
ATTN: Mr. Andy Popper

I.C. File # Y17-4
Project Review

RE: CUP 2017-002/APN 032-260-006/Holly Sugar Plant
T22N, R1W, Unsectioned MDBM
USGS Hamilton City 7.5' and Willows (1951) 15' quadrangles
51 acres (Glenn County)

Dear Mr. Popper,

In response to your request, a project review for the project cited above was conducted by examining the official maps and records for archaeological sites and surveys in Glenn County.

RESULTS:

Prehistoric Resources: According to our records, no sites of this type have been recorded in the project area or ½-mile project vicinity. The project area is located in a region utilized by Konkow Maidu populations. Unrecorded prehistoric cultural resources may be located in the project area.

Historic Resources: According to our records, three sites of this type have been recorded in the project area. Please see Table 1 below for more information. Additionally, three sites of this type have been recorded in the ½-mile project vicinity consisting of lime mud from the Holly Sugar Plant, a levee, and sewage ponds. Unrecorded historic cultural resources may be located in the project area.

Table 1, Previously Recorded Historic Sites in the Project Area

State Number	Site Description
CA-GLE-606H	Colusa & Hamilton Railway and a culvert
P-11-000707	Hamilton City Sugar Mill
P-11-000708	Hamilton City Railyard Culverts

The USGS Willows (1951) 15' quad map indicates that the project area lies within the town of Hamilton City and that the Capay land grant, Southern Pacific Railroad, a water tank, structures, and a road are located within the project area, while Highway 32, a high school, oil tank, levee, orchards, roads, and structures are located within the general project vicinity.

A copy of the historic Willows (1906) quad depicting the Northern Electric Line Railroad, roads, and structures in the project area is enclosed. Hamilton City was founded in 1905 with the operation of a large sugar beet factory, which was later operated by the Holly Sugar Company. The town was named after J.G. Hamilton, the sugar company's president.

Previous Archaeological Investigations: According to our records, portions of the project area have been previously surveyed for cultural resources. The studies are listed below.

Hildebrandt, William and Philip Kaijankoski (Far Western Anthropological Research Group, Inc.)

2011 *Archaeological and Architectural Site Evaluations for the Hamilton City Flood Damage Reduction and Ecological Restoration Area, Glenn County, California.*
NEIC Report 0103762
Resources:
Numerous resources

Maniery, Mary L. (PAR Environmental Services)

2008 *Cultural Resources Inventory Report for the Glenn #2 Reconductor Project Glenn County, California.*
NEIC Report 010029
Resources:
P-11-000575 (CA-GLE-000575H)
P-11-000606 (CA-GLE-000606H)
P-11-000707
P-11-000708
P-11-000709

Millet, Marshall (PAR Environmental Services)

2008 *Cultural Resources Constraints Study for the Replacement of Wood Poles of PG&E High Voltage Transmission Lines, PAR Reference #08-8015.*
NEIC Report 010558
Resources:
Numerous resources

Rosenthal, Jeffery (Far Western Anthropological Research Group)
2011 *Addendum Archaeological Survey Report for the Hamilton City Flood Damage Reduction and Ecological Restoration Area, Glenn County, California.*
NEIC Report 0103761
Resources:
Numerous resources

Literature Search: The official records and maps for archaeological sites and surveys in Glenn County were reviewed. Also reviewed: **National Register of Historic Places - Listed properties and Determined Eligible Properties** (2012), **California Register of Historical Resources** (2012), **California Points of Historical Interest** (2009), **California Investigation of Historic Resources** (1976), **California Historical Landmarks** (2012), **Gold Districts of California – Bulletin 193** (2012), **Historic Spots in California – Fifth Edition** (2002), **Handbook of North American Indians, Vol. 8, California** (1978), and **Directory of Properties in the Historic Property Data File for Glenn County** (2012).

RECOMMENDATIONS:

Based upon the above information and the local topography, and regional history, the project is located in an area considered to be sensitive for prehistoric, protohistoric, and historic cultural resources. The *Mechoopda* subgroup of Konkow Maidu populations used the local region for seasonal and/or permanent settlement, as well as for the gathering of plants, roots, seeds, domestic materials, and hunting seasonal game. Historically, Euro-Americans utilized the region for farming and transportation opportunities.

Therefore, because the entire project area has not been previously surveyed, we recommend that a professional archaeologist be contacted to conduct a cultural resources survey of the entire project area. The consultant can offer recommendations for avoidance and protection of previously recorded sites as well as any newly identified resources. In addition, any existing structures should be evaluated for potential historical significance. The project archaeologist will be able to offer recommendations for the preservation of or mitigation of effects on any cultural resources encountered as a result of field survey. A list of qualified consultants is available online at www.chrisinfo.org.

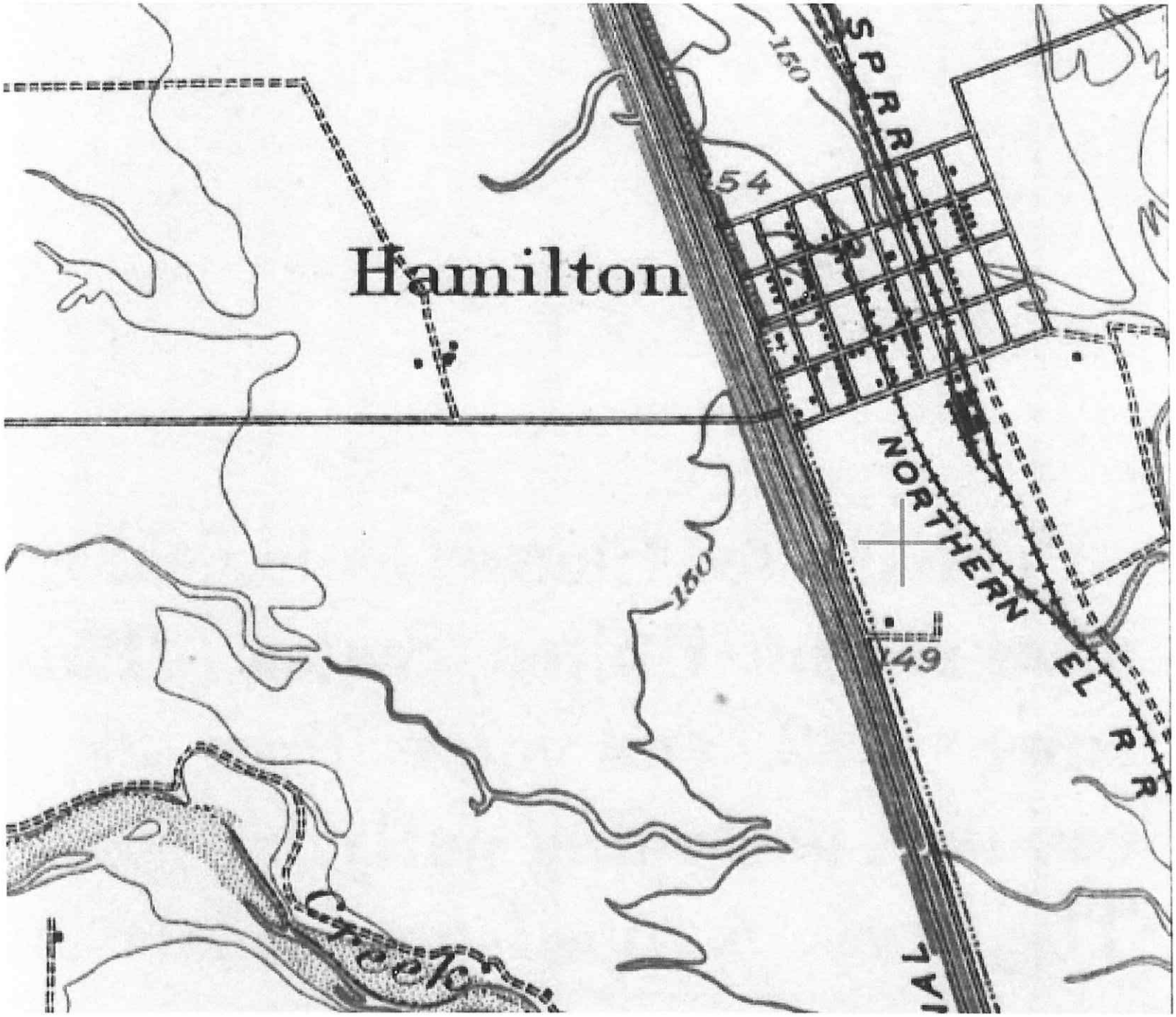
The project archaeologist should also contact the appropriate local Native American representatives for information regarding traditional cultural properties that may be located within project boundaries for which we have no records. The Native American Heritage Commission should be contacted at (916) 373-3710 for information regarding Native American representatives in the vicinity of the project.

During any phase of parcel development, if any potential prehistoric, protohistoric, and/or historic cultural resources are encountered, all work should cease in the area of the find pending an examination of the site and materials by the project archaeologist. This request to cease work in the area of a potential cultural resource find is intended for accidental discoveries made during construction activities, and is not intended as a substitute for the recommended cultural resources survey.

The fee for this project review is $75.00 (1 hour Project Review Time @ $75.00 per hour). Payment for this project review was received on August 14, 2017 (Check # 44984195287). Thank you for your dedication preserving Glenn County's and California's irreplaceable cultural heritages, and please feel free to contact us if you have any questions or need any further information or assistance.

Sincerely,

Adrienne Springsteen
Research Assistant



T22N, R1W

Willows (1906)

Crop Production Services

April 24, 2017

Glenn County
Planning and Public Works Agency
777 North Colusa Street
Willows, CA 95988

Dear Sir or Madam,

Please find enclosed a request by Crop Production Services, Inc. (CPS) for a conditional use permit in connection with the old Holy Sugar Plant located at 555 West 1st St., Hamilton City, CA 95951. CPS has executed a purchase agreement with Bains Properties L.P. for the property, subject to a period of due diligence by CPS. As part of its due diligence, CPS is seeking a determination of its conditional use permit application in advance of closing on the property or applying for building permits. This application has been updated by CPS in order to incorporate changes and clarifications prompted by the feedback it received in response to the pre-application submitted previously.

CPS remains committed to this undertaking and would welcome the opportunity to further discuss any aspect of the project. We look forward to hearing from you.

Sincerely,

G. Rey Reinhardt
Head of Retail Greenfield Growth
Crop Production Services
Office: 970-685-3288 | Cell: 720-340-6519
Email: G.Rey.Reinhardt@cpsagu.com

RECEIVED
APR 25 2017
Glenn County
PPWA

GLENN COUNTY
PLANNING AND PUBLIC WORKS AGENCY
777 North Colusa Street
Willows, CA 95988 (530)
934-6540
FAX (530) 934-6533
www.countyofglenn.net

INSTRUCTIONS FOR FILING APPLICATION FOR CONDITIONAL USE PERMIT

The Glenn County Planning & Public Works Agency advises the Applicant to request a Pre-Application Review to be reviewed by the pertinent agencies prior to applying for projects requiring development permits or projects that propose substantial land use changes. Application fees are only for the processing of the application and not a guarantee that the project will be approved. There is a Non-Refundable deposit which will be credited toward the application fee if the application is submitted within six (6) months of the pre-application review. Fees are accepted by check, cash, or credit card. Checks should be made payable to Glenn County.

It is advisable to obtain Building Department and Health Department requirements prior to applying for a Conditional Use Permit. This application is for the use of the property and in no way guarantees the acceptability of the site for onsite sewage disposal systems.

The following list is intended to meet the requirements of State of California Government Code Section 65940.

APPLICATION CHECKLIST:

1. ☐ The applicant shall pay the required application fee. Fees are accepted by check, cash, or credit card. Checks should be made payable to Glenn County. The current application fee is as listed in the Glenn County Master Fee schedule.

2. ☐ The County of Glenn will refer your application to the Northeast Information Center (NEIC) of the California Historical Resources Information System (CHRIS) for a Records Search to identify the potential existence of historical and/or cultural resources located at the project site. This is a state requirement as of March 1, 2005. A separate non-refundable fee is required. The check or money order (no cash) should be made out to the NEIC. The NEIC will provide a recommendation of whether further archeological survey of the project site is warranted. If further archeological survey work is required, the County will work with the applicant to see that it is accomplished, according to set standards, by a qualified archaeologist. The applicant can be provided with a list of qualified archaeologists. The applicant shall bear all costs associated with further archeological survey work required to continue processing the application.

3. ☐ The application form shall be properly filled out and signed by the applicants and ALL property owners. All property owners shall sign (husband and wife) or a Power-of-Attorney shall be submitted specifically authorizing a designated person to sign the application. If the property owner is a corporation, a Resolution from the corporation authorizing this application shall be submitted. The Resolution shall indicate an individual or individuals who are authorized to sign the application on behalf of the corporation.

Note: The current property owner is Bains Properties L.P.. Crop Production Services, Inc. (CPS) has signed a purchase and sale agreement with Bains Properties to acquire the site, subject to additional due diligence, including the attainability of necessary permits. For purposes of this application, CPS is identified as the "Property Owner".

The required Resolution from CPS authorizing this application is attached as Appendix E to this Application.

4. ☐ Preliminary Title Report (issued within 90 days) and Current Deeds.

Note: The Preliminary Title Report is attached as Exhibit F to this Application.

5. ☐ The attached Environmental Information Form must be properly filled out and signed.

6. ☐ If applicable, one set of building plans shall be required at the time of application submittal. The plans shall show elevations to scale which show all sides of any proposed building or structure. The elevations shall indentify exterior materials. The plans shall also include a detailed scaled drawing of the floor plan for each proposed building or structure. The floor plan shall show uses within each proposed building or structure.

Note: The building permit application will be submitted at a later date. At that time, all required building plans will be submitted.

7. ☐ One copy of the current County Assessor's Map with the property for the proposed project delineated on the map shall be submitted with the application.

Note: The current County Assessor's Map is attached as Appendix J to this Application.

8. ☐ **SITE PLAN REQUIREMENTS:**

Twenty-five (25) copies of a clear and legible site plan shall be submitted with the application. Additional copies of the site plan shall be submitted to the County upon request. For complex projects, it is recommended that the site plan be

prepared by a professional engineer. The site plan shall be at least 8.5 inches by 11 inches. It shall be large enough to show all information clearly and shall be drawn using an engineer's scale. A legible reproducible reduction of the site plan is also required if presented on sheets larger than 11 inches by 17 inches. In addition, a digital copy of the map and aerial photographs are encouraged. The site plan shall contain the following information unless it doesn't apply to the specific project or project location:

See Appendix K to this Application for the site plan drawings.

(a) ☐ Name, mailing address, and phone number of applicant(s).

(b) ☐ Name, mailing address, and phone number of property owner(s).

(c) ☐ Name, mailing address, and phone number of engineer or person who prepared the site plan and the date of preparation (if applicable).

(d) ☐ Current Glenn County Assessor's Parcel Number(s) and property address (if applicable).

(e) ☐ North arrow and scale. The site plan shall be drawn so that north faces the top of the page and shall be drawn to a scale. The scale of the site plan shall be indicated (i.e. graphic bar scale, verbal scale, representative fraction).

(f) ☐ All property dimensions and acreage. Parcels less than one acre in area may be noted in square feet.

(g) ☐ Locations of all existing and proposed buildings and structures including their dimensions (LxW), height (H), and distances to all property lines (setbacks). The distances between all proposed and existing buildings and structures shall also be shown. Proposed buildings and structures shall be clearly differentiated from existing buildings and structures. All buildings and structures shall be labeled according to their type of use. Any existing buildings or structures proposed to be removed shall be identified.

(h) ☐ Names, locations, and dimensions of all existing adjoining/adjacent streets or roads, width of road right-of-ways, and location of center of roads. Also show the locations and dimensions of existing and proposed driveways, on-site curbs, gutters, sidewalks, road surface widths, and possible future street continuations.

(i) ☐ The widths, location, and purpose of all existing and proposed easements on-site and show or describe off-site access easements serving the project.

(j) ☐ Existing and proposed walls and fences including location, height, and construction material.

(k) ☐ Locations and dimensions of all existing and proposed utilities including pipelines, sewer lines, irrigation and drainage facilities, fire hydrants within 300 feet on the project site, water wells, septic tanks and drain (leach) fields. Include a list of all firms and/or public districts supplying utility services. Sewage disposal and water supply shall comply with the Health standards (Chapter 15.660 & 15.670 of the Glenn County Code).

(l) ☐ Existing and proposed off-street parking and loading areas. The locations, number of spaces, dimensions, type of surfacing, and internal circulation pattern shall be shown. Areas to be reserved for disabled parking shall be indicated. Include any concrete curbing, retaining walls, and on-site lighting. Off-street parking and loading areas shall comply with Chapter 15.610 of the Glenn County Code unless otherwise approved.

(m) ☐ The locations and dimensions of any proposed signs. Indicate on a separate detailed drawing, the size, height aboveground if free standing, and what will be on the face of the sign(s). Also, indicate if the sign(s) will be illuminated and how. Signs shall comply with the standards of Chapter 15.620 of the Glenn County Code.

See Appendix G to this Application for the information about signage requested above.

(n) ☐ Locations and dimensions of open and outdoor storage. Outdoor storage shall comply with Glenn County Code Section 15.560.110 unless otherwise approved. Also show locations of any trash enclosures.

(o) ☐ Existing and proposed landscaping in accordance with Chapter 15.570 of the Glenn County Code. A Landscaping Plan, either as an overlay of the proposed Site Plan or a separate drawing, shall be submitted to the planning authority for review and approval by the Director. The Landscaping Plan shall include: the location of all landscaped areas with the proposed shrubs, trees, and other plant materials clearly labeled with information on size, type, and spacing. A description and layout of the proposed irrigation system is also required. (Note: no use shall commence nor occupancy permit issued until the Landscaping Plan has been implemented and approved)

See Appendix H to this Application.

(p) ☐ Identify adjacent land uses and distances to any residential dwellings within 500 feet of subject property.

See Note 11 on Site Drawing.

(q) ☐ Locations of any hazardous material or chemical storage. Include locations

of above or below ground storage tanks.

Hazardous materials and chemicals identified in Appendix D will be stored in the Proposed Mixing Building and the Proposed Package Warehouse, which are labeled on the Site Plan included with this application. There will be no below ground storage tanks.

(r) ☐ Show lines indicating the direction of the slope of the land and the approximate percent grade, including all drainage features. A separate Drainage Plan may be required. Include locations of any proposed grading and drainage. Areas subject to inundation or overflow shall be indicated. Include contour lines at sufficient intervals to provide for a proper study of drainage and indicate the direction of flow.

(s) ☐ Locations of all watercourses including FEMA 100-year floodplain, reservoirs, rivers, creeks, ponds, and irrigation canals. Also illustrate mature trees, rock outcroppings, and similar natural features.

See Note 14 on the Site Plan.

(t) ☐ A small inset map indicating the location of the land in relation to the nearest major roads and/or significant features in the surrounding area or region.

(u) ☐ Identify any other information on the site plan which may be pertinent to the specific project or site.

9. ☐ A clear and legible written narrative shall be submitted on a separate sheet of paper which details the proposed project. The narrative shall include: proposed uses, number of employees, proposed hours of operation, traffic count, types and quantities of any storage of material, any processing of material, etc. Additionally, explain why the establishment, maintenance or operation of the use of the proposed project, will not, under the circumstance of the particular case, be detrimental to the health, safety (including traffic safety), and general welfare (peace, morals) of persons residing or working in the vicinity, or injurious to property and improvements in the vicinity.

Note: The requested written narrative is attached as Appendix A to this Application.

In order to consider approval of the Conditional Use Permit, the application should demonstrate that the proposed project would meet all applicable minimum requirements as established in Glenn County Code Title 15, Development Standards, Part 1 Performance Standards, Chapters 15.560 through 15.620. Uses which are not in compliance with all applicable performance standards are allowed with approval of a Conditional Use Permit. Any deviations from the performance standards will need to be specifically addressed and approved during the Conditional Use Permit process. The performance standards shall not be construed as preventing the review authority, as part

of any discretionary approval, to require more restrictive standards as deemed necessary.

According to Section 65943 of the California Government Code, your application shall be reviewed by the County within 30 days from the filing date to determine the completeness of the application. You shall receive written notice if the application is determined to be incomplete. Please note that acceptance of the application as complete is not an indication of approval.

If the application is deemed incomplete for further processing, the applicant may appeal this decision to the Planning Commission by filing a Notice of Appeal with the Planning & Public Works Agency within ten (10) days from the date of the written notice (Glenn County Code §15.050.040). The Notice of Appeal shall be submitted in writing and accompanied by appeal fee as listed in the Glenn County Master Fee Schedule.

The Planning & Public Works Agency or any other reviewing agency may, in the course of processing the application, request the applicant to clarify, amplify, correct, or otherwise supplement the information required for the application. According to Section 65944(C), additional information may be requested in order to comply with Divisions 13 of the State of California Public Resources Code.

Pursuant to Board of Supervisors Resolution No. 96-12

For complex projects, an estimate of the Glenn County Planning & Public Works Agency time and expense shall be prepared by the Glenn County Planning Division within thirty days of application submittal. The Applicant shall be notified of the amount of deposit required in writing. The Applicant shall be required to deposit the amount of money specified in the estimate in a Glenn County Planning & Public Works Agency Trust Account for the specific application.

No work shall be performed by the Glenn County Planning & Public Works Agency on the project in excess of the allotted hours listed above until funds are deposited in a Glenn County Planning & Public Works Agency Trust Account. Funds shall be deposited prior to determining that the application is complete for processing. At the time of final project approval, any excess funds remaining in the Trust Account shall be returned to the applicant.

Additional Fee: California State Fish and Game Code Section 711.4:

Pursuant to California Fish & Game Code §711.4, the County of Glenn is required to collect filing fees for the Department of Fish and Game for all projects processed with a Negative Declaration or Environmental Impact Report unless a fee exemption is provided in writing from the Department of Fish and Game. These filing fees are collected to defray the costs of managing and protecting fish and wildlife resources including, but not limited to, consulting with public agencies, reviewing environmental documents, recommending mitigation measures, and developing monitoring programs.

California Fish & Game Code §713 requires the Department of Fish and Game to adjust the filing fees annually. The annual fee adjustments are based on changes in the Implicit Price Deflator for State and Local Government Purchases of Goods and Services, as published by the U.S. Department of Commerce. As the filing fees are adjusted annually,

you will be notified of the fee amount upon release of the environmental document for the project. You may go to http://www.dfg.ca.gov/habcon/ceqa/ for more information and to see a list of the current filing fees.

Pursuant to California Fish & Game Code §711.4(d) and California Code of Regulations Title 14, Chapter 3, Article 6, Section 15075(a), the filing fee is required to be submitted prior to the noticing or approval of any project. All checks should be made payable to Glenn County. Under Section 711.4 (c)(3) of the Fish and Game Code, any approvals granted for any project are not vested until the filing fee is paid.

Additional Fees:

If additional fees are requires for environmental review of a project, the applicant shall be responsible for these fees. The applicant shall also be responsible to pay the cost for obtaining any necessary permits from any other agencies.

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CUP_____

GLENN COUNTY
PLANNING AND PUBLIC WORKS AGENCY
777 North Colusa Street
WILLOWS, CA 95988
(530) 934-6540
FAX (530) 934-6533
www.countyofglenn.net

APPLICATION FOR CONDITIONAL USE PERMIT

NOTE: FAILURE TO ANSWER APPLICABLE QUESTIONS AND REQUIRED ATTACHMENTS COULD DELAY THE PROCESSING OF YOUR APPLICATION.

1. Applicant(s):

Name: Ginno Construction Inc., Bryan Ginno

Address: 297 Convair Ave., Ste 2, Chico, CA 95973

Phone:(Business) 530-894-6859 (Home) 530-570-7761

Fax: 530-894-6061 E-mail: bryan@ginnoconstruction.net

2. Property Owner(s):

Note: The current property owner is Bains Properties L.P.. Crop Production Services, Inc. (CPS) has signed a purchase and sale agreement with Bains Properties L.P. to acquire the site, subject to additional due diligence including the attainability of necessary permits. For purposes of this application, CPS is identified as the "Property Owner".

Name: Crop Production Services, Inc.

Address: 3005 Rocky Mountain Ave, Loveland, CO 80538

Phone:(Business) 970-685-3300 (Home)

Fax: E-mail: g.rey.reinhardt@cpsagu.com

3. Engineer/Person who Prepared Site Plan (if applicable):

Name: Rolls Anderson & Rolls, Keith Doglio

Mailing Address: 115 Yellowstone Drive, Chico, CA 95973

Phone:(Business) 530-895-1422 (Home)

Fax: 530-895-1409 E-mail: kdoglio@rarcivil.com

4. Name and address of property owner's duly authorized agent (if applicable) who is to be furnished with notice of hearing (Section 65091 California Government Code).

   Name: G.Rey Reinhardt
   Mailing Address: 3005 Rocky Mountain Ave, Loveland, CO 80538

   Note: The required resolution by Crop Production Services, Inc. authorizing G.Rey Reinhardt to submit this application on behalf of CPS is attached as Appendix F to this Application.

5. Request or Proposal: See Appendix A to this Application.

6. Address and Location of Project: 555 West 1st St., Hamilton City, CA 95951

7. Current Assessor's Parcel Number(s): 032-260-006-0

8. Existing Zoning: 15.440 M Industrial Zone

9. Existing Use of Property: Animal Feed Storage

10. Provide any additional information that may be helpful in evaluating this request: We intend to demolish five (5) existing buildings. Building 1 to be demolished is 10'x10' and located on the West side of the West entrance near the front gate. Building 2 to be demolished is 40'x126' and is located just South of the East entrance. Buildings 3 and 4 to be demolished are 10'x10' noted on plans as existing well buildings. Building 5 to be demolished is 50'x109' and is located on the far south end of the property. We plan on remodeling the A-frame Structure called the Mixing Building (39,000 sq. ft.), concrete masonry unit building called the Package Warehouse(16,170 sq. ft.), Front office (2,290 sq.ft) and East Scale House (120 sq. ft.). The intended uses for the new site are detailed in Appendix A to this application. The owners have decided to preserve the historic aspects of the site, which include the Holy Sugar plant sign at the entrance and the two (2) 300' concrete silos and the North face of the Package Warehouse.

DECLARATION UNDER PENALTY OF PERJURY

(Must be signed by Applicant(s) and Property Owner(s))
(Additional sheets may be necessary)

The Applicant(s) and/or Property Owner(s), by signing this application, shall be deemed to have agreed to defend, indemnify, release and hold harmless the County, its agents, officers, attorneys, employees, boards and commissions from any claim, action or proceeding brought against the foregoing individuals or entities, the purpose of which is to attack, set aside, void or null the approval of this development entitlement or approval or certification of the environmental document which accompanies it, or to obtain damages relating to such action(s). This indemnification agreement shall include, but not be limited to, damages, costs expenses, attorney fees or expert witness fees that may be asserted by any person or entity, including the applicant, arising out of or in connection with the approval of the entitlement whether or not there is concurrent passive or active negligence on the part of the County.

Applicant(s):

Signed: _____

Print: Bryan Ginno

Date: 4/24/17

Address: 297 Convair Ave., Chico, CA 95973

I am (We are) the owner(s) of property involved in this application and I (We) have completed this application and all other documents required.

I am (We are) the owner(s) of the property involved in this application and I (We) acknowledge the preparation and submission of this application.

I (We) declare under penalty of perjury that the foregoing is true and correct.

Property Owner(s):

Signed: _____

Print: G.Rey Reinhardt, Head of Retail Greenfield Growth for Crop Production Services

Date: 4/24/17

Address: 3005 Rocky Mountain Ave, Loveland, CO 80538

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ENVIRONMENTAL INFORMATION FORM

To be completed by applicant or engineer
Use extra sheets if necessary

This list is intended to meet the requirements of State of California Government Code Section 65940.

I. GENERAL INFORMATION:

1. Name: Ginno Construction Inc., Bryan Ginno
   Address, City, State, Zip: 297 Convair Ave., Ste. 2 Chico, CA 95973
   Telephone: 530-894-6859 Fax: 530-894-6061
   E-mail: bryan@ginnoconstruction.net

2. Name: Crop Production Services, Inc.
   Address, City, State, Zip: 3005 Rocky Mountain Ave, Loveland, CO 80538
   Telephone: 970-685-3300 Fax:
   E-mail:
   g.rey.reinhardt@com

3. Address and Location of Project: 555 West 1st St. Hamilton City, CA 95951

4. Current Assessor's Parcel Number(s): 032-260-006-0

5. Existing Zoning: 15.440M Industrial Zone

6. Existing Use: Animal Feed Storage

7. Proposed Use of Site (project for which this form is prepared): The site will be used for a retail agriculture facility offering crop nutrients, crop protection products, seeds and application services. A more thorough description of the proposed site is contained in **Appendix A** to this Application.

8. Indicate the type of permit(s) application(s) to which this form pertains: Conditional Use Permit

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9. If the project involves a variance, conditional use permit, or rezoning application, state this and indicate clearly why the application is required: The site is currently zoned 15.440M Industrial Zone. The site will be used as a retail agriculture facility offering crop nutrients, crop protection products, seeds and application services. CPS therefore requires a Conditional Use Permit: 15.440.020 (A) (3)

10. List and describe any other related permit(s) and other public approvals required for this project, including those required by city, regional, state, and federal agencies: Glenn County Building Permit, Encroachment Permit, Conditional Use Permit, SWPPP

11. Have any special studies been prepared for the project site that are related to the proposed project including, but not limited to traffic, biology, wetlands delineation, archaeology, etc? No

II. ENVIRONMENTAL SETTING:

1. Describe in detail the project site as it exists before the project, including information on topography, soil stability, plants and animals (wetlands, if any), different crops, irrigation systems, streams, creeks, rivers, canals, water table depth, and any cultural historical or scenic aspects. Describe any existing structures on the site, and the use of the structures. Attach photographs of the site. Snapshots or Polaroid photos will be accepted.

Topography: 5' of slope from North to South over the entire 51 acres.
Soil: Soil type D: stiff soil.
There are no wetlands on the site.
North border is 1st St. with orchards on remaining three sides.
The lot is a mixture of concrete slabs and debris, gravel, field with weeds.
There are no natural water features onsite.
There are two large concrete silos on property, which will remain standing.
We intend to demolish five existing buildings. Building 1 to be demolished is 10'x10' and is located on the west side of the west entrance near the front gate. Building 2 to be demolished is 40'x126' and is located just South of the East entrance. Buildings 3 and 4 to be demolished are 10'x10' noted on plans as existing well buildings. Building 5 to demolished is 50'x109' and is located on the far south end of the property. We plan on remodeling the A-frame Structure called the Mixing Building (39,000 sq. ft.), concrete masonry unit (CMU) building called the Package Warehouse (16,170 sq. ft.), Front office (2,290 sq.ft) and East Scale House (120 sq. ft.). The intended uses for the new site are detailed in Appendix A to this application. CPS intends to preserve the historic aspects of the site, which include the Holy Sugar plant sign over the west entrance gate, the two 300' concrete silos and North face of the CMU building.

See pictures of the site attached as Appendix B.

2. Describe the surrounding properties, including information on plants, animals, and any cultural, historical or scenic aspects. Indicate the type of land use (residential,

commercial, agricultural, etc.), intensity of land use (one-family, apartment houses, shops, department stores, dairy, row crops, orchards, etc.) Attach photographs of the vicinity. Snapshots or Polaroid photos will be accepted.

See Appendix B for photographs.

North: 1st St. in Hamilton City, railroad tracks, residential houses (single family homes) and commercial properties

East: Railroad tracks, Walnut Orchard

South: Walnut Orchard, Almond Orchard, Rail Road Tracks

West: Walnut Orchard

See Appendix C for photographs of the vicinity.

3. Describe noise characteristics of the surrounding area (include significant noise sources): Farm Equipment, Vehicle Traffic

III. SPECIFIC ITEMS OF IMPACT:

1. Drainage:

Describe how increased runoff will be handled (on-site and off-site): Any site work that does not increase the existing quantity of impervious areas will utilize the existing drainage features with no improvement proposed. Any site work that does increase the existing quantity of impervious areas will utilize leach trenches sized for the 10-year storm event for storm water disposal. Additional information about the handling of storm water is described in Appendix A.

Will the project change any drainage patterns? (Please explain): No

Will the project require the installation or replacement of storm drains or channels? If yes, indicate length, size, and capacity: We will clean out existing storm drains near the front office. See above for additional information.

Are there any gullies or areas of soil erosion? (Please explain): No

Do you plan to grade, disturb, or in any way change swales, drainages, ditches, gullies, ponds, low lying areas, seeps, springs, streams, creeks, river banks, or other area on the site that carries or holds water for any amount of time during the year? No

If yes, you may be required to obtain authorization from other agencies such as the Army Corps of Engineers or California Department of Fish and Game.

2. Water Supply:

Indicate and describe source of water supply (domestic well, irrigation district, private water company): Currently, domestic and irrigation water is provided by California Water Service Company. An existing fire water system consisting of wells and multiple hydrants is located onsite. The project proposes to install a new onsite fire water system that includes new water piping, hydrants and a connection to an existing 6" diameter California Water Service Company main in 1st Street. New domestic water piping is proposed to be installed onsite.

Will the project require the installation or replacement of new water service mains? Yes. See above for additional information.

3. Liquid Waste Disposal:

Will liquid waste disposal be provided by private on-site septic system or public sewer?: Public Sewer will service the existing front office. A new septic system will service one bathroom in the mixing building and one bathroom at the package ware house.

If private on-site septic system, describe the proposed system (leach field or seepage pit) and include a statement and tests explaining percolation rates, soil types, and suitability for any onsite sewage disposal systems: (2) 1,500 Gallon Septic Tanks with Leach Field per Environmental Health requirements.

Will any special or unique sewage wastes be generated by this project other than normally associated with resident or employee restrooms? Industrial, chemical, manufacturing, animal wastes? (Please describe) No

Should waste be generated by the proposed project other than that normally associated with a single family residence, Waste Discharge Requirements may be required by the Regional Water Quality Control Board. N/A

4. Solid Waste Collection:

How will solid waste be collected? Individual disposal, private carrier, city? Private Carrier

5. Source of Energy:

What is the source of energy (electricity, natural gas, propane)?: Electricity

If electricity, do any overhead electrical facilities require relocation? Is so, please describe: Yes, we are demolishing five buildings. The electric service to the east scale house, which will remain, currently runs from one of the five buildings that will be demolished. Electricity to the east scale house will therefore need to be run from the existing transformer on the pole southeast of the building.

If natural gas, do existing gas lines have to be increased in size? If yes, please describe: N/A

Do existing gas lines require relocation? If yes, please describe: N/A

6. Fire Protection:

Indicate number and size of existing and/or proposed fire hydrants and distance from proposed buildings: Currently there are six onsite hydrants that are proposed to be demolished. A new onsite fire water and hydrant system is proposed as discussed above. There are three existing hydrants along 1st Street within 300 feet of the site.

Indicate number and capacity of existing and/or proposed water storage facilities and distance from proposed buildings: There is an existing water tank on the property that holds 1,777,000 gallons. The tank will remain onsite, but will not be utilized at this time. It is uncertain whether this tank will be used at some point in the future. The existing water tank is 340 feet from the nearest existing buildings. The site will not have a water storage facility.

IV. FOR ZONE CHANGE, ZONE VARIANCE, AND SPECIAL USE PERMIT APPLICATION:

1. Number and sizes of existing and proposed structures: Existing Structures (13) including 1 tank. Proposed Structures (10) including 2 tanks.

Square footage (structures)	74,600± (New)	S.F.	82,100± Existing	S.F.

2. Percentage of lot coverage: Existing building coverage is 3.7%±; proposed building coverage is 3.4%±.

3. Amount of off-street parking provided: (13) 22-foot long spaces & (1) ADA space west of front office . (5) 20-foot long spaces & (1) ADA space at North East corner of Mixing Building.

4. Will the project be constructed in phases? If so, please describe each phase briefly: No

5. If residential, include the number of units, schedule of unit sizes, range of sale prices or rents, and type of household size expected: N/A

6. If commercial, indicate type, estimated employment per shift, days and hours of operation, estimated number of daily customers/visitors on site at peak time, and

loading facilities: This information is provided in Appendix A to this Application. Loading facilities will include three load pads at the "Proposed Mixing Building" and a truck doc pad on the south end of the "Proposed Package Warehouse." All loading facilities are depicted on the Site Plan.

7. If industrial, indicate type, estimated employment per shift, and loading facilities: N/A

8. If institutional, indicate the major function, estimated employment per shift, estimated occupancy, loading facilities, and community benefits to be derived from the project: N/A

9. List types and quantities of any hazardous or toxic materials, chemicals, pesticides, flammable liquids, or other similar product used as a part of the operation and storage container sizes: See Appendix D for a list of types and quantities of all materials to be stored at the site, including the requested designation for each product.

   Submit Material Safety Data Sheets (MSDS) for any proposed hazardous materials. If hazardous materials are proposed, it is recommended that the applicant contact the Air Pollution Control District/CUPA for permitting requirements. See Appendix E to the Pre-Application Request for Conditional Use Permit for MSDS sheets for all proposed hazardous and flammable materials.

10. Describe any earthwork (grading) to be done and dust control methods to be used during construction: Grading will be performed during demolition operations and for construction of proposed concrete slabs, truck loading dock, receiving area, tank, parking area and sidewalks. Dust will be controlled by watering exposed areas as necessary.

11. Describe any potential noise or vibration sources associated with the project (i.e. compressor, machine noise, heavy equipment). Nail Guns, Saws, BackHoe, Ready Mix Truck, Compressor, Generators

12. Describe source, type, and amount of air pollutant emissions (smoke, odors, steam, gases, water vapor, dust, chemicals) from the project. Describe what methods would be used to reduce emissions: Most of the work to be completed is on the interior of the existing structures, which will keep any air emissions to a minimum. There will be underground water lines installed and limited grading work around the existing A-frame building. A concrete truck dock will be installed on the South side of the Package Warehouse. Potential dust from these activities will be wet down with a water truck or site water. Construction equipment will be regularly serviced and maintained. All equipment onsite will meet or exceed California Air quality standards.

V. CERTIFICATION:

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this initial evaluation to the best of my ability, and that the facts, statements and information presented are true and correct to the best of my knowledge and belief.

Date: 4/24/17 Signature: _____

For: Ginno Construction Inc.

According to Section 65943 for the California Government Code, your application will be reviewed within 30 days and you or your agent will receive written notice regarding the completeness of your application. Any reviewing agency may, in the course of processing the application, request the applicant to clarify, amplify, correct, or otherwise supplement the information required for the application.

According to Section 65944 (C), additional information may be requested in order to comply with Division 13 of the State of California Public Resources Code.

Appendix A: Detailed Project Proposal

Crop Production Services, Inc. (CPS) is seeking to make a significant long-term investment in the Hamilton City, California area. CPS is prepared to invest significant capital toward the development of a state-of-the art retail agriculture facility to provide agricultural inputs and related services to growers in the area. This project will have a positive impact on the local economy by providing essential products and services to meet the needs of the local agricultural community.

CPS is a wholly owned subsidiary of Agrium, Inc. Agrium is a major global producer and distributor of agricultural products, services and solutions. Agrium produces nitrogen, potash and phosphate fertilizers for distribution around the world to meet the needs of a growing population. On the local level, CPS supplies key products and services directly to growers, including crop nutrients, crop protection products, seed and application services. CPS is recognized as a leader in providing agronomic and application services, thereby helping growers to meet the ever growing global demand for food and fiber.

CPS has a network of over 1,400 facilities and over 3,800 crop consultants who provide agronomy advice and products to our farmer customers to help them increase their yields and returns responsibly on hundreds of different crops. With a focus on sustainability, CPS strives to improve the communities in which it operates through safety, education, environmental improvement and the use of new technologies such as the development of precision agriculture and revolutionary products such as controlled-release fertilizers that are recognized as environmentally-friendly products. We encourage you to learn more information about CPS by visiting our website at cpsagu.com.

CPS proposes to renovate the old Holly Sugar site to a commercially viable and aesthetically pleasing business. The project site is located at located at 555 West 1st St., Hamilton City, CA 95951 in Glenn County and is currently zoned as 15.440 M Industrial Zone. CPS seeks to use the site for a retail agriculture facility offering crop nutrients, crop protection products, seeds and application services. Specifically, CPS would offer dry and liquid fertilizers, bulk and packaged crop protection products, seeds and application services. The storage, handling and application of these products will be governed by CPS' stringent environment, health, safety and security requirements and standards, which in all cases meet, and in many cases exceed, applicable government regulations and requirements. CPS prides itself as the leader in safety and environmental stewardship amongst agricultural retailers. CPS has demonstrated it is a responsible member of communities across North America and has achieved this good standing by developing and adhering to the high standards described in more detail below.

Number of Employees

CPS anticipates this facility will grow over time in terms of both employees and quantities of inputs stored and sold by the location. Initially, CPS plans to employ approximately 10 individuals at the location, with that number potentially growing to 25-30 over five years.

Job responsibilities for those individuals would include a branch manager, an administrative coordinator, crop consultants, applicators, warehouse personnel and delivery drivers.

Proposed Hours of Operation

Proposed hours of operations for the facility would vary by season. During the busy spring and fall seasons, the proposed hours of operation would be 7am to 5pm. During the slower summer and winter months, proposed hours of operation would be 8am to 4pm. These hours of operation would be subject to demands of our customer growers and may vary throughout the year. Trucks will typically be moving in and out of the location from an hour after opening until an hour before closing time.

Traffic Count

Traffic at the site would include relatively little customer traffic given that the majority of interactions with customers occur at their ranches or farms. CPS anticipates 10-15 visits daily from customers during our busy times in the spring and fall, and 4-5 visits daily from customers during the winter and summer months.

The majority of traffic in and out of the site will be trucks hauling product to CPS from its suppliers and by CPS to its customers. The types of trucks used to move the products will likely include 1-ton flatbeds up to semi-trucks with bulk dry trailers, with the majority of shipments being handled by dual axle extended semi-trucks with flatbeds or van bodies. Again, traffic count will depend on the season. During the peak seasons in the spring and fall, CPS could see an average of 4-6 trucks entering or leaving the facility on a daily basis, with that number rising to 8-12 daily over five years as the facility grows. This number would drop by roughly 75% during the winter and summer months. CPS also intends to utilize rail if possible for incoming shipments of product from suppliers, which would reduce the amount of truck traffic dramatically. CPS is in discussions with the California Northern Railroad regarding the possible reactivation of the rail line serving the old Holly Sugar Plant.

At the recommendation of Caltrans, SR 32 will be used as the main point of entry for trucks to the project location. Use of SR 45 would be limited to vehicles permitted by Caltrans regulations. CPS would also use SR 32 to Sacramento to 1st Street based on the feedback we have received from Caltrans. Based on the geographical diversity of the likely customer base for CPS, coupled with the fact that the typical service area for a CPS facility is 30 miles, CPS believes the potential impact on the roads would be minimal. CPS will also work with Glenn County to enter into a road maintenance agreement per the comments we received to our pre-application submittal.

Traffic Safety

CPS as a whole operates one of the North America's largest privately held vehicle fleets. Our overall fleet safety is audited by a third-party insurance company and has received top quartile rankings when compared with other large corporate vehicle fleets. We continually

invest in technology and review our standards and procedures to mitigate risks associated with the transportation of our products. The driving records of all employees are monitored and checked annually. Our new hire process involves reviewing driver history, physical health and operator certifications. Employees that operate a company vehicle are required to participate in regular defensive driving training and annual reviews of their driving records. All of our drivers receive training annually. If an employee's risk level increases, their driving privileges could be restricted or eliminated. All potential employees must complete a pre-employment drug test. All positive drug test results are reported to the potential employee, location contact and an EH&S staff member. Our Human Resources Department is notified and the new hire is prevented from being hired due to the failed drug test.

A Motor Vehicle Record (MVR) is obtained and reviewed by CPS for all prospective employees and for all employees on an annual basis, as stated in the company's Driving Policy. All Department of Transportation (DOT) regulated drivers are subject to random drug and alcohol testing. Any employee that might operate a CPS vehicle (including rental vehicles) is required to complete the initial Defensive Driving Training. This is a video that the employee completes before operating a company vehicle. Every three years, all employees that operate a company vehicle (including rental vehicles) are required to complete the Defensive Driving Course-4 presented by the National Safety Council.

CPS also enforces strict standards regarding proper load securement for vehicles transporting products. For example, each delivery vehicle must be equipped with devices providing protection against shifting or falling cargo that meet the following requirements: (a) sideboards or stakes are required along with a rear end-board high enough to ensure that cargo will not shift upon or fall from the vehicle; (b) cargo identified as a hazardous material must not be loaded above the sidewall more than 1/3 the height of a single container and under no circumstances are hazardous materials to be loaded on a vehicle without the appropriate side and rear protection devices; (c) palletized materials should be stretch wrapped before loading (stretch wrapped or shrink wrapped materials must be secured to the vehicle); (d) devices such as chains, cables, fiber webbing, binders or ropes must also be used to secure the cargo to the vehicle; (e) the aggregate working load limit of the tie-down assemblies used to secure an article against movement in any direction must be at least 1/2 times the weight of the article; (f) minimum of two tie-down assemblies must be used for each pallet, mini bulk or cluster of materials; (g) the hook, bolt, weld or other connector by which a tie-down assembly is attached to a vehicle, and the mounting piece and means of mounting the connector must be at least as strong as the tie-down assembly and free from defects (cracking/bending); and (h) if the cargo is likely to shift sideways in transit, the cargo must either be securely blocked or braced against the sides, sideboards or stakes of the vehicle. These types of requirements imposed by CPS serve to greatly enhance traffic safety.

Types and Quantities of Storage of Material

The types and quantities of materials stored at the proposed site will vary greatly throughout the year and from year to year depending on the needs of CPS' customers. The needs of the growers can vary depending on factors such as crop values, the types of crops planted, weather, insects, disease, changes in technology and much more. The volumes and types of product identified in this document, therefore, are the best estimates of CPS at this time based on demands of growers in other similar geographies.

At the outset of operations, CPS anticipates selling roughly 12,000 tons of dry fertilizer, 15,000 tons of liquid fertilizer, 30,000 gallons crop protection products, and 2,000 to 3,000 bags of seed annually. Those volumes could increase by as much as 150-200% over the initial five years of operations.

In terms of total planned available storage space, CPS intends to renovate and improve an existing warehouse on the site that, when complete, is estimated to provide roughly 13,000 square feet of storage for packaged inputs such as seeds, nutritional products and crop protection products. CPS also intends to renovate and utilize the existing A-frame building on the site to hold roughly 6,000 tons of dry fertilizer. CPS will use various sizes of tanks capable of holding a total of 600,000 gallons of liquid fertilizer and 10,000–15,000 gallons of bulk crop protection products. The list of products CPS currently anticipates storing at the site is contained in **Appendix D** to this application. MSDS sheets for any hazardous or flammable materials that may be stored at the site are included in Appendix E to the pre-application submitted by CPS. A drawing showing the location and size of storage tanks within the "Proposed Mixing Building" is attached as **Appendix I**. Safety standards for the storage and transportation of materials at the site are described in greater detail below.

Health and Safety

CPS is committed to the safety of our employees, contractors, carriers, customers, neighbors and the general public. We reinforce our strong safety culture daily with ongoing awareness, training, procedures, equipment and continual improvement measures. Our integrated Environment, Health, Safety and Security Management System (EMS) contains the minimum standards expected of each employee at every CPS location. The EMS guides us on expectations regarding how to conduct work safely, including key behaviors on risk management, stop-work obligations, incident reporting and investigation as well as meeting life-critical work standards. We audit every CPS facility every three years and conduct regular compliance reviews.

CPS has been recognized numerous times for its participation and work with industry trade associations, government agencies and one-on-one work with the regulatory community on issues that benefit public safety regarding the storage and distribution of agricultural inputs. We focus on public safety through a highly structured transportation process, stringent storage protocols for chemicals at our facilities and ongoing monitoring.

The proposed facility in Hamilton City will not store or sell straight ammonium nitrate, which is the agricultural input most commonly associated with public safety concerns.

CPS health and safety standards consist of stringent construction standards for buildings and containment (secondary and operational). Retail facilities are periodically assessed for compliance with our building and containment standards. Management is required to annually assess compliance with CPS standards and then budget for improvements accordingly. CPS also has imposed strict operational guidelines that facility staff must follow when performing services for their customers. Operational guidelines mainly pertain to the safety of people and the protection of the environment (facility as well as offsite impacts). Examples of CPS guidelines include ensuring facilities comply with all federal, state and local regulations, periodic inspection of all facility components and equipment, the proper storage and transfer of liquid and dry crop protection products, facility appearance and safety/environmental housekeeping practices.

CPS has also instituted multiple best management practices that facilities must put in action to reduce risk that go beyond the minimum government requirements and regulations. Packaged product warehouses are required to be inspected and inventory accounted for, structurally contained, and certain products are required to be physically separated. If a facility houses bulk liquid products (crop protection products and fertilizer) those components are periodically inspected, properly secured (locks) when not actively being used, and the storage and transfer is required to be done within containment (dikes and transfer pads).

The proposed Hamilton City facility will have bulk liquid fertilizer and crop protection product storage and bulk dry fertilizer storage. The bulk liquid and crop protection product storage will be in 110% plus displacement secondary containment, and load and unload pads that will hold the largest quantity filled. CPS has a tank management program that provides guidance to branches on the proper inspection and operation of bulk liquid storage tanks. All new tanks are constructed to API 650 standards. All stationary storage tanks must have secondary containment. Large Tanks are inspected and assessed periodically to the API 653 standard. Storage tanks that do not meet the standard are taken out of service, or repaired to meet the standard. Out of Service API 653 inspections are conducted by an outside qualified API 653 inspector. There is an initial inspection followed by another inspection in five years to determine a corrosion rate. Using that corrosion rate, the inspector will schedule the next inspection not to exceed ten years. This inspection covers everything from foundation to the paint condition. All bulk tanks are labeled according to regulations.

The dry bulk storage will be on concrete with load and unload pads. Conveyors for the dry bulk fertilizer will be covered and dust socks used. All dry fertilizer will be stored in a covered area and on impervious surfaces that provide protection for the elements. Under no circumstances will dry fertilizer be stored in a manner that allows for contact with soils, storm waters or surface waters.

Any transfer of fertilizer or crop protection products is strictly regulated by CPS. For example, all loading, unloading and transferring of fertilizer and pesticides must be done over a transfer pad of adequate capacity to meet company, state and federal requirements.

The transfer pad for liquid fertilizers and crop protection products will be equipped with a sump or other means of collecting spilled products, rinse water, or rain water. The transfer pads used by CPS must be constructed of structurally sound concrete or other impervious material and maintained in a manner to eliminate infiltration of products to underlying soils or surface waters. Transfer pads must also be constructed to prevent yard surface waters from entering onto the pad or materials on the pad from entering onto the yard by the use of grading, walls, curbs, gutters or similar methods. Any fertilizer spilled on the transfer area must be cleaned up and, if practical, returned to its storage container as often as necessary. At a minimum, this is done daily or prior to any storm event. This is to prevent fertilizer from blowing or otherwise getting tracked off the pad. Clean up and storage equipment will be readily available in dry fertilizer handling areas to allow for the prompt clean up, storage, and handling of all dry products.

After rainfall a visual inspection of the water within any containment area must be conducted. Inspection includes visual assessment of the tanks, valves and plumbing to confirm that no leaks have occurred. In addition to the visual inspection, water must be tested with qualitative test strips for possible contaminants before discharge. If any amount of contamination is indicated on the test strips, then the water must be collected for agronomic use.

CPS ensures that all facilities and their respective employees have at a minimum the relevant qualifications and training required by all applicable laws and reguations. In terms of risk management and emergency response, each facility has an emergency response plan, employees engage in annual emergency response planning, first responder contact information is reviewed annually, employees annually perform a mock emergency response to an unplanned event, and a minimum of two employees are trained in emergency response to the incident commander level (OSHA and EPA requirement). Furthermore, CPS has required that all facilities maintain a contact/relationship with local first responders and their respective emergency management agency. Along with the above mentioned programs and training pertaining to risk management and emergency response, CPS annually submits all required information to federal, state and local regulators. Each location has an Emergency Action Plan which outlines procedures to be followed in case of emergency situations. All employees are trained on the plan. Local fire stations and Emergency Planning Councils are invited to tour the facilities. They are also provided site maps of the locations along with the Tier II list for the facility. SDSs of all products are electronically accessible.

CPS will work with Glenn County Air Pollution to develop an odor and dust management plan for the site, which CPS has been informed will be implemented to the extent necessary after the construction work is complete. CPS does not anticipate any significant odor or dust issues at the site.

CPS has been working closely with the Water Quality Board to identify and remedy any issues arising from the existing of lime piles at the site. Those lime piles will be handled by CPS in a manner that is satisfactory to the Water Quality Board.

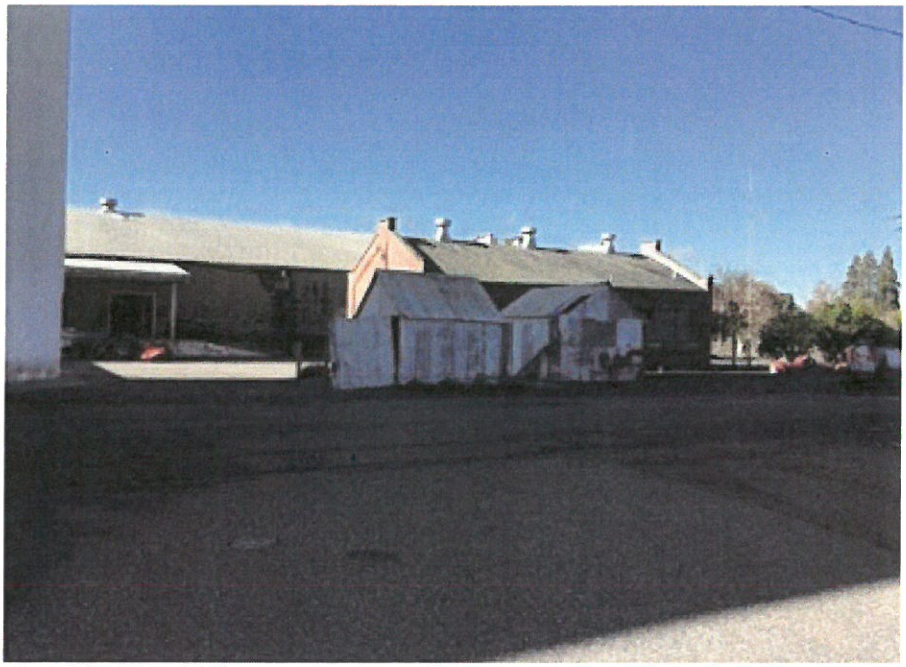
Appendix B (Pictures of the Site)

This picture shows the existing office building on the north side of the property that is to be renovated.

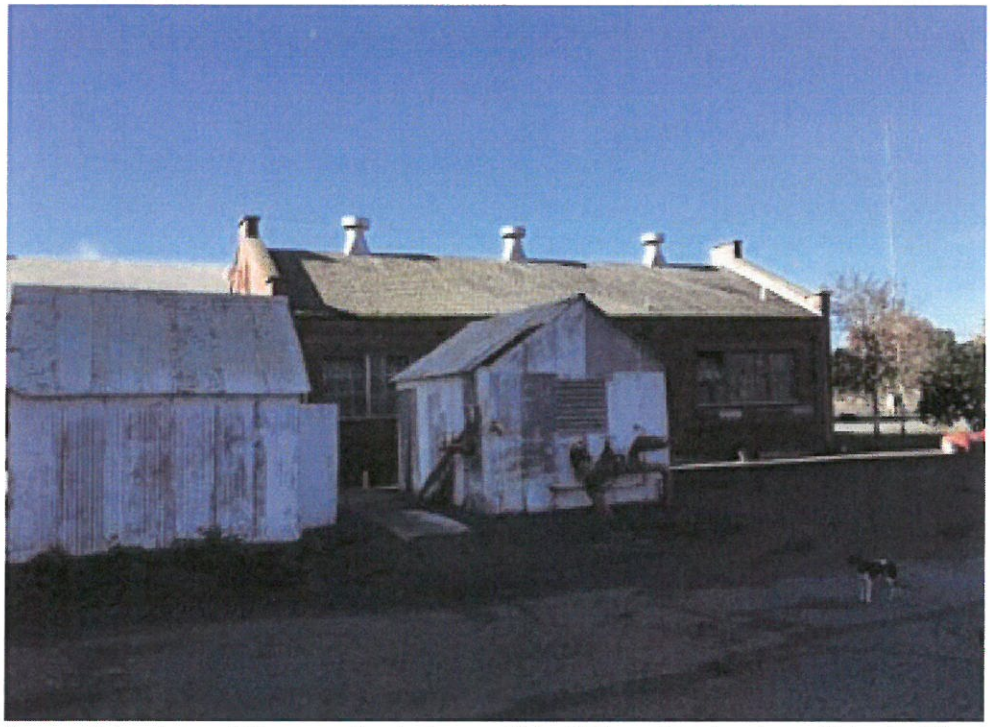
This picture shows the existing two concrete silos that will be preserved.

Existing A-Frame Building (Labeled as Proposed Mixing Building on Site Drawing) to be Renovated

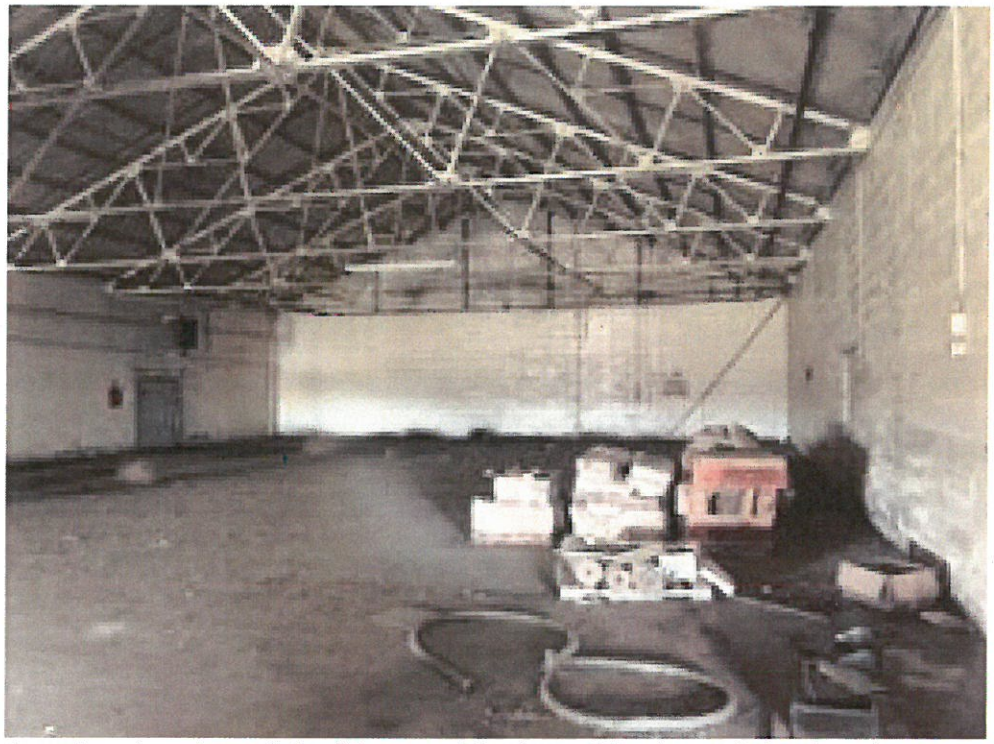
Existing Building (Labeled as Building 2 on the Site Drawing) that is to be demolished due to structural deficiencies.



Two existing 10x10 buildings to be demolished (referenced on the site plan as "existing well buildings"). Large building in the background is the "Proposed Package Warehouse" identified on the site plan, which is to be renovated.



This is another view of the two "existing well buildings" to be demolished. The brick building in the background will be preserved.



This is an interior view of the "Proposed Package Warehouse" that is to be renovated.

This is the south wall of the "Proposed Package Warehouse." The south wall will be demolished and a new wall will be constructed as part of the renovation of the "Proposed Package Warehouse."

This a picture of the north face of the "Proposed Package Warehouse". The north face of the building will be preserved due to its historical significance and aesthetic appeal.

Appendix C (Pictures of the Surrounding Vicinity)

North View

East View

South View

West View

Appendix D (all materials to be stored at the site)

As discussed in greater detail in Appendix A, below is a list of possible products that may be stored at the site. Please note that not all of these products would be stored at the site at any given time. Nor would the maximum quantities of all products be stored at the site on a regular basis. Rather, the exact mix of products and quantities of those products to be stored at the site will vary greatly over time depending on the needs of CPS customers and the season. Although it is rare that the maximum quantities listed below would actually be stored at the site for any significant period of time, if at all, CPS has nevertheless chosen to list maximum quantities rather than average quantities in order to show what could potentially be on the site for a particular product during peak storage times. In reality, CPS would typically have on site just a fraction of the total products listed below in quantities well below the maximum storage quantities.

Hamilton City, CA

Projected Stock Items - Bulk Fertilizer Items

Product	Product Description	State	Maxmimum Amount Stored	Hazardous, Corrossive, or Flammable
00-00-00-90(S) Tiger 90	Prilled basic Sulfur	Dry	3000 tons	
00-00-25-17(S) KTS	Potassium Thiosulfate	Liquid	30,000 gallons	
00-00-50 SOP Ag Gran	Sulfate of Potash	Dry	3000 tons	
00-00-60 MOP Gr	Muriate of Potash	Dry	3000 tons	
10-34-0 Liq (Green)	Ammonium Phosphate	Liquid	30,000 gallons	
11-52-00 MAP	Monoammonium Phosphate	Dry	3000 tons	
12-00-00-26(S) ATS	Ammonium Thiosulfate	Liquid	30,000 gallons	
17-0-0 (CAN 17% Sol)	Calcium Ammonium Nitrate	Liquid	30,000 gallons	
46-0-0 Prilled Urea	Urea	Dry	3000 tons	
9-0-0 CN Liq	Calcium Nitrate	Liquid	30,000 gallons	
Aqua Ammonia 24-0-0	Aqua Ammonia	Liquid	120,0000 gallons	Corrosive
Bio Humic Acid 6%	Humic Acid	Liquid	30,000 gallons	
Calcium Thiosulfate (Thiocal)	Calcium Thiosulfate	Liquid	30,000 gallons	
Zinc Sulf 12% Liq	Zinc Sulfate	Liquid	12,000 gallons	
32-0-0 UAN	Urea Ammonium Nitrate	Liquid	500,000 gallons	
N-Phuric 15-0-0 49(S)	Urea / Sulfuric acid (1:1) ratio	Liquid	12,000 gallons	
0-68-0	Phosphoric Acid	Liquid	12,000 gallons	Corrosive
22-0-0	Solublized Urea	Liquid	30,000 gallons	
Accelerate	refer to MSDS	Liquid	30,000 gallons	
Riser	refer to MSDS	Liquid	30,000 gallons	
Accomplish	refer to MSDS	Liquid	30,000 gallons	
9-0-1 7% Zinc		Liquid	30,000 gallons	
Hot Water	Boiler/Heater Insulated Tank	Liquid	12,000 gallons	
21-0-0-24s	Ammonium Sulfate	Dry	3000 tons	
Dolomite Ag 7	Dry Filler	Dry	2000 tons	
ESN 44-0-0	ESN	Dry	1000 tons	
0-0-62 Sol	Soluble Muriate of Potash	Dry	3000 tons	
Stanchion(7-21-0)	Stanchion	Liquid	12,000 gallons	

Hamilton City, CA

Projected Stock Items - Packaged Fertilizers

SKU Item Description	Unit of Measure	Pack Size	Maximum Stocking Level	Hazardous	Flammable
0-0-52 SOP SOLUBLE FINE 2000#	lbs	1 X 2000	12,000		
FOLIAR PRIDE 7-14-8 5GA	gals	1 X 5	180		
ZINC SULFATE POWDER 35.5% 50LB	lbs	1 X 50	24,000		
ZINC SULFATE MAXIMO 362 50LB	lbs	1 X 50	24,000		
4-0-0 MICRO-PLEX ZN-FE-MN 275GA	gals	1 X 275	2,750		
0-0-50 ULTRA FINES DIAMOND K 50LB	gals	1 X 50	15,000		
BIOMIN CAL-BORO 5 GA	gals	1 X 5	900		
LOKOMOTIVE 2-0-25 2X2.5GA	gals	2 X 2.5	1,800		
0-0-0 QMIN ZINC 7.5% 2X2.5GA	gals	2 X 2.5	1,800		
MAXIMUM N-PACT 24-0-0 2X2.5GA	gals	2 X 2.5	1,800		
9-0-1 PLUS 7% ZINC GOLD'N GRO 5GA	gals	1 X 5	1,800		
3.5-0-0 QMIN MAGNESIUM 3.0% 2X2.5GA	gals	2 X 2.5	1,800		
FUSION 360 INTEG CA-O 2.5 GA	gals	2 X 2.5	1,800		
15-15-15 YARAMILA 50LB	lbs	1 X 50	12,000		
ZINC SULFATE MAXIMO 360 50LB	lbs	1 X 50	12,000		
3-12-3 PHOCON ACTAGRO 5 GA	gals	1 X 5	1,800		
8-32-4 SYNERGIZER 2X2.5GA	gals	2 X 2.5	900		
21-0-0-24S AMSUL 50#	lbs	1 X 50	12,000		
0-0-0 QMIN MANGANESE 5.5% 2X2.5GA	gals	2 X 2.5	900		
BIOMIN ZINC 2.5 GA	gals	2 X 2.5	900		
NUTRISYNC SULFUR 6-0-0 2X2.5GA	gals	2 X 2.5	1,800		
BRANDT SEQUESTAR 4.5 FE HEDTA 2X2.5GA	gals	2 X 2.5	900		
BRANDT 20-20-20 MICRO 25LB	gals	1 X 25	12,000		
6-3-2 TRUE ORGANIC 2000LB	lbs	1 X 2000	20,000		
4-0-0 MICRO-PLEX ZN-FE-MN 5GA	gals	1 X 5	1,800		
13.75-0-46 P/N GG CR CH 50LB	lbs	1 X 50	24,000		
9-0-0 CALMAX TREE/VINE 2X2.5GA	gals	2 X 2.5	1,800		
SIAPTON 10-0-0 2X2.5GA	gals	2 X 2.5	900		
HUMAX 5GA	gals	1 X 5	900		
SOLUBOR 20.5% PWD 50#	lbs	1 X 50	12,000		
1-0-5 ACADIAN ORGANIC LIQ SEAWEED 2.5GA	gals	1 X 2.5	3,600		
NUTRISYNC BORON 2X2.5GA	gals	2 X 2.5	1,800		
MAXIMUM N-PACT 24-0-0 275GA	gals	1 X 275	2,750		
BLACK JACK ZN 265GA	gals	1 X 265	2,650		
PHOSGARD 0-28-25 2.5 GA	gals	2 X 2.5	1,800		
10-12-0 FOLIAR NUTRIENT 5GA	gals	1 X 5	900		
ACADIAN LIQ SEAWEED .1-0-5 2.5GA	gals	1 X 2.5	1,800		
ZINC BASIC MICRO 52% 25#	lbs	1 X 25	2,500		
NUTRISYNC ZINC 2X2.5GA	gals	2 X 2.5	1,800		
QUICK ULTRA+AWAKEN 2X2.5GA	gals	2 X 2.5	1,800		
FUSION 360 FOLIAR-O 0-0-1 2X2.5GA	gals	2 X 2.5	1,800		

Hamilton City, CA

Projected Stock Items - Chemistry

SKU Item Description	Base UOM	Manufacturer Vendor	Ingredient Name	Maximum Stocking Level	Hazardous	Flammable	Bulk Item
INTREPID 2F 4X1GA	GA	DOW AGROSCIENCES	METHOXYFENOZIDE	1,800			
GALIGAN 2E 2X2.5GA	GA	ADAMA	OXYFLUORFEN	180	X	X	
QUADRIS TOP 2X2.5GA	GA	SYNGENTA	AZOXYSTROBIN	1,800			
SURFLAN AS 2X2.5GA	GA	UNITED PHOSPHORUS, INC	ORYZALIN	1,800	X		
CENTAUR WDG 6X4.32LB	LB	NICHINO AMERICA INC	BUPROFEZIN	180	X		
ESTEEM ANT BAIT 25LB	LB	VALENT USA CORPORATION	PYRIPROXYFEN	5,000			
ORTHENE TT&O 97 SPRAY 12X1CN (EA=.773LB)	CN	AMVAC CHEMICAL CORPORATION	ACEPHATE	100			
MYCOSHIELD 10X2LB	LB	NUFARM AMERICAS INC	OXYTETRACYCLINE	500			
AXIAL XL 2X2.56GA	GA	SYNGENTA	PINOXADEN	180		X	
GRANITE GR 45LB (CA)	LB	DOW AGROSCIENCES	PENOXSULAM	5,000	X		
TRELLIS 6X4X1LB	LB	DOW AGROSCIENCES	ISOXABEN	200	X		
FONTELIS 2X2.5GA	GA	DUPONT	PENTHIOPYRAD	1,800			
FUSILADE DX 4X1GA	GA	SYNGENTA	FLUAZIFOP	360			
SIVANTO 200 SL 4X1GA	GA	BAYER CROPSCIENCE LP	FLUPYRADIFURONE	180	X		
AZAGUARD 2X1GA	GA	BIOSAFE SYSTEMS LLC	AZADIRACHTIN	180			
TRILOGY 2X2.5GA	GA	CERTIS USA LLC	NEEM OIL	360			
COMITE 2X2.5GA	GA	CHEMTURA CORPORATION	PROPARGITE	360		X	
LI 700 LECITECH 2X2.5GA	GA	LOVELAND PRODUCTS INC	LECITHIN	360			
GARLON 3A 2X2.5GA	GA	DOW AGROSCIENCES	TRICLOPYR	180	X	X	
SHARK EW 6X1QT	QT	FMC CORP	CARFENTRAZONE	400	X		
DELEGATE WG 6X26OZ	OZ	DOW AGROSCIENCES	SPINETORAM	5,000	X		
MAD DOG 5.4# 2X2.5GA	GA	LOVELAND PRODUCTS INC	GLYPHOSATE	5,000			
MATRIX SG 12X20OZ	OZ	E I DUPONT DE NEMOURS & CO	RIMSULFURON	10,000			
KANEMITE 15 SC 4X124OZ	OZ	ARYSTA LIFESCIENCE NA CORP	ACEQUINOCYL	1,000	X		
GARLON 4 ULTRA 2X2.5GA	GA	DOW AGROSCIENCES	BUTOXYETHYL TRICLOPYR	180	X		
NU FILM P 4X1GA (90930)	GA	MILLER CHEMICAL & FERTILIZER	POLY-1-P-MENTHENE	144			
VERIMARK 4X80OZ	OZ	DUPONT	CYANTRANILIPROLE	4,200			
SATELLITE HYDROCAP 2X2.5GA	GA	UNITED PHOSPHORUS, INC	PENDIMETHALIN	900	X		
PARAZONE 3SL 265GA	GA	ADAMA	PARAQUAT DICHLORIDE	540	X		
QUADRIS 2X2.5GA	GA	SYNGENTA	AZOXYSTROBIN	1,800			
ROUNDUP POWERMAX 265GA CUBE	GA	MONSANTO	GLYPHOSATE	7,420			
ROUNDUP POWERMAX BULK	GA	MONSANTO	GLYPHOSATE	5,000			X
NU FILM P 4X1GA	GA	MILLER CHEMICAL & FERTILIZER	POLY-1-P-MENTHENE	180			
WEATHER GARD COMPLETE 2X2.5GA	GA	LOVELAND PRODUCTS INC	LECITHIN	180			
SNIPER 4X1GA	GA	LOVELAND PRODUCTS INC	BIFENTHRIN	144	X		
ETHEPHON 2 2X2.5GA	GA	ARYSTA LIFESCIENCE NA CORP	ETHEPHON	900	X		
PROPANIL 80CHS 30LB	LB	WILLOWOOD USA, LLC	PROPANIL	12,000	X		
VANGARD WG 4X50OZ	OZ	SYNGENTA	CYPRODINIL	3,000		X	
DIAZINON AG500 2X2.5GA	GA	ADAMA	DIAZINON	540	X	X	
TEMPO SC ULTRA 6X1BT (BT=240ML)	BO	BAYER CROPSCIENCE LP	CYFLUTHRIN	56			
MAD DOG 5.4# 30GA	GA	LOVELAND PRODUCTS INC	GLYPHOSATE	900			
CHOICE WEATHER MASTER 275GA	GA	LOVELAND PRODUCTS INC	PHOSPHATE ESTER	275			
WARHAWK CLEARFORM 2X2.5GA	GA	LOVELAND PRODUCTS INC	CHLORPYRIFOS	900	X	X	
KARMEX DF 10X5LB	LB	ADAMA	DIURON	300	X		
MOVENTO SC 4X1GA	GA	BAYER CROPSCIENCE LP	SPIROTETRAMAT	180			
MAKAZE 2X2.5GA	GA	LOVELAND PRODUCTS INC	GLYPHOSATE	3,600			
MAKAZE BULK	GA	LOVELAND PRODUCTS INC	GLYPHOSATE	5,000			X
DEFOL 750 2X2.5GA	GA	DREXEL CHEMICAL COMPANY	SODIUM CHLORATE	360	X		
FRANCHISE 2X2.5GA	GA	LOVELAND PRODUCTS INC	LECITHIN	180			
SHARK H2O 4X2LB	LB	FMC CORP	CARFENTRAZONE	280			
ET 8X.5GA	GA	NICHINO AMERICA INC	PYRAFLUFEN ETHYL	190	X	X	
SULFUR DUST 98 YELLOWJACKT 50LB	LB	GEORGIA GULF SULFUR CORP	SULFUR	20,000			
WETTABLE YELLOW JACKET 50LB	LB	GEORGIA GULF SULFUR CORP	SULFUR	20,000			
ABOUND 2X2.5GA	GA	SYNGENTA	AZOXYSTROBIN	180			
DIURON 4L 2X2.5GA	GA	LOVELAND PRODUCTS INC	DIURON	900	X		
HELMQUAT 3SL 2X2.5GA	GA	HELM AGRO US INC	PARAQUAT DICHLORIDE	900	X		
BOLERO ULTRAMAX 50LB	LB	VALENT USA CORPORATION	THIOBENCARB	20,000	X		
GRAMOXONE SL 2.0 2X2.5GA	GA	SYNGENTA	PARAQUAT DICHLORIDE	3,600	X		
GRAMOXONE SL 2.0 BULK	GA	SYNGENTA	PARAQUAT DICHLORIDE	5,000	X		X
CHATEAU SW 4X2.5LB	LB	VALENT USA CORPORATION	FLUMIOXAZIN	2,000	X		
PROPANIL 4SC 30GA	GA	WILLOWOOD USA, LLC	PROPANIL	720	X		
ALTACOR (CA ONLY) 8X40OZ	OZ	DUPONT	CHLORANTRANILIPROLE	8,000			
TREEVIX 6X10OZ	OZ	BASF CORPORATION	SAFLUFENACIL	12,000			
PINDAR GT 2X2.5GA	GA	DOW AGROSCIENCES	OXYFLUORFEN	900			
CHOICE WEATHER MASTER 2X2.5GA	GA	LOVELAND PRODUCTS INC	PHOSPHATE ESTER	720			
GRANDSTAND CA 2X2.5GA	GA	DOW AGROSCIENCES	TRICLOPYR	360	X	X	
MANZATE PRO-STICK 8X6LB	LB	UNITED PHOSPHORUS, INC	MANCOZEB	24,000	X		
CAPTAN 80WDG 30LB	LB	ARYSTA LIFESCIENCE NA CORP	CAPTAN	2,400	X		
AGRI-MYCIN 17 10X2LB	LB	NUFARM AMERICAS INC	STREPTOMYCIN	2,000			
ORCHARD STAR 2X2.5GA	GA	ALBAUGH INC	2,4-D	1,800	X		
TRELLIS SC 2X2.5GA	GA	DOW AGROSCIENCES	ISOXABEN	900			
PFR-97 20% WDG 4X5LB	LB	CERTIS USA LLC	ISARIA FUMOSOROSEA	600			

ETHEPHON 2SL 2X2.5GA	GA	ADAMA	ETHEPHON	900	X		
WARHAWK 2X2.5GA	GA	LOVELAND PRODUCTS INC	CHLORPYRIFOS	1,800	X	X	
STEALTH 2X2.5GA	GA	LOVELAND PRODUCTS INC	PENDIMETHALIN	1,800			
STEALTH BULK	GA	LOVELAND PRODUCTS INC	PENDIMETHALIN	5,000			X
MILSTOP 25LB	LB	BIOWORKS INC	CARBONIC ACID	1,000			
CLINCHER CA 2X2.5GA	GA	DOW AGROSCIENCES	CYHALOFOP	1,800	X	X	
CAPAROL 4L 2X2.5GA	GA	SYNGENTA	PROMETRYN	180	X		
SONALAN HFP 2X2.5GA	GA	DOW AGROSCIENCES	ETHALFLURALIN	1,800	X	X	
SONALAN HFP BULK	GA	DOW AGROSCIENCES	ETHALFLURALIN	5,000	X	X	X
ABOLISH 8EC 15GA	GA	VALENT USA CORPORATION	THIOBENCARB	2,400	X		
CUPROFIX ULTRA 40 DISPERSS 30LB	LB	UNITED PHOSPHORUS, INC	BASIC COPPER SULFATE	10,000			
PURSUIT 2X1GA	GA	BASF CORPORATION	IMAZETHAPYR	80			
GOAL 2XL 2X2.5GA	GA	DOW AGROSCIENCES	OXYFLUORFEN	3,600	X		
CLINCH 25LB	LB	SYNGENTA	ABAMECTIN	5,000			
RIFLE 2X2.5GA	GA	LOVELAND PRODUCTS INC	DICAMBA	900	X		
PROTOCOL 2X2.5GA	GA	LOVELAND PRODUCTS INC	THIOPHANATE-METHYL	1,800			
ASANA XL 4X1GA	GA	VALENT USA CORPORATION	ESFENVALERATE	288			
STATUS 4X125OZ	OZ	BASF CORPORATION	DICAMBA	3,600			
SUPER WHAM! CA 30GA	GA	RICE CO	PROPANIL	12,000			
FORFEIT 280 30GA	GA	LOVELAND PRODUCTS INC	GLUFOSINATE-AMMONIUM	3,600			
MALICE 2F 4X1GA	GA	LOVELAND PRODUCTS INC	IMIDACLOPRID	288			
ROUNDUP POWERMAX 30GA	GA	MONSANTO	GLYPHOSATE	3,000			
POAST 2X2.5GA	GA	BASF CORPORATION	SETHOXYDIM	900			
PROGIBB 40% (WSG) 12X1EA (EA=320GM)	EA	VALENT USA CORPORATION	GIBBERELLIC ACID	200		X	
LIQUI-STIK CONCENTRATE 4X1GA	GA	LOVELAND PRODUCTS INC	NAPHTHALENE	144			
DITHANE F-45 RAINSHIELD 2X2.5GA	GA	DOW AGROSCIENCES	MANCOZEB	900			
FUGITIVE 2X2.5GA	GA	ADAMA	ORYZALIN	900			
PERMETHRIN 3.2 4X1GA	GA	LOVELAND PRODUCTS INC	PERMETHRIN	288			
ZIRAM 76DF UPI 40LB	LB	UNITED PHOSPHORUS, INC	ZIRAM	12,000	X		
GAVICIDE SUPER 90 30GA RPK	GA	LOVELAND PRODUCTS INC	MINERAL OIL	539			
ZEAL 4X4X3OZ	OZ	VALENT USA CORPORATION	ETOXAZOLE	9,800			
DIP'N GROW 4X1GA	GA	DIP'N GROW, INC	INDOLE 3-BUTYRIC ACID	100			
REAPER CLEARFORM 4X1GA	GA	LOVELAND PRODUCTS INC	ABAMECTIN	900			
SEDUCE INSECT BAIT 50LB	LB	CERTIS USA LLC	SPINOSAD	5,000			
LUNA SENSATION 8X32OZ	OZ	BAYER CROPSCIENCE LP	FLUOPYRAM	4,000			
CAPTAN 50WP 30LB	LB	ARYSTA LIFESCIENCE NA CORP	CAPTAN	1,000			
GRANDEVO 6X5LB	LB	MARRONE BIO INNOVATIONS INC	CHROMOBACTERIUM SUBTS	600			
VENUE 8X1QT	QT	NICHINO AMERICA INC	PYRAFLUFEN ETHYL	240			
INTENSITY 2X2.5GA	GA	LOVELAND PRODUCTS INC	CLETHODIM	900	X		
MICRO BLAST 30GA	GA	MERAS ENGINEERING, INC	HYDROGEN PEROXIDE	900			
KOCIDE 2000 15LB	LB	DUPONT	COPPER HYDROXIDE	12,000	X		
LUNA EXPERIENCE 8X32OZ	OZ	BAYER CROPSCIENCE LP	FLUOPYRAM	4,000			
FLINT 6X20OZ	OZ	BAYER CROPSCIENCE LP	TRIFLOXYSTROBIN	4,000	X		
SUBDUE MAXX 12X1QT	QT	SYNGENTA	MEFENOXAM	8			
GOALTENDER 4X1GA	GA	DOW AGROSCIENCES	OXYFLUORFEN	1,800			
AXXE 2.5GA	GA	BIOSAFE SYSTEMS LLC	AMMONIUM NONANOATE	180			
RANMAN 6X1QT	QT	FMC CORP	CYAZOFAMID	360			
TRELLIS SC 4X1GA	GA	DOW AGROSCIENCES	ISOXABEN	900		X	
BRAVO WEATHERSTIK 2X2.5GA	GA	SYNGENTA	CHLOROTHALONIL	1,800	X		
GAVICIDE SUPER 90 275GA RPK	GA	LOVELAND PRODUCTS INC	MINERAL OIL	5,000			
PARAZONE 3SL 2X2.5GA	GA	ADAMA	PARAQUAT DICHLORIDE	900	X		
VENOM 10X1LB	LB	VALENT USA CORPORATION	DINOTEFURAN	400	X	X	
BIFENTURE 10DF 4X5LB	LB	UNITED PHOSPHORUS, INC	BIFENTHRIN	900	X		
MICRO BLAST 300GA	GA	MERAS ENGINEERING, INC	HYDROGEN PEROXIDE	600			
LEVERAGE 360 4X1GA	GA	BAYER CROPSCIENCE LP	IMIDACLOPRID	144			
ENTRUST SC 4X4X1QT	QT	DOW AGROSCIENCES	SPINOSYN	60			
CAPTAN 80WDG 30LB	LB	LOVELAND PRODUCTS INC	CAPTAN	18,000	X		
MICROTHIOL DISPERSS 30LB	LB	UNITED PHOSPHORUS, INC	SULFUR	12,000	X		
WATERMAXX 2 5GA RPK	GA	LOVELAND PRODUCTS INC		288	X		
QUASH 4X12.5OZ	OZ	VALENT USA CORPORATION	METCONAZOLE	24,000			
GRANITE GR 750LB (CA)	LB	DOW AGROSCIENCES	PENOXSULAM	27,000			
BOLERO ULTRAMAX 1200LB	LB	VALENT USA CORPORATION	THIOBENCARB	54,000			
PYGANIC EC 5.0 II 2X1GA	GA	MCLAUGHLIN GORMLEY KING CO	PYRETHRINS	144	X		
ALION 8X32OZ	OZ	BAYER CROPSCIENCE LP	INDAZIFLAM	12,000	X		
BELAY 2X1.5GA	GA	VALENT USA CORPORATION	CLOTHIANIDIN	160			
BELEAF 50 SG 6X1.5LB	LB	FMC CORP	FLONICAMID	160			
EXPRESS W/TOTAL SOL 12X15OZ	OZ	DUPONT	TRIBENURON METHYL	300			
CARBARYL CRUMBLES 50LB	LB	LOVELAND PRODUCTS INC	CARBARYL	5,000			
RIDOMIL GOLD SL 4X1GA	GA	SYNGENTA	MEFENOXAM	288		X	
LORSBAN ADVANCED 2X2.5GA	GA	DOW AGROSCIENCES	CHLORPYRIFOS	900	X		
ACRAMITE 50WS 10X1LB	LB	CHEMTURA CORPORATION	BIFENAZATE	800			
MICRO BLAST 53.5GA	GA	MERAS ENGINEERING, INC	HYDROGEN PEROXIDE	550			
MAKAZE 30GA	GA	LOVELAND PRODUCTS INC	GLYPHOSATE	6,000			
MAKAZE BULK	GA	LOVELAND PRODUCTS INC	GLYPHOSATE	5,000			X
ROUNDUP POWERMAX 2X2.5GA	GA	MONSANTO	GLYPHOSATE	1,800			
INCOGNITO 4.5 F 2X2.5GA	GA	ADAMA	THIOPHANATE-METHYL	2,000	X		

TOMBSTONE HELIOS 4X1GA	GA	LOVELAND PRODUCTS INC	CYFLUTHRIN	144		X	
PROPI-STAR EC 4X1GA	GA	ALBAUGH INC	PROPICONAZOLE	288		X	
GRANITE SC 4X4X1QT	QT	DOW AGROSCIENCES	PENOXSULAM	480			
BOND MAX 4X1GA	GA	LOVELAND PRODUCTS INC	ALCOHOL ETHOXYLATE	288			
LANNATE SP 6X2LB	LB	E I DUPONT DE NEMOURS & CO	METHOMYL	580	X		
TANOS 4X7.5LB	LB	DUPONT	FAMOXADONE	240	X		
SEVIN XLR PLUS 2X2.5GA	GA	TESSENDERLO KERLEY INC	CARBARYL	1,800	X		
ROUNDUP POWERMAX 275GA RPK	GA	MONSANTO	GLYPHOSATE	5,000			
FUJIMITE SC 2X2.5GA	GA	NICHINO AMERICA INC	FENPYROXIMATE	900			
HI-WETT SUPER SPREADER 4X1GA	GA	LOVELAND PRODUCTS INC	ORGANOSILICONE	20			
ALTREVIN FIRE ANT BAIT 15LB	LB	BASF CORPORATION	METAFLUMIZONE	5,000			
BASIC COPPER 53 50LB	LB	ALBAUGH INC	BASIC COPPER SULFATE	12,000			
REGIMENT CA 5X4X2OZ	OZ	VALENT USA CORPORATION	BISPYRIBAC SODIUM	2,000			
REMEDY ULTRA 4X1GA	GA	DOW AGROSCIENCES	TRICLOPYR	180			
TRIFLURALIN 10G 50LB	LB	LOVELAND PRODUCTS INC	TRIFLURALIN	12,000	X		
FORFEIT 280 2X2.5GA	GA	LOVELAND PRODUCTS INC	GLUFOSINATE-AMMONIUM	3,600			
FORFEIT 280 BULK	GA	LOVELAND PRODUCTS INC	GLUFOSINATE-AMMONIUM	5,000			X
SANDEA 24X10OZ	OZ	GOWAN USA	HALOSULFURON-METHYL	2,000			
INTREPID EDGE 4X1GA	GA	DOW AGROSCIENCES	METHOXYFENOZIDE	1,440			
SILENCER 4X1GA	GA	ADAMA	LAMBDA-CYHALOTHRIN	144	X	X	
STYLET OIL 2X2.5GA	GA	JMS FLOWER FARMS INC	WHITE MINERAL OIL	3,600			
AZA-DIRECT 2X2.5GA	GA	GOWAN USA	AZADIRACHTIN	180			
KOCIDE 3000 4X10LB	LB	DUPONT	COPPER HYDROXIDE	10,000	X		
LONDAX 8X20OZ	OZ	RICE CO	BENSULFURON-METHYL	7,000			
FITNESS FUNGICIDE 4X1GA	GA	LOVELAND PRODUCTS INC	PROPICONAZOLE	182		X	
MANZATE PRO-STICK 30LB	LB	UNITED PHOSPHORUS, INC	MANCOZEB	12,000	X		
ACTIVATOR 90 4X1GA	GA	LOVELAND PRODUCTS INC	PRIMARY ALIPHATIC OXYAL	288			
OXIDATE 2.0 2.5GA	GA	BIOSAFE SYSTEMS LLC	HYDROGEN PEROXIDE	180	X	X	
PRINCEP 4L 2X2.5GA	GA	SYNGENTA	SIMAZINE	540			
PRISTINE 4X7.5LB	LB	BASF CORPORATION	PYRACLOSTROBIN	4,000			
TRIFLURALIN HF 2X2.5GA	GA	LOVELAND PRODUCTS INC	TRIFLURALIN	1,800	X		
SATORI 2X2.5GA	GA	LOVELAND PRODUCTS INC	AZOXYSTROBIN	1,800			
BADGE X2 4X10LB	LB	ISAGRO USA INC	COPPER OXYCHLORIDE	5,000			
THIOLUX 30LB	LB	LOVELAND PRODUCTS INC	SULFUR	18,000			
BUTYRAC 200 2X2.5GA	GA	ALBAUGH INC	2,4-DB	180			
SUCCESS 1GA	GA	DOW AGROSCIENCES	SPINOSAD	144			
SURROUND WP 25LB	LB	TESSENDERLO KERLEY INC	KAOLIN CLAY	60,000			
ENVIDOR CA 2X2.5GA	GA	BAYER CROPSCIENCE INC	SPIRODICLOFEN	360			
NU-COP 50DF 20LB	LB	ALBAUGH INC	COPPER HYDROXIDE	34,000	X		
WRANGLER 4X1GA	GA	LOVELAND PRODUCTS INC	IMIDACLOPRID	288	X		
SIL-MATRIX 2X2.5GA	GA	PQ CORPORATION	POTASSIUM SILICATE	180			
IPRODIONE 4L AG 2X2.5GA	GA	ARYSTA LIFESCIENCE NA CORP	IPRODIONE	1,800			
TILT 2X1GA	GA	SYNGENTA	PROPICONAZOLE	280		X	
GOAL 2XL 30GA	GA	DOW AGROSCIENCES	OXYFLUORFEN	3,000	X		
INITIATE 720 2X2.5GA	GA	LOVELAND PRODUCTS INC	CHLOROTHALONIL	3,600	X		
FOSPHITE 2X2.5GA	GA	JH BIOTECH, INC.	DIPOTASSIUM PHOSPHITE	900			
MICRO FLOW 300 30GA	GA	MERAS ENGINEERING, INC	SODIUM CHLORITE	900			
MANZATE MAX 2X2.5GA	GA	UNITED PHOSPHORUS, INC	MANCOZEB	1,800	X		
BRANDT INSECT BAIT 2X2.5GA	GA	BRANDT CONSOLIDATED INC	CORN STEEP LIQUOR	360	X		
REGALIA 2X2.5GA	GA	MARRONE BIO INNOVATIONS INC	REYNOUTRIA SACHALINENS	900			
LAMCAP 4X1GA	GA	SYNGENTA	LAMBDA-CYHALOTHRIN	288			
INDAR 2F 4X1GA	GA	DOW AGROSCIENCES	FENBUCONAZOLE	288			
MCP AMINE 4 2X2.5GA	GA	LOVELAND PRODUCTS INC	MCPA	360			
ASSAIL 70WP 4X28OZ	OZ	UNITED PHOSPHORUS, INC	ACETAMIPRID	12,000			
QUINTEC 10X30OZ	OZ	DOW AGROSCIENCES	QUINOXYFEN	12,000			
ONAGER 6X96OZ	OZ	GOWAN USA	HEXYTHIAZOX	30,000	X		
AMINE 4 2,4-D 2X2.5GA	GA	LOVELAND PRODUCTS INC	2,4-D	900			
REQUIEM EC 2X2.5GA	GA	BAYER CROPSCIENCE LP	CHENOPODIUM AMBROSIOID	360		X	
ASANA XL 2X2.5GA	GA	E I DUPONT DE NEMOURS & CO	ESFENVALERATE	288		X	
KOCIDE 3000 4X10LB	LB	CERTIS USA LLC	COPPER HYDROXIDE	12,000	X		
NEALTA 4X137OZ	OZ	BASF CORPORATION	CYFLUMETOFEN	2,000			
PROWL H2O 2X2.5GA	GA	BASF CORPORATION	PENDIMETHALIN	3,000			
PROWL H2O BULK	GA	BASF CORPORATION	PENDIMETHALIN	5,000			X
MERIVON 4X55OZ	OZ	BASF CORPORATION	FLUXAPYROXAD	12,000	X		
APOLLO SC 3X4X1QT	QT	ADAMA	CLOFENTEZINE	120			
ACTIVATOR 90 2X2.5GA	GA	LOVELAND PRODUCTS INC	PRIMARY ALIPHATIC OXYAL	1,800			
TEB 45DF 24X2LB	LB	WILLOWOOD USA, LLC	TEBUCONAZOLE	4,682	X		
SUPPRESS EC 2X2.5GA	GA	WESTBRIDGE AGRICULTURAL PRODUCTS		143			
SONALAN HFP 2X2.5GA	GA	DOW AGROSCIENCES	ETHALFLURALIN	900	X	X	
MSO CONCENTRATE W/LECITEC 2X2.5GA	GA	LOVELAND PRODUCTS INC	METHYLATED SEED OIL	360			
RELY 280 2X2.5GA	GA	BAYER CROPSCIENCE LP	GLUFOSINATE-AMMONIUM	180			
VIGILANT 4SC 2X2.5GA	GA	CHEMTURA CORPORATION	BIFENAZATE	180	X		
MEDAL EC 2X2.5GA	GA	SYNGENTA	S-METOLACHLOR	900			
DUAL MAGNUM BULK	GA	SYNGENTA	S-METOLACHLOR	5,000			X
COPPER SULFATE CRYSTALS FINE 25 50LB	LB	CHEM ONE LTD	COPPER SULFATE PENTAHY	12,000	X		
VIGILANT 4SC 2X2.5GA	GA	CHEMTURA CORPORATION	BIFENAZATE	180	X		

Appendix E (Board Resolution as Requested in Item #3 in the Application Checklist)

CERTIFICATE

CROP PRODUCTION SERVICES, INC.

I, Gary J. Daniel, Corporate Secretary of Crop Production Services, Inc. (the "**Corporation**"), hereby certify that the following is a true and accurate excerpt of the resolutions passed by the directors of the Corporation on February 13th, 2017, and these resolutions are in full force and effect unamended and no proceedings have been taken or are pending to amend, supplement or cancel the same as of the date hereof:

WHEREAS the Corporation intends to submit an Application for Conditional Use Permit to the Glenn County Planning and Public Works Agency (the "Application") with respect to property located at 555 West 1st Street, Hamilton City, CA 95951;

NOW THEREFORE BE IT RESOLVED THAT:

1. Any Officer or Director of the Corporation or G. Rey Reinhardt, Head of Retail Greenfields, be and is hereby authorized, empowered and directed to prepare and execute, in the name of and on behalf of the Corporation, any and all permit applications as required by the Glenn County Planning and Public Works Agency, and to take all such actions and steps as may be necessary or advisable to give full force and effect to these resolutions and the transactions contemplated hereby.

2. Any and all actions previously taken, and any and all agreements, documents and instruments previously executed and delivered, in the name of and on behalf of the Corporation, in connection with the Application and any and all transactions contemplated by the Application are hereby ratified and approved.

DATED at the City of Calgary, in the Province of Alberta, this 15th day of February, 2017.

Gary J. Daniel
Corporate Secretary

Appendix F (Preliminary Title Report)

TIMIOS, INC.

FIDELITY NATIONAL TITLE INSURANCE COMPANY

Commitment For Title Insurance

TIMIOS
TITLE AND ESCROW

Issued By: Timios, Inc.

FIDELITY NATIONAL TITLE INSURANCE COMPANY, a California corporation ("Company"), for a valuable consideration, commits to issue its policy or policies of title insurance, as identified in Schedule A, in favor of the Proposed Insured named in Schedule A, as owner or mortgagee of the estate or interest in the land described or referred to in Schedule A, upon payment of the premiums and charges and compliance with the Requirements; all subject to the provisions of Schedules A and B and to the Conditions of this Commitment.

This Commitment shall be effective only when the identity of the Proposed Insured and the amount of the policy or policies committed for have been inserted in Schedule A by the Company.

All liability and obligation under this Commitment shall cease and terminate 180 days after the Effective Date or when the policy or policies committed for shall issue, whichever first occurs, provided that the failure to issue the policy or policies is not the fault of the Company.

The Company will provide a sample of the policy form upon request.

IN WITNESS WHEREOF, Timios, Inc. has caused its corporate name and seal to be affixed by its duly authorized officers on the date shown in Schedule A.

Fidelity National Title Insurance Company

SEAL

BY _____ President

ATTEST _____ Secretary

This commitment is valid and binding for a period of 180 days from the date hereof. Thereafter it is void and of no effect.

Issued by: **TIMIOS, INC.**
5716 CORSA AVE.
STE 102
WESTLAKE VILLAGE, CA 91362
PHONE: (818) 706-6400 FAX: (818) 879-0836
Agent for: **FIDELITY NATIONAL TITLE INSURANCE COMPANY**

Countersigned: **TIMIOS, INC.**

Reviewed By: _____

CONDITIONS

1. The term mortgage, when used herein, shall include deed of trust, trust deed, or other security instrument.

2. If the proposed Insured has or acquired actual knowledge of any defect, lien, encumbrance, adverse claim or other matter affecting the estate or interest or mortgage thereon covered by this Commitment other than those shown in Schedule B hereof, and shall fail to disclose such knowledge to the Company in writing, the Company shall be relieved from liability for any loss or damage resulting from any act of reliance hereon to the extent the Company is prejudiced by failure to so disclose such knowledge. If the proposed Insured shall disclose such knowledge to the Company, or if the Company otherwise acquires actual knowledge of any such defect, lien, encumbrance, adverse claim or other matter, the Company at its option may amend Schedule B of this Commitment accordingly, but such amendment shall not relieve the Company from liability previously incurred pursuant to paragraph 3 of these Conditions.

3. Liability of the Company under this Commitment shall be only to the named proposed Insured and such parties included under the definition of Insured in the form of policy or policies committed for and only for actual loss incurred in reliance hereon in undertaking in good faith (a) to comply with the requirements hereof, or (b) to eliminate exceptions shown in Schedule B, or (c) to acquire or create the estate or interest or mortgage thereon covered by this Commitment. In no event shall such liability exceed the amount stated in Schedule A for the policy or policies committed for and such liability is subject to the insuring provisions and Conditions and the Exclusions from Coverage of the form of policy or policies committed for in favor of the proposed Insured which are hereby incorporated by reference and are made a part of this Commitment except as expressly modified herein.

4. This Commitment is a contract to issue one or more title insurance policies and is not an abstract of title or a report of the condition of title. Any action or actions or rights of action that the proposed Insured may have or may bring against the Company arising out of the status of the title to the estate or interest or the status of the mortgage thereon covered by this Commitment must be based on and are subject to the provisions of this Commitment.

5. The policy to be issued contains an arbitration clause. All arbitral matters when the Amount of Insurance is $2,000,000 or less shall be arbitrated at the option of either the Company or the Insured as the exclusive remedy of the parties. You may review a copy of the arbitration rules at http://www.alta.org/

This commitment is valid and binding for a period of 180 days from the date hereof. Thereafter it is void and of no effect.

Issued by: **TIMIOS, INC.**
5716 CORSA AVE.
STE 102
WESTLAKE VILLAGE, CA 91362
PHONE: (818) 706-6400 FAX: (818) 879-0836
Agent for: **FIDELITY NATIONAL TITLE INSURANCE COMPANY**

Countersigned: **TIMIOS, INC.**

Reviewed By: Timothy M. [illegible]

SCHEDULE A

1. Effective Date: January 17, 2017 at 8:00 a.m.

   This Title Insurance Commitment is good for 180 days from the effective date. If you close a transaction based on this Title Insurance Commitment without a title update, Fidelity National Title Insurance Company will not issue a Title Insurance Policy.

2. Policy or Policies to be issued: Amount

   a. ALTA Extended Owner's Policy: $1,750,000.00

   Proposed Insured: CROP PRODUCTION SERVICES, A DELAWARE CORPORATION

   b. ALTA Loan Policy: $.00

   Proposed Insured:

   Proposed Text:

   c. ALTA Second Mortgage Amount:

   Proposed Insured:

3. The estate or interest in the land described or referred to in this Commitment is:

   Fee Simple

4. Title to the estate or interest in the land is at the Effective Date vested in:

   BAINS PROPERTIES LP, A CALIFORNIA LIMITED PARTNERSHIP

5. The land referred to in this Commitment is described as follows:

```
(SEE ATTACHED EXHIBIT A)
COMMONLY KNOWN AS:  555 FIRST ST
                    HAMILTON CITY CA 95951
```

REQUIREMENTS

1. ALL FEES BE PAID

2. ALL DOCUMENTS BE DRAWN, SIGNED,NOTARIZED AND RECORDED.

3. EVIDENCE MUST BE PROVIDED THAT THERE ARE NO COMMITMENT STATEMENTS IN EFFECT UNDER CIVIL CODE SECTION 850 ET SEQ. WITH RESPECT TO THE PROPERTY.

   IN ORDER TO REMOVE THIS STATEMENT, THE LANDOWNER WILL NEED TO PROVIDE US WITH AN AFFIDAVIT STATING THAT THEY ARE NOT AWARE OF ANY RELEASE REPORTS OR COMMITMENT STATEMENTS WHICH HAVE BEEN ISSUED UNDER THIS STATUTE WITH RESPECT TO THE P ROPERTY.

4. WITH RESPECT TO BAINS PROPERTIES LP, A CALIFORNIA LIMITED PARTNERSHIP:

   A. THAT A CERTIFIED COPY OF THE CERTIFICATE OF LIMITED PARTNERSHIP (FORM LP-1) AND ANY AMENDMENTS THERETO (FORM LP-2) BE RECORDED IN THE PUBLIC RECORDS;

   B. A FULL COPY OF THE PARTNERSHIP AGREEMENT AND ANY AMENDMENTS;
   C. SATISFACTORY EVIDENCE OF THE CONSENT OF A MAJORITY IN INTEREST OF THE LIMITED PARTNERS TO THE CONTEMPLATED TRANSACTION;

   D. OTHER REQUIREMENTS WHICH THE COMPANY MAY IMPOSE FOLLOWING ITS REVIEW OF THE MATERIAL REQUIRED HEREIN AND OTHER INFORMATION WHICH THE COMPANY MAY REQUIRE.

5. PRIOR TO THE ISSUANCE OF ANY POLICY OF TITLE INSURANCE, THE COMPANY WILL REQUIRE: WITH RESPECT TO CROP PRODUCTION SERVICES, A DELAWARE CORPORATION:

   A. A CERTIFICATE OF GOOD STANDING OF RECENT DATE ISSUED BY THE SECRETARY OF STATE OF THE CORPORATION'S STATE OF DOMICILE.

   B. A CERTIFIED COPY OF A RESOLUTION OF THE BOARD OF DIRECTORS AUTHORIZING THE CONTEMPLATED TRANSACTION AND DESIGNATING WHICH CORPORATE OFFICERS SHALL HAVE THE POWER TO EXECUTE ON BEHALF OF THE CORPORATION.

   C. OTHER REQUIREMENTS WHICH THE COMPANY MAY IMPOSE FOLLOWING ITS REVIEW OF THE MATERIAL REQUIRED HEREIN AND OTHER INFORMATION WHICH THE COMPANY MAY REQUIRE.

6. THE POLICY LIABILITY CONTEMPLATED BY THIS TRANSACTION EXCEEDS OUR LOCAL LIMIT. UNDERWRITER APPROVAL MUST BE OBTAINED FROM THE HOME OFFICE OR REGIONAL OFFICE PRIOR TO CLOSING. PLEASE CONTACT THE TITLE OFFICER IN ADVANCE OF THE CLOSING DATE TO DISCUSS THE SPECIFICS OF THE PROPOSED TRANSACTION, INCLUDING IDENTITY OF PROPOSED INSURED(S), ENDORSEMENT REQUIREMENTS, AND EXCEPTIONS WHICH ARE TO BE ELIMINATED.

SCHEDULE B

1. Schedule B of the policy or policies to be issued will contain exceptions to the following matters unless the same are disposed of to the satisfaction of the Company. Defects, liens, encumbrances, adverse claims or other matters, if any, created first appearing in the public records or attaching subsequent to the Effective Date but prior to the date the proposed Insured acquires for value of record the estate or interest or mortgage thereon covered by this Commitment.

   1. Rights or claims of parties in possession not shown by the public record
   2. Easements, or claims of easements, not shown by the public record
   3. Any discrepancies, encroachments, overlaps, conflicts in boundary lines, variation ins in area or content, party walls, or any other adverse circumstances affecting title that would be disclosed by an accurate and complete survey or inspection of the land
   4. Any lien, or right to a lien, for services, labor, or material heretofore or hereafter furnished, imposed by law and not shown on the public record
   5. Taxes or special assessments which are not shown as existing liens by the public records
   6. Taxes and assessments for the current tax year and subsequent years
   7. Streams, riparian rights, littoral rights and the title to any filled in lands

8. PROPERTY TAXES INCLUDING ANY PERSONAL PROPERTY TAXES AND ANY ASSESSMENTS COLLECTED WITH TAXES, FOR THE FISCAL YEAR 2017-2018, A LIEN NOT YET DUE OR PAYABLE.

9. THE LIEN OF SUPPLEMENTAL OR ESCAPED ASSESSMENTS OF PROPERTY TAXES, IF ANY, MADE PURSUANT TO THE PROVISIONS OF PART 0.5, CHAPTER 3.5 OR PART 2, CHAPTER 3, ARTICLES 3 AND 4 RESPECTIVELY (COMMENCING WITH SECTION 75) OF THE REVENUE AND TAXATION CODE OF THE STATE OF CALIFORNIA AS A RESULT OF THE TRANSFER OF TITLE TO THE VESTEE NAMED IN SCHEDULE A; OR AS A RESULT OF CHANGES IN OWNERSHIP OR NEW CONSTRUCTION OCCURRING PRIOR TO THE DATE OF THE POLICY.

10. THE LAND HEREIN DESCRIBED LIES WITHIN THE BOUNDARIES OF HAMILTON CITY LEVEE RECLAMATION DISTRICT AND IS SUBJECT TO ALL TAXES, ASSESSMENTS AND OBLIGATIONS THEREOF. ANY AND ALL ASSESSMENTS ARE COLLECTED WITH COUNTY TAXES.

11. TERMS AND PROVISIONS AS CONTAINED IN THAT DEED FROM SACRAMENTO VALLEY SUGAR COMPANY TO THE COLUSA & HAMILTON RAILROAD COMPANY, DATED NOVEMBER 16, 1911 AND RECORDED DECEMBER 11, 1911 IN BOOK 39 OF DEEDS AT PAGE 182.

12. A RIGHT OF WAY FOR RAILROAD PURPOSES AS CONVEYED TO COLUSA & HAMILTON RAILROAD COMPANY IN THAT INSTRUMENT DATED NOVEMBER 19, 1913 AND RECORDED FEBRUARY 19, 1914 IN BOOK 45 OF DEEDS AT PAGE 135.

13. RIGHTS OF WAY FOR THE MAINTENANCE AND OPERATION OF POLE LINES GRANTED BY SACRAMENTO VALLEY SUGAR COMPANY TO PACIFIC GAS AND ELECTRIC COMPANY, IN DEED DATED MARCH 19TH, 1923, RECORDED MAY 14TH, 1923 IN BOOK 84 OF DEEDS, AT PAGE 268, THE LOCATION OF SAID POLE LINES BEING SHOWN ON THE MAP ATTACHED THERETO AND RECORDED THEREWITH.

14. RIGHT OF WAY DEED FROM SOUTHERN PACIFIC COMPANY, A CORPORATION AND ITS LESSOR, SOUTHERN PACIFIC RAILROAD COMPANY, FIRST PARTIES, COUNTY OF GLENN, A POLITICAL SUBDIVISION, SECOND PARTY AND HOLLY SUGAR CORPORATION, THIRD PARTY, DATED AUGUST 26, 1936 AND RECORDED SEPTEMBER 15, 1936 IN BOOK 83 OF OFFICIAL RECORDS, AT PAGE 463, GRANTING THE RIGHT TO CONSTRUCT AND MAINTAIN A HIGHWAY UPON AND ACROSS .098 OF AN ACRE, MORE OR LESS, TO THE PARTY OF THE SECOND PART.

15. RIGHT OF WAY DEED FROM SOUTHERN PACIFIC COMPANY, A CORPORATION AND ITS LESSOR, SOUTHERN PACIFIC RAILROAD COMPANY, FIRST PARTIES, COUNTY OF GLENN, A POLITICAL SUBDIVISION, SECOND PARTY AND HOLLY SUGAR CORPORATION, THIRD PARTY, DATED AUGUST 26, 1936 AND RECORDED SEPTEMBER 15, 1936 IN BOOK 83 OF OFFICIAL RECORDS, AT PAGE 466.

16. RIGHT OF WAY AND CONDITIONS IN DEED FROM HOLLY SUGAR CORPORATION, A CORPORATION, TO THE COUNTY OF GLENN, DATED AUGUST 4, 1936 AND RECORDED SEPTEMBER 15, 1936 IN BOOK 83 OF OFFICIAL RECORDS, AT PAGE 469, COVERING A STRIP OF LAND 25 FEET WIDE LYING WEST OF AND ADJOINING THE WEST RIGHT OF WAY LINE OF THE COLUSA-HAMILTON BRANCH RAILROAD.

17. RIGHT OF WAY FOR RAILROAD PURPOSES GRANTED BY HOLLY SUGAR CORPORATION, A CORPORATION TO SOUTHERN PACIFIC RAILROAD COMPANY, A CORPORATION, BY DEED DATED DECEMBER 1, 1947 AND RECORDED JUNE 3, 1948 IN BOOK 216 OF OFFICIAL RECORDS, AT PAGE 361.

18. RIGHT OF WAY FOR RAILROAD PURPOSES GRANTED BY HOLLY SUGAR CORPORATION, A CORPORATION TO SOUTHERN PACIFIC COMPANY, A CORPORATION, BY DEED DATED DECEMBER 2, 1959 AND RECORDED JANUARY 25, 1960 IN BOOK 395 OF OFFICIAL RECORDS, AT PAGE 504.

EXHIBIT "A"

Legal Description:

ALL THAT REAL PROPERTY IN THE COUNTY OF GLENN, STATE OF CALIFORNIA, BEING PARCEL TWO, TOGETHER WITH A PORTION OF PARCEL ONE AS SAID PARCELS ARE DESCRIBED IN THAT QUIT CLAIM DEED FROM SPRECKELS SUGAR COMPANY, INC. TO WANTJAS, LLC RECORDED ON MAY 7, 2008 AT DOCUMENT NO. 2008-2253, GLENN COUNTY RECORDS, BEING A PORTION OF THE CAPAY RANCHO AND LYING SOUTH OF, AND ADJACENT TO, THE TOWN OF HAMILTON, DESCRIBED AS FOLLOWS:

SAID PARCEL TWO, TOGETHER WITH ALL THAT PORTION OF SAID PARCEL ONE LYING WESTERLY OF THE EXISTING CENTERLINE OF THE MAIN RAILROAD TRACKS RUNNING NORTHERLY AND SOUTHERLY THROUGH THE ENTIRETY OF SAID PARCEL ONE, SAID RAILROAD CENTERLINE BEING FURTHER DESCRIBED AS BEGINNING AT THE INTERSECTION OF SAID CENTERLINE WITH THE NORTHERLY LINE OF SAID PARCEL ONE, FROM WHICH THE NORTHEAST CORNER OF SAID PARCEL ONE BEARS NORTH 69°28'00" EAST 913.41 FEET, SAID NORTHEAST CORNER BEING MARKED BY AN 8" X X 36" GRANITE MONUMENT, SAID NORTHEAST CORNER ALSO BEING THE SOUTHEAST CORNER OF THE TOWN OF HAMILTON AS SHOWN ON THE MAP OF "TOWN OF HAMILTON" RECORDED IN BOOK 1 OF MAPS AND SURVEYS, AT PAGE 163, AS FILED IN THE RECORDER'S OFFICE OF SAID COUNTY; THENCE, FROM SAID POINT OF BEGINNING, ALONG SAID EXISTING CENTERLINE OF TRACKS, SOUTH 29°31'02" EAST 2529.54 FEET TO THE BEGINNING OF A NON-TANGENT CURVE HAVING A RADIUS OF 5,639.81 FEET AND A CENTRAL ANGLE OF 7°59'49"; THENCE, CONTINUING ALONG SAID CENTERLINE OF TRACKS, ALONG SAID CURVE TO THE RIGHT, AN ARC DISTANCE OF 787.16 FEET TO THE INTERSECTION OF SAID CENTERLINE WITH THE SOUTHERLY LINE OF SAID PARCEL ONE.

EXCEPTING THEREFROM PARCEL NO. 1 AND PARCEL NO. 2 AS SAID PARCELS ARE DESCRIBED IN THAT INDENTURE RECORDED ON SEPTEMBER 14, 1936 IN BOOK 83, PAGE 447, OFFICIAL RECORDS OF GLENN COUNTY.

BASIS OF BEARINGS: THE NORTHERLY LINE OF SAID PARCEL ONE IS GIVEN THE BEARING OF NORTH 69°28'00" EAST PER SAID QUIT CLAIM DEED.

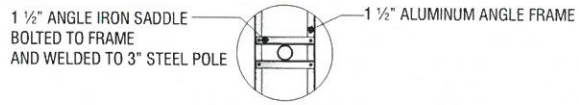
NOTICE OF VOLUNTARY MERGER RECORDED JUNE 28, 2012 AS GLENN COUNTY RECORDER'S INSTRUMENT NO. 2012-2811, OFFICIAL RECORDS.

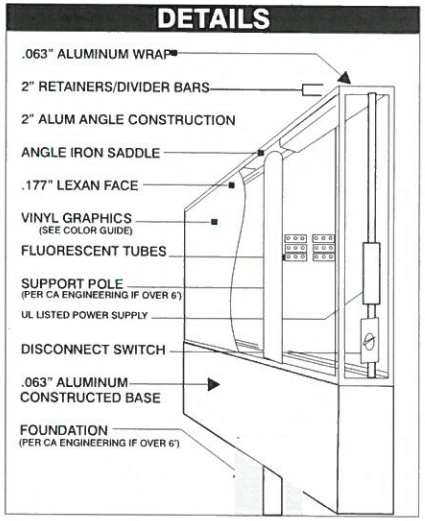
Appendix G

(Separate drawing showing the size, height what will be on the face of the sign per site plan requirements)

D/F LED ILLUMINATED MONUMENT SIGN

.177" LEXAN FACES WITH VINYL GRAPHICS





HUPP SIGNS
& LIGHTING, INC.
530-345-7078
70 Loren Ave. Chico, CA 95928
License #969949,
www.huppsigns.com
SIGN DESIGN
MANUFACTURING
INSTALLATION & SERVICE

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SALES ASSOCIATE	Kathy Cunningham
JOB NUMBER	
CUSTOMER NAME	CROP PRODUCTION
CUSTOMER ADDRESS	HAMILTON CITY
CUSTOMER PHONE#	
DESIGN PHASE	1design

REVISED BY	DATE
Kathy C	2-10-17

APPROVALS INCLUDE DESIGN, COLOR, SPELLING

CUSTOMER APPROVAL
PRINT NAME
SIGN NAME
DATE

HUPP STAFF APPROVAL
PRINT NAME
SIGN NAME
DATE

This sign is intended to be installed in accordance with the requirements of article 600 of the national electric code and/or other applicable local codes. This includes proper grounding and bonding of the sign.

Appendix H

(Existing and Proposed Landscaping Per Site Plan Requirements)

IRRIGATION LEGEND

SYM.	MFGR	DESCRIPTION	MODEL	REMARKS	DETAILS
⊗		WATER POINT OF CONNECTION		CONNECT TO EXISTING 1" WATER CONFIRM EXACT LOCATION IN FIELD. CONTRACTOR IS TO INSURE PROPER BACKFLOW PREVENTION IS INSTALLED PRIOR TO CONNECTION	—
BFP	WILKINS	BACKFLOW PREVENTER	975XL2U	1" INSTALL IN ENCLOSURE ON CONCRETE PAD. PROVIDE AND INSTALL INSULATED BLANKET	1/ L-1.3
SS	HUNTER	SOLAR SYNC	WSS-SEN	INSTALL ON AREA LIGHT POST OVER LANDSCAPE. INSTALL AS PER MANUFACTURER'S SPECIFICATIONS	—
C	HUNTER	CONTROLLER	XCORE-4	4 STATIONS (2 USED), EXTERIOR WALL MOUNT ON NORTH SIDE OF BUILDING COLUMN - INSTALL WITH GROUNDING AS PER MANUFACTURER'S SPECIFICATIONS. CONTRACTOR IS RESPONSIBLE TO CONNECT AND PROPERLY PROGRAM THE SOLAR SYNC SENSOR TO COMMUNICATE WITH CONTROLLER.	4/ L-1.3
	NIBCO	ISOLATION VALVE	T-113-LF	INSTALL IN VALVE BOX AS PER DETAIL	2/ L-1.1
	RAINBIRD	QUICK COUPLER VALVE	44LRC	INSTALL IN VALVE BOX AS PER DETAIL	8/ L-1.1
	RAINBIRD	REMOTE CONTROL DRIP VALVE	ABOVE 20 GPM: XCZ-150-PRB-COM 5-20 GPM: XCZ-100-PRF BELOW 5 GPM: XZC-075-PRF	INSTALL IN VALVE BOX AS PER DETAIL	10/ L-1.1
		PRESSURE MAINLINE		3" AND LARGER: CLASS 315, 2-1/2" AND SMALLER: PVC SCHEDULE 40	5/A L-1.1
		NON-PRESSURE LATERAL PIPE		PVC SCHEDULE 40	5/A L-1.1
		CONTROL WIRE CHASE		2" SCH 40 PVC (MAY ELECTRICAL CONDUIT) FROM CONTROLLER TO MAINLINE. BUNDLE AND TAPE TO MAINLINE AT TEN FOOT INTERVALS.	5/ A L-1.1
		IRRIGATION SLEEVE		PVC SCHEDULE 40. SIZE AS REQUIRED TO ACCOMMODATE IRRIGATION PIPING AND WIRING	6/ L-1.1
T		TRANSITION TO DRIP		INSTALL IN CARSON 910 VALVE BOX OR EQUAL SET BELOW A MINIMUM OF 1" BELOW TOP OF BOX	11/ L-1.1
F	SPEARS	FLUSH VALVE	1821-0050X	4" THREADED BALL VALVE. CONNECT TO DRIPPERLINE USING 4F FITTINGS. INSTALL IN VALVE BOX AS PER PLANS AND DETAILS.	3/ L-1.1
	RAINBIRD	BLANK DRIPLINE WITH PRESSURE COMPENSATING MODULES	XF™ SERIES WITH PC-5 (5 GPH)	USE FITTINGS AS REQUIRED. INSTALL 2 EMITTERS PER SHRUB. SCRATCH IN DRIPLINE TO A DEPTH OF 6" AND SECURE WITH SOIL STAPLES AT AT 4'-0" OC. DAYLIGHT DRIPPERLINE AT SHRUB LOCATIONS.	7/ L-1.3
	RAINBIRD	TREE BUBBLERS	PCT-55 (5 GPH)	INSTALL TWO BUBBLERS PER TREE. SEE DETAIL	9/ L-1.3

SYMBOLS

1	VALVE #/CONTROLLER STATION
1-1/2	VALVE SIZE
28.4	FLOW IN GALLONS PER MINUTE

IRRIGATION SPECIFICATIONS

1. GENERAL - CONTRACTOR SHALL BID AND INSTALL IRRIGATION PER THESE PLANS AND SPECIFICATIONS UNLESS GIVEN FURTHER WRITTEN INSTRUCTIONS OR REVISED PLANS PER OWNER OR LANDSCAPE ARCHITECT. WORK INCLUDES BUT IS NOT LIMITED TO ALL LABOR, EQUIPMENT, AND MATERIALS NECESSARY TO FURNISH, INSTALL AND TEST IRRIGATION SYSTEM AS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN.

2. QUALITY ASSURANCE - MANUFACTURERS DIRECTIONS AND DETAILED DRAWINGS SHALL BE FOLLOWED IN ALL CASES WHERE THE MANUFACTURERS OF COMPONENTS USED IN THIS CONTRACT COVER POINTS NOT SHOWN ON DRAWINGS AND SPECIFICATIONS.

3. ORDINANCES AND REGULATIONS - THE CONTRACTOR SHALL OBTAIN AND PAY FOR ANY AND ALL PERMITS AND INSPECTIONS AS REQUIRED. THE MATERIALS AND WORK SHALL CONFORM TO ALL APPLICABLE PROVISIONS OF THE LATEST EDITION OF THE UNIFORM PLUMBING CODE AND THE NATIONAL ELECTRIC CODE.

4. EXPLANATION OF DRAWINGS - ALL OFFSETS, FITTINGS, SLEEVES, ETC. NOT INDICATED DUE TO SCALE OF DRAWINGS ARE TO BE FURNISHED AS REQUIRED. BEFORE PROCEEDING WITH ANY WORK, CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND QUANTITIES AND SHALL INFORM THE LANDSCAPE ARCHITECT OF ANY DISCREPANCIES BETWEEN DRAWINGS AND ACTUAL CONDITIONS. CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR WORK INSTALLED IN SUCH AN AREA, FOR WORK MODIFIED WITHOUT APPROVAL. PIPE SIZES ON PLANS ARE MINIMUM ALLOWABLE.

5. SUBMITTALS - CONTRACTOR SHALL SUPPLY OWNER WITH AS-BUILT RECORD OF IRRIGATION ILLUSTRATING EXACT LOCATION OF LATERAL AND MAIN LINES, REMOTE CONTROL VALVES, POINTS OF CONNECTION, BACKFLOW PREVENTER, AND CONTROLLER. CONTRACTOR SHALL FURNISH TO OWNER KEYS TO CONTROLLER ENCLOSURE, AND ANY SPECIAL TOOLS REQUIRED FOR MAINTENANCE OF ALL IRRIGATION COMPONENTS.

6. GUARANTEE - THE CONTRACTOR SHALL GUARANTEE THE IRRIGATION SYSTEM FOR A PERIOD OF 120 DAYS THAT THE SYSTEM SHALL BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP AND THAT THE WORK HAS BEEN COMPLETED IN ACCORDANCE TO THE DRAWINGS AND SPECIFICATIONS. THE CONTRACTOR SHALL REPAIR OR REPLACE ANY DEFECTS FOR THE ABOVE MENTIONED TIME PERIOD AT NO COST TO THE OWNER. SUCH REPAIRS OR REPLACEMENTS SHALL BE COMPLETED WITHIN A 48 HOUR TIME PERIOD.

7. CONTROL WIRES - CONNECTIONS BETWEEN THE CONTROLLER AND THE REMOTE CONTROL VALVES SHALL BE MADE WITH DIRECT BURIAL COPPER WIRE, AWG-U.F. 600 VOLT. WIRE SHALL BE SIZED NO LESS THAN #14, SHALL BE TAPED TO THE MAIN LINE AT 10 FOOT INTERVALS EXCEPT WHERE INDEPENDENTLY SLEEVED. AN EXPANSION CURL SHALL BE PROVIDED WITHIN 3 FEET OF EACH WIRE CONNECTION. EXPANSION CURLS SHALL BE 18 INCHES IN LENGTH AT EACH SPLICE CONNECTION AND AT EACH CONTROL VALVE SO THAT IN CASE OF REPAIR THE VALVE BONNET CAN BE BROUGHT TO THE SURFACE WITHOUT DISCONNECTION OF CONTROL WIRES. ALL SPLICES SHALL BE MADE WITH TOM KING HARMONY PRODUCTS SNAPLOC LV-9000 SEALING PACKS, DBY-SPLICE DS-400 WIRE CONNECTORS, OR DBY SEALING PACKS OR APPROVED EQUAL. ALL SPLICES SHALL BE WATERPROOF.

8. BACKFILL - THE TRENCHES SHALL NOT BE BACKFILLED UNTIL ALL REQUIRED TESTS ARE PERFORMED. BACKFILL SHALL BE MECHANICALLY COMPACTED IN LANDSCAPED AREAS TO A DRY DENSITY EQUAL TO ADJACENT UNDISTURBED AREAS. BACKFILL SHALL CONFORM TO ADJACENT GRADES WITHOUT DIPS, SUNKEN AREAS, HUMPS, OR OTHER SURFACE IRREGULARITIES. IF SETTLEMENT OCCURS AND SUBSEQUENT ADJUSTMENTS ARE NECESSARY, THE CONTRACTOR SHALL MAKE ANY REQUIRED ADJUSTMENTS WITHOUT COST TO THE OWNER.

9. ADJUSTMENT OF THE SYSTEM - THE CONTRACTOR SHALL FLUSH AND ADJUST ALL IRRIGATION HEADS FOR OPTIMUM PERFORMANCE AND TO PREVENT OVER SPRAY ONTO BUILDINGS, WALKS, WALLS AND FENCES AS MUCH AS POSSIBLE.

10. TESTING - TEST ALL PRESSURE LINES, PRIOR TO BACKFILLING, UNDER HYDROSTATIC PRESSURE OF 150 PSI FOR A PERIOD OF 2 HOURS. IF LEAKS DEVELOP, REPAIR SYSTEM AND REPEAT TEST UNTIL PRESSURE IS HELD.

11. BACKFLOW PREVENTION ASSEMBLY - INSTALL AS PER SPECIFICATIONS AND DETAILS.

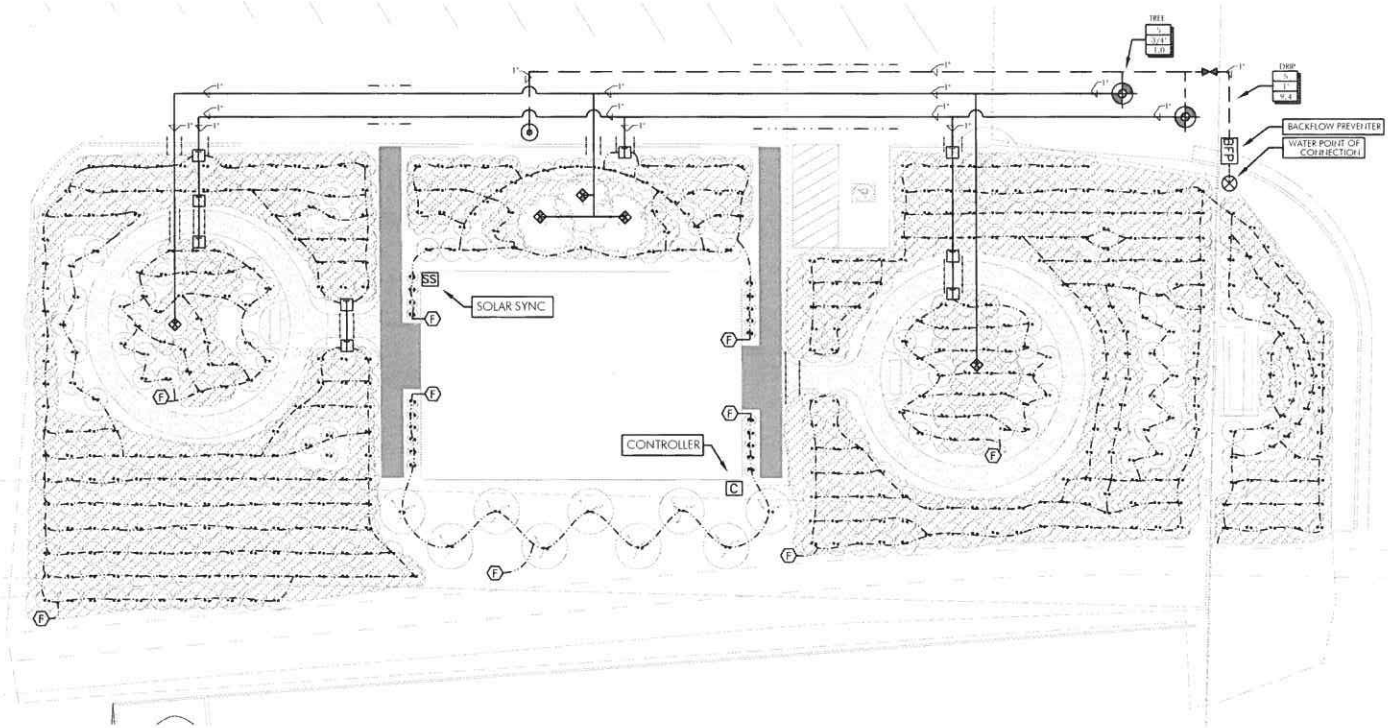
12. VALVES - INSTALL IN VALVE BOXES WITH DRAIN ROCK.

13. SWING JOINTS - INSTALL IRRIGATION HEADS AS PER SPECIFICATIONS AND DETAILS.

14. CLEAN UP - CLEAN UP SHALL BE MADE AS EACH PORTION OF WORK PROGRESSES. ALL PAVING AND WALKS SHALL BE BROOMED OR WASHED DOWN AND ANY DAMAGE SUSTAINED TO THE WORK OF OTHERS SHALL BE REPAIRED TO ORIGINAL CONDITIONS ACCEPTABLE TO THE OWNER.

IRRIGATION NOTES

1. THIS SYSTEM IS DESIGNED FOR A MAXIMUM DEMAND OF 9.4 GPM. AVERAGE STATIC PRESSURE IS 50-75 PSI AT THE POINT OF CONNECTION AND 30 PSI AT THE FARTHEST IRRIGATION HEAD. CONTACT THE LANDSCAPE ARCHITECT IN THE EVENT THAT FIELD TESTED PRESSURE IS LESS THAN STATED, PRIOR TO CONSTRUCTION.
2. THE INTENT OF THIS IRRIGATION SYSTEM IS TO PROVIDE THE MINIMUM AMOUNT OF WATER REQUIRED TO SUSTAIN GOOD PLANT HEALTH. ADJUST CLOCK AS REQUIRED TO ACHIEVE THIS GOAL AS REQUIRED BY THE TIME OF YEAR.
3. IT IS THE RESPONSIBILITY OF THE LANDSCAPE MAINTENANCE CONTRACTOR AND/OR OWNER TO PROGRAM THE IRRIGATION CONTROLLERS TO PROVIDE THE MINIMUM AMOUNT OF WATER NEEDED TO SUSTAIN GOOD PLANT HEALTH. THIS INCLUDES MAKING ADJUSTMENTS TO THE PROGRAM FOR SEASONAL CHANGES, PLANT MATERIAL, WATER REQUIREMENTS, MOUNDS AND SLOPES, AND SUN, SHADE AND WIND EXPOSURES.
4. THIS DRAWING IS DIAGRAMMATIC. IRRIGATION COMPONENTS SHOWN BENEATH PAVING OR PLANTINGS ARE FOR GRAPHIC CLARITY ONLY. PLACE ALL PIPING, VALVES, AND OTHER IRRIGATION COMPONENTS WITHIN THE ADJACENT PLANTER EXCEPT WHERE PIPES CROSS PAVING. PLACE PIPING TO PREVENT CONFLICT WITH SUBSEQUENT PLANTING. REFER TO PLANTING PLAN.
5. CONTRACTOR TO PROVIDE COMPLETE AS-BUILT DRAWINGS (DIGITAL AND HARD COPY) TO THE CITY AT COMPLETION OF PROJECT AND CONFIRM CONNECTION OF CONTROLLER TO CENTRAL CONTROL WITH THE CITY AND THAT THE SYSTEM FUNCTIONS PROPERLY.
6. TRENCH ALL MAIN LINES TO A DEPTH OF 18", TRENCH ALL LATERAL LINES TO A DEPTH OF 12". TRENCH ALL MAIN OR LATERAL LINES TO A DEPTH OF 24" WHERE CROSSING UNDER DRIVEWAY PAVEMENT AND PLACE WITHIN A SCHEDULE 40 SLEEVE, SIZE AS SHOWN.
7. INSTALL SLEEVES WHERE SHOWN ON PLAN AND AS REQUIRED, PRIOR TO THE PLACEMENT OF PAVING. COORDINATE WITH PAVING CONTRACTOR.
8. ALL REMOTE CONTROL VALVES, QUICK COUPLER VALVES, AND FLUSH VALVES SHALL BE INSTALLED IN PLANTER AND IN VALVE BOXES.
9. CONTRACTOR IS RESPONSIBLE FOR COMPLETE COVERAGE OF ALL PLANT MATERIAL. INSTALL ADDITIONAL EMITTERS OR ADJUST SPACING AS REQUIRED.
10. MAIN LINE PIPE SIZE DOWNSTREAM OF LAST PIPE SIZE CALLOUT TO BE 1" PIPE (MAIN LINE PIPE SIZE DIAMETER NOT TO BE LESS THAN 1"). LATERAL PIPE SIZE DOWNSTREAM OF LAST PIPE SIZE CALLOUT TO BE 3/4" PIPE (LATERAL PIPE SIZE DIAMETER NOT TO BE LESS THAN 3/4").
11. IT IS IMPORTANT THAT THE CONTROLLER IS GROUNDED TO GROUND RODS OR PLATES WITH LESS THAN 10 OHMS RESISTANCE. THE GROUND SHOULD ALWAYS BE MEASURED WITH A GROUND RESISTANCE METER. A TOUCH ON METER CANNOT BE USED FOR GROUND MEASUREMENT, SINCE THIS IS AN ISOLATED SYSTEM. GROUND RESISTANCE MEASUREMENTS SHOULD BE PERFORMED WITH A FALL OF POTENTIAL TYPE METER IN DECODER SYSTEMS. CONTRACTOR IS RESPONSIBLE TO PROVIDE THE OWNER AND THE CITY OF CHICO WITH A CERTIFIED GROUNDING REPORT SHOWING THE RESULTS OF THE TEST.
12. CONTRACTOR IS RESPONSIBLE TO PROVIDE AND INSTALL A HUNTER WIRELESS MODEM TO CONNECT TO THE CITY CENTRAL CONTROL. CONTRACTOR IS RESPONSIBLE FOR WORKING WITH CITY TO MAKE CONNECTION.
13. SEE DETAILS FOR ADDITIONAL INFORMATION.



SOLAR INFLUENCE

NORTH

0 10 20

SCALE: 1" = 10'-0"

BRIAN FIRTH LANDSCAPE ARCHITECT, INC.
627 BROADWAY, SUITE 200
CHICO, CALIFORNIA 95928
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LICENSE

REGISTERED LANDSCAPE ARCHITECT — BRIAN FIRTH — 2519 — SEMI-FINAL CONSTRUCTION DOCUMENTS — EXP. 06-17 — STATE OF CALIFORNIA — NOT VALID WITHOUT SIGNATURE

CONSULTANT

CLIENT

CROP PRODUCTION SERVICES & GINNO CONSTRUCTION, INC.

PROJECT

OFFICE BUILDING
555 1ST STREET
HAMILTON CITY, CA

SHEET TITLE

LANDSCAPE IRRIGATION PLAN

DATES

NO.	DESCRIPTION	DATE
1		2-22-17

Plot Date: March 13, 2017 – 4:00 pm

PROJECT NUMBERS

BFLA PROJECT #: 1939
CONSULTANT PROJECT #:

SHEET NUMBER

L-1.0

SHEET 1 OF 2

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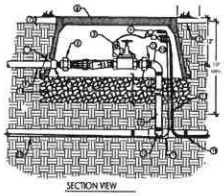
Plot Date: March 13, 2017 – 4:00 pm File Name: Z:\BFLA (1900-1999)\1972 Holly Sugar\1972 Cad Files\1972 Xrefs\1972 IRR PLAN.dwg



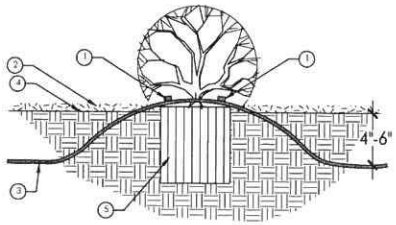
SECTION VIEW

1. FINK VALVE BOX TO PROVIDE 1" CLEARANCE OVER PIPE
2. SCHEDULE 40 PVC NIPPLE, LENGTH AS NEEDED
3. DRIP CONTROL ZONE KIT, SEE KIT MODEL PER PLAN. INCLUDES FILTER, REMOTE CONTROL VALVE, PRESSURE REGULATOR AND MISCELLANEOUS FITTINGS
4. LOCKING WATERPROOF WIRE CONNECTOR, MODEL 76-4WP OR APPROVED EQUAL
5. FINISH GRADE
6. SCHEDULE 80 PVC UNION, SLT (TYP. 2 PLCS.)
7. SET TOP OF BOX ABOVE FINISH GRADE: 1/2" IN SEED, 1-1/2" IN SOD, 2-1/2" IN PLANTER OR DECOMPOSED GRANITE
8. PLASTIC VALVE BOX WITH BOLT DOWN LOC KIT, CARSON MODEL 1220-12 OR APPROVED EQUAL
9. PVC SCHEDULE 40 LATERAL LINE, PROVIDE 18" LENGTH PRIOR TO FIRST FITTING
10. SCHEDULE 40 PVC SLEEVE, MIN.
11. CONTROL AND COMMON WIRES, SIZE AS NEEDED, PROVIDE MINIMUM 30" COILED EXTRA
12. SCHEDULE 80 PVC O.D. NIPPLE, LENGTH AS NEEDED
13. SCHEDULE WELD SCHEDULE 40 OR CLASS 315 MAINLINE, 12" MINIMUM COVER. SEE SPECIFICATIONS.
14. 3/4" CRUSHED ROCK, 6" DEPTH MINIMUM
15. SCHEDULE 80 PVC TEE (SIDES)
16. 12" FROM HARDSCAPE
17. 1/4" GALVANIZED WIRE CLOTH
18. PVC SCHEDULE 40 MALE ADAPTER
19. TAPE WIRE TO SIDE OF MAINLINE AT 10' O.C.

NOTES:
1. ALL SUPPLY FITTINGS TO BE PRIMED AND GLUED.
2. STOP VALVE PER BOX.
3. INSTALL MINIMUM OF 12" FROM STRUCTURAL OR HARDSCAPE.
4. INSTALL IN SHRUB BEDS WHERE POSSIBLE.
5. PLACE VALVE BOX AT MOST ANGLES TO STRUCTURES OR HARDSCAPE.
6. USE MINIMUM 3 WRAPS OF TEFLON TAPE AT EACH THREADED CONNECTION.

SCALE: NTS

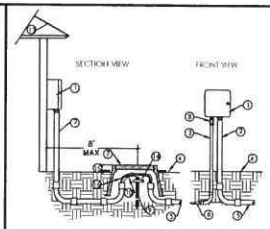
REMOTE CONTROL VALVE — 10



1. EMITTER- SEE IRRIGATION LEGEND FOR ADDITIONAL INFORMATION
2. BARK MULCH PER PLANS
3. DRIPPERLINE - SEE IRRIGATION LEGEND FOR ADDITIONAL INFORMATION
4. FINISH GRADE
5. SHRUB PLANTING

SCALE: NTS

XF SERIES BLANK DRIPLINE WITH PRESSURE COMPENSATING MODULES — 7

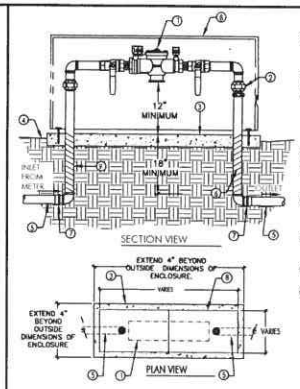


1. AUTOMATIC SPRINKLER CONTROLLER, WALL MOUNTED (EXTERIOR WALL)
2. PVC SCHEDULE 40 CONDUIT AND FITTINGS, SIZE AS NEEDED
3. METAL CONDUIT (PER NATIONAL ELECTRICAL CODE) TO POWER SUPPLY
4. FINISH GRADE
5. SCHEDULE 40 PVC CONDUIT TO MAINLINE, SIZE AS NEEDED
6. ELECTRICAL CONDUIT TO SOURCE, POWER REQUIRED (REQUIRED 120 VAC, 60 Hz, 2 AMPS MAX.
7. GRAY PLASTIC VALVE BOX, CARSON MODEL 910 OR APPROVED EQUAL
8. NOT USED
9. 8' COPPER CLAD GROUND ROD, INSTALL PER N.E.C. AND LOCAL CODES (INSTALL IN IRRIGATED AREA). SEE DETAIL 3, THIS SHEET.
10. #8 BARE COPPER WIRE
11. NOT USED
12. NOT USED
13. BUILDING ROOF LINE
14. ACORN CLAMP
15. SET TOP OF BOX 4" ABOVE TOP OF BARK MULCH. SEE PLANTING SPECIFICATIONS FOR FINISH GRADE AND MULCH SPECIFICATIONS.
16. CONTROL WIRE

NOTES:
1. NO SPLICES SHALL BE MADE BETWEEN CONTROLLER AND REMOTE CONTROL VALVE UNDER 500 FEET.
2. CONTROL WIRING (#14) UP (4) SECURE TO TERMINAL STRIP PROVIDED IN ENCLOSURE. PROVIDE 4 PVC CONDUIT FOR WIRES.
3. INSTALL ALL ELEMENTS AS PER MANUFACTURERS SPECIFICATIONS.

SCALE: NTS

IRRIGATION CONTROLLER — 4

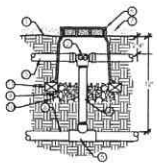


1. REDUCED BACKFLOW PREVENTER, WILKINS 975XL2U OR APPROVED EQUAL (SIZE PER PLANS)
2. UNION (TYPICAL)
3. 4" CONCRETE PAD: SET 2" ABOVE FINISH GRADE IN GROUNDCOVER OR DECOMPOSED GRANITE, 1" ABOVE FINISH GRADE IN TURF
4. FINISH GRADE
5. PVC SCHEDULE 40 OR CLASS 315 MAINLINE, SIZE AND TYPE PER PLAN
6. WRAP ALL BURIED GALVANIZED WITH 20MIL CORROSION PROTECTION TAPE
7. PVC SCHEDULE 40 ADAPTER/BUSHING (MPT X SLIP)
8. STRONG BOX ENCLOSURE, SIZE AND MODEL PER PLAN
9. SCHEDULE 40 GALVANIZED PIPE AND FITTINGS

NOTE:
INSTALL WITH INSULATED BACKFLOW BLANKET, SIZE AS REQUIRED.

SCALE: NTS

BACKFLOW PREVENTER — 1

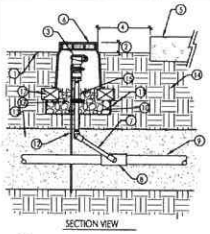


SECTION VIEW

1. FINISH GRADE
2. TECHLINE 180 2-WAY TEE OR CROSS
3. TECHLINE SUBSURFACE DRIPPERLINE
4. 3/4" PVC SCHEDULE 80 NIPPLE (LENGTH AS NEEDED)
5. PVC SCHEDULE 80 TEE (SIDES)
6. 3/4" PVC SCHEDULE 40 SUB HEADER
7. MULCH PER PLANS AND SPECIFICATIONS
8. PLASTIC VALVE BOX WITH BOLT DOWN LOC KIT, CARSON MODEL 910 OR APPROVED EQUAL
9. 3/4" CRUSHED ROCK, 6" MINIMUM DEPTH
10. 1/4" GALVANIZED WIRE CLOTH
11. COMMON BRICKS FOR SUPPORT, 3 (MIN.), TYPICAL AT ALL VALVE BOXES

SCALE: NTS

TRANSITION TO DRIP — 11



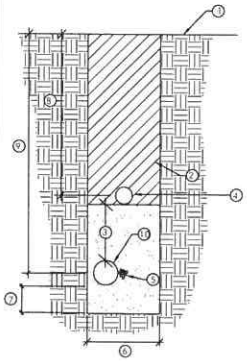
SECTION VIEW

1. FINISH GRADE
2. SET TOP OF BOX ABOVE FINISH GRADE: 1/2" IN SEED, 1-1/2" IN SOD, 3-1/2" IN PLANTER OR DECOMPOSED GRANITE
3. QUICK COUPLING VALVE WITH LOCKING RUBBER COVER; INSTALL SO QUICK COUPLER KEY CLEARS VALVE BOX
4. SET VALVE BOX 12" FROM EDGE OF PLANTING AREA
5. CURB, HEADER OR PAVING WHERE APPLICABLE
6. 10" DIAMETER PLASTIC VALVE BOX WITH BOLT DOWN LOC KIT. HEAT BRANDED "GCV" ON TOP
7. MANUFACTURED TRIPLE SWING JOINT, KBI MODEL TSA-1000-TT OR APPROVED EQUAL
8. PVC SCHEDULE 80 TEE
9. PVC CLASS 315 OR SCHEDULE 40 MAINLINE, SIZE PER PLAN
10. 3/4" CRUSHED ROCK, 6" MINIMUM DEPTH
11. 1/4" GALVANIZED WIRE CLOTH
12. #8 (1" DIA.) X 30" REBAR, SECURE TO QUICK COUPLER VALVE WITH STAINLESS STEEL HOSE CLAMPS AND SCREWS (TYP. 2 PLCS.)
13. SAND BACKFILL, 6" ABOVE AND BELOW MAIN LINE
14. NATIVE SUBGRADE
15. PVC SCHEDULE 80 NIPPLE, LENGTH AS NEEDED
16. STAINLESS STEEL HOSE CLAMP WITH STAINLESS STEEL SCREWS (TYP. 2 PLCS.)
17. COMMON BRICKS FOR SUPPORT, 3 (MIN.), TYPICAL AT ALL VALVE BOXES

NOTE:
ALL NON "O" RING THREADED CONNECTIONS SHALL RECEIVE MIN. 3 WRAPS OF TEFLON TAPE.

SCALE: NTS

QUICK COUPLER VALVE — 8



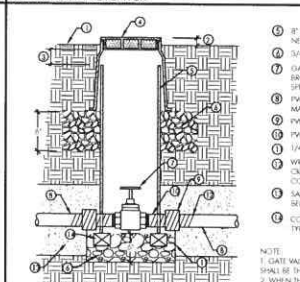
SECTION VIEW

1. FINISH GRADE
2. TOPSOIL BACKFILL; NO PARTICLES GREATER THAN 1". COMPACT PER SPECIFICATIONS.
3. SIX INCHES SAND FILL COVER, ABOVE MAINLINE
4. PVC SCHEDULE 40 LATERAL LINE
5. ELECTRIC WIRES BUNDLED AND TAPED TO SIDE OF MAINLINE AT 10 O.C. (INSTALL WIRES IN CONDUIT FROM CONTROLLER TO MAINLINE).
6. 6" OR AS NEEDED TO PROVIDE FOR A MINIMUM 4" CLEARANCE BETWEEN PIPES.
7. 6" FROM BOTTOM OF TRENCH
8. LATERAL -12" MIN. COVER
9. MAINLINE -18" MIN. COVER
10. PVC SCHEDULE 40 MAINLINE

NOTE:
SIDES OF TRENCH WILL BE DUG SQUARE AND CLEAN OF ALL SHARP MATERIAL.

SCALE: NTS

STANDARD TRENCHING — 5



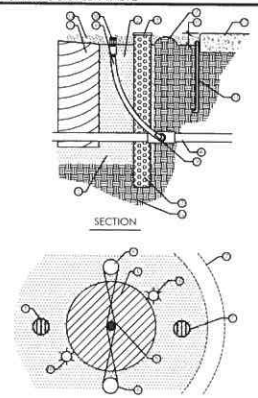
SECTION VIEW

1. 8" DIAMETER PVC PIPE, LENGTH AS NEEDED
2. 3/4" CRUSHED ROCK, 6" MINIMUM DEPTH
3. GATE VALVE 2" AND SMALLER WITH BRONZE CROSS HANDLE. SEE SPECIFICATIONS
4. PVC SCHEDULE 40 OR CLASS 315 MAIN LINE AS PER PLANS
5. PVC SCHEDULE 40 COUPLER
6. PVC SCHEDULE 80 T.O.E. NIPPLE
7. 1/4" GALVANIZED WIRE CLOTH
8. WRAP ALL PVC PIPE EXPOSED TO CRUSHED ROCK WITH 20MIL CORROSION RESISTANT TAPE
9. SAND BACKFILL, 6" ABOVE AND BELOW MAIN LINE
10. COMMON BRICKS FOR SUPPORT, 3 (MIN.), TYPICAL AT ALL VALVE BOXES

NOTE:
1. GATE VALVES 2" AND SMALLER SHALL BE THREADED.
2. WHEN THE MAIN LINE IS TERMINATED AT THE VALVE, EXTEND MAIN LINE 48" BEYOND VALVE BOX AND CAP.

SCALE: NTS

ISOLATION BALL VALVE — 2



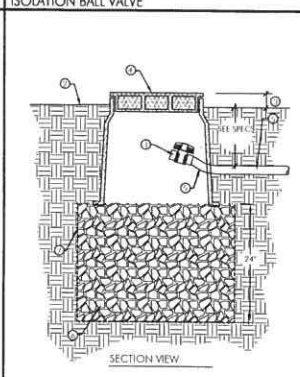
SECTION

PLAN

1. TREE ROOTBALL. SEE TREE PLANTING DETAIL FOR ADDITIONAL INFORMATION
2. TREE PLANTING PIT. SEE TREE PLANTING DETAIL FOR ADDITIONAL INFORMATION
3. AERATION TUBES. 3" MINIMUM DIAMETER X 24" MINIMUM DEPTH PERFORATED DRAINPIPE WITH FILTER FABRIC ENVELOPE AROUND AND ROUND PLASTIC GRATE, BACKFILL WITH 1"-1-1/2" CRUSH ROCK. 2 TUBES PER TREE PLANTING. TYPICAL
4. PVC LATERAL PIPE AND FITTINGS (REFER TO TRENCHING DETAIL)
5. TREE CENTER (TYPICAL)
6. TREE STAKE (TYPICAL)
7. WATER RETENTION BERM (TYPICAL). SEE TREE PLANTING DETAIL FOR ADDITIONAL INFORMATION
8. LANDSCAPE FINISH GRADE AS PER PLANTING SPECIFICATIONS
9. 4" DIAMETER HEAVY DUTY FLEXIBLE PVC HOSE (SACCO OR EQUAL ASSEMBLE USING STANDARD SCHEDULE 40 PVC FITTINGS WITH FLEXIBLE TO REDUCE PVC ACHEDULE 2 FT. 4 2/90 OR EQUIVALENT)
10. IRRIGATION BUBBLER, MODEL PER IRRIGATION PLAN, 2 PER TREE, TYPICAL
11. ROOT BARRIER (WHERE APPLICABLE), SIZE AND MODEL PER PLAN
12. UNDISTURBED SUBGRADE
13. CONCRETE FLATWORK (WHERE APPLICABLE)
14. MULCH PER SPECIFICATIONS

SCALE: NTS

ROOT ZONE WATERING KIT — 9

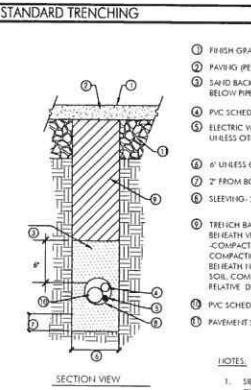


SECTION VIEW

1. COMPRESSION SHUT-OFF VALVE (RAIN BIRD 61-700UB OR EQUAL)
2. FINISH GRADE
3. SET TOP OF BOX ABOVE FINISH GRADE: 1/2" IN SEED, 1-1/2" IN SOD, 3-1/2" IN PLANTER
4. ROUND VALVE BOX, CARSON 910 OR APPROVED EQUAL
5. POLYTUBE DRIPLINE
6. 3/4" CRUSHED ROCK, 6" - 8" DIAMETER X 24" DEPTH
7. 1/4" GALVANIZED WIRE CLOTH

SCALE: NTS

FLUSH VALVE — 3



SECTION VIEW

1. FINISH GRADE
2. PAVING (PER OTHER'S PLANS)
3. SAND BACKFILL WITH 6" COVER ABOVE PIPE AND 6" BELOW PIPE
4. PVC SCHEDULE 40 LATERAL
5. ELECTRIC WIRES TAPED TOGETHER IN BUNDLE UNLESS OTHERWISE INDICATED ON PLAN
6. 6" UNLESS OTHERWISE NOTED
7. 2" FROM BOTTOM OF TRENCH
8. SLEEVING- 24" BENEATH PAVING; SIZE AS REQUIRED
9. TRENCH BACKFILL:
   BENEATH VEHICULAR PAVEMENT:
   -COMPACTED CLASS II AGGREGATE - DEPTH AND COMPACTION PER ENGINEERS PLANS
   BENEATH NON- VEHICULAR PAVEMENT: -NATIVE SITE SOIL, COMPACTED TO ELIMINATE SETTLING, 95% RELATIVE DENSITY
10. PVC SCHEDULE 40 MAINLINE
11. PAVEMENT SUBGRADE - AS PER ENGINEERS PLANS

NOTES:
1. SIDES OF TRENCH WILL BE DUG SQUARE AND CLEAN OF ALL SHARP MATERIAL.
2. INSTALL ALL MAINLINE WITH UNDERGROUND DETECTABLE TAPE (CHRISTY OR EQUAL)

SCALE: NTS

TRENCHING BENEATH PAVING — 6

--

BRIAN FIRTH LANDSCAPE ARCHITECT, INC.
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CHICO, CALIFORNIA 95928
PHONE: (530) 899-1130
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www.facebook.com/BFLAdesign

LICENSE

REGISTERED LANDSCAPE ARCHITECT BRIAN D. FIRTH 4752 EXP. 06-17 STATE OF CALIFORNIA — NOT FOR CONSTRUCTION

CONSULTANT

CLIENT

CROP PRODUCTION SERVICES & GINNO CONSTRUCTION, INC.

PROJECT

OFFICE BUILDING
555 1ST STREET
HAMILTON CITY, CA

SHEET TITLE

LANDSCAPE IRRIGATION PLAN

DATES

NO.	DESCRIPTION	DATE
1		3.22.17

Plot Date: March 13, 2017 – 4:00 pm

PROJECT NUMBERS

BFLA PROJECT #: 1939
CONSULTANT PROJECT #:

SHEET NUMBER

L-1.1

SHEET 2 OF 2

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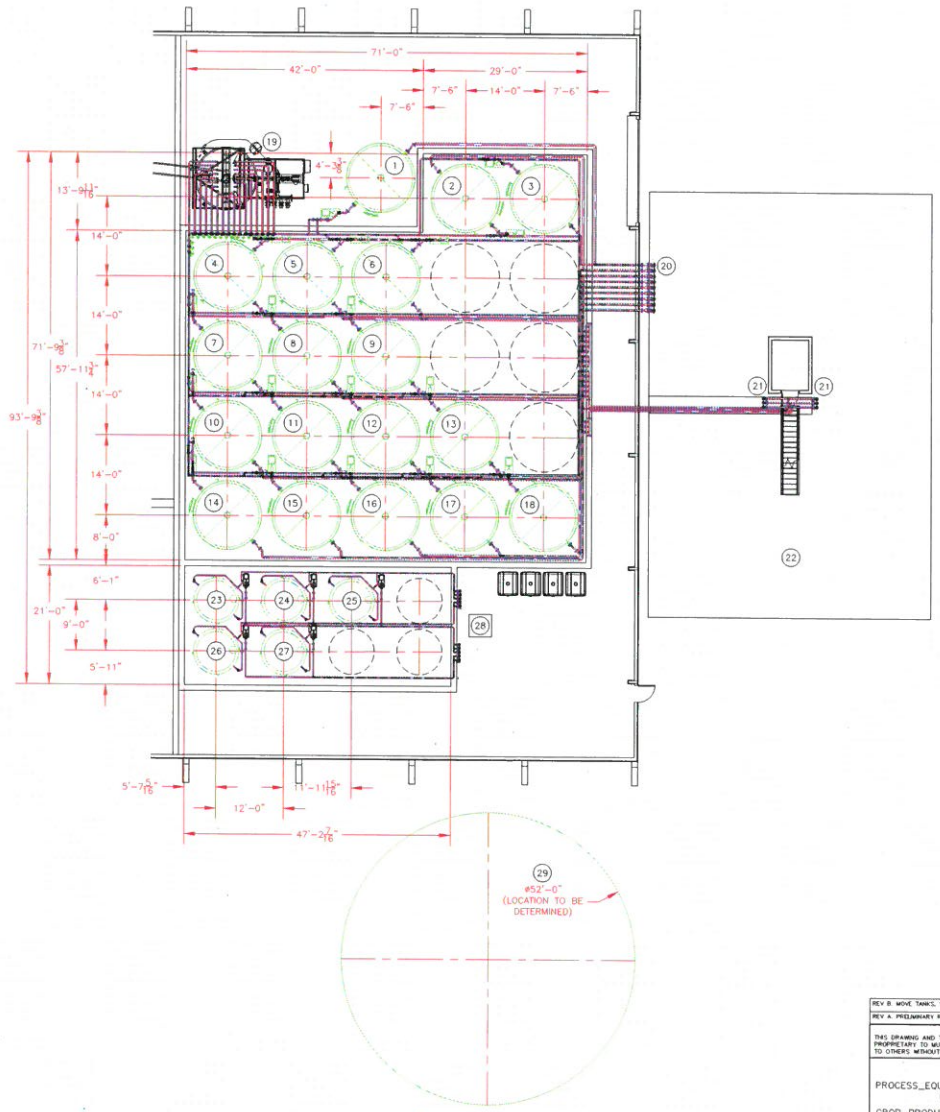
Plot Date: March 13, 2017 – 4:00PM Pen Name: Z:\BFLA (1900-1999)\1972 Holly Sugar\1972 Cad Files\1972 Xrefs\1972 IRR PLAN.dwg

Appendix I (Identification and Size of Tanks in Proposed Mixing Building)

ITEM	DESCRIPTION	SYSTEM	PRODUCT
1	30,000 GALLON TANK	FERTILIZER	WATER
2	12,000 GALLON TANK	FERTILIZER	GOODS FINISHED
3	12,000 GALLON TANK	FERTILIZER	GOODS FINISHED
4	30,000 GALLON TANK	FERTILIZER	UREA SOLUBILIZED
5	30,000 GALLON TANK	FERTILIZER	THIOSULFATE POTASIUM
6	12,000 GALLON TANK	FERTILIZER	GOODS FINISHED
7	30,000 GALLON TANK	FERTILIZER	9-0-1 7% ZN
8	30,000 GALLON TANK	FERTILIZER	LIQUID HUMUS
9	30,000 GALLON TANK	FERTILIZER	CATS
10	12,000 GALLON TANK	FERTILIZER	PHOS ACID
11	30,000 GALLON TANK	FERTILIZER	RISER
12	30,000 GALLON TANK	FERTILIZER	ACCOMPLISH
13	30,000 GALLON TANK	FERTILIZER	CN17
14	30,000 GALLON TANK	FERTILIZER	POLY TANK
15	30,000 GALLON TANK	FERTILIZER	N-PHURIC
16	12,000 GALLON TANK	FERTILIZER	12-0-0-26
17	30,000 GALLON TANK	FERTILIZER	ACCELERATE
18	30,000 GALLON TANK	FERTILIZER	CN9
19	MIXING SKID	FERTILIZER	BLEND
20	TRUCK UNLOAD/TANK FILL	FERTILIZER	ALL
21	TRUCK LOAD OUT	FERTILIZER	ALL
22	LOAD PAD	FERTILIZER	ALL
23	5,100 GALLON TANK	CHEMICAL	ROUNDUP
24	5,100 GALLON TANK	CHEMICAL	GLYPHOSATE
25	5,100 GALLON TANK	CHEMICAL	PARAQUAT
26	5,100 GALLON TANK	CHEMICAL	PROWL
27	5,100 GALLON TANK	CHEMICAL	TRIFLURALIN
28	SCALE PLATFORM TO LOAD TOTES	CHEMICAL	ALL
29	52'-0" DIAMETER TANK	FERTILIZER	32% NITROGEN



REV B MOVE TANKS, SAFERACK, MAG METERS, ADD SCALE, TOTES, TRENCH; NEW PIPING – 3/24/17

REV A PRELIMINARY REVIEW – 3/05/17

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PROCESS_EQUIPMENT_LAYOUT FOR CROP_PRODUCTION_SERVICES HAMILTON_CITY

MEI MURRAY EQUIPMENT INC. 2897 CHARLESTON PL. FT WAYNE, INDIANA

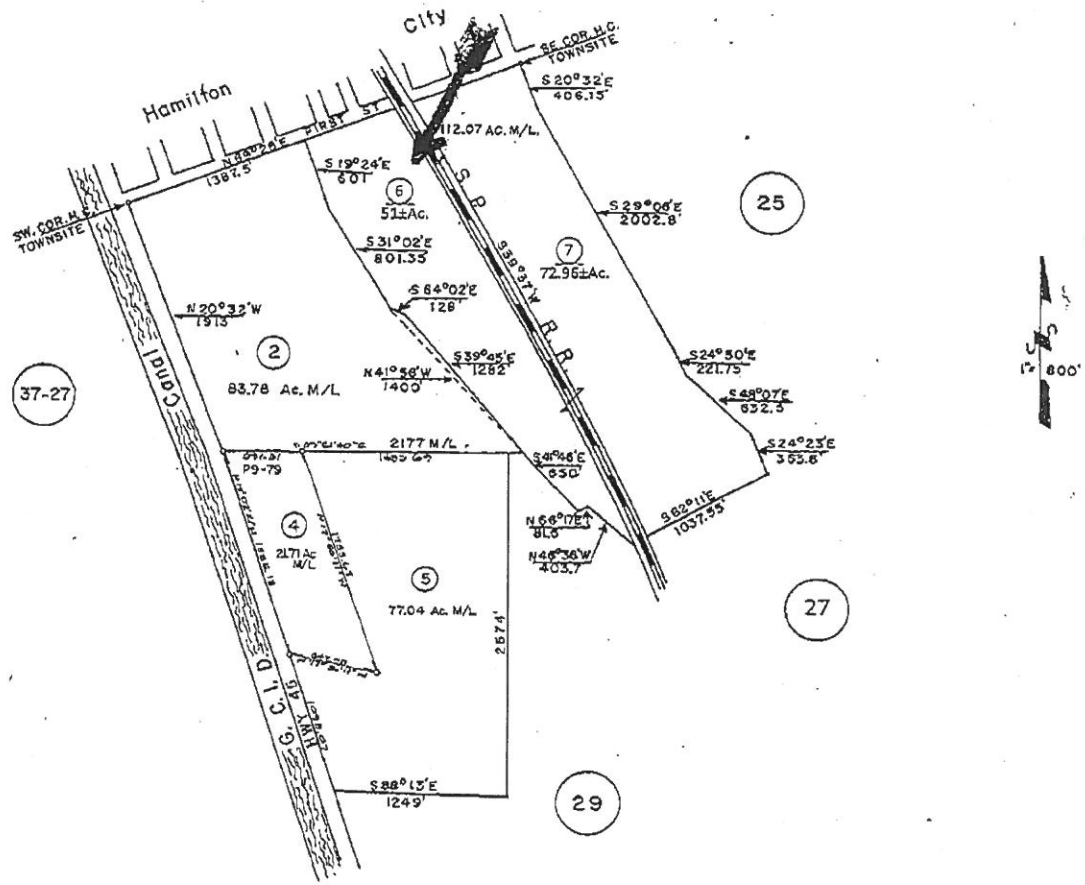
PROJ. NUMBER	ORDER NUMBER
	TBD
DATE 03/05/17	DRAWING NUMBER P101
DRWN BY: MLP	REV. NO.

Appendix J (County Assessor's Map)

CAPAY RANCHO

T. C.A
682

32-26



PARCEL MAP - Bk.9, Pg.79

BOOK 13 MS PAGE 14
M & S Bk. 14, Pg. 70

LEGAL DESCRIPTION

ALL THAT REAL PROPERTY IN THE COUNTY OF GLENN, STATE OF CALIFORNIA, BEING PARCEL TWO, TOGETHER WITH A PORTION OF PARCEL ONE AS SAID PARCELS ARE DESCRIBED IN THAT QUIT CLAIM DEED FROM SPRECKLES SUGAR COMPANY, INC. TO WANTJAS, LLC RECORDED ON MAY 7, 2008 AT DOCUMENT NO. 2008-2253, GLENN COUNTY RECORDS, BEING A PORTION OF THE CAPAY RANCHO AND LYING SOUTH OF, AND ADJACENT TO, THE TOWN OF HAMILTON, DESCRIBED AS FOLLOWS:

SAID PARCEL TWO, TOGETHER WITH ALL THAT PORTION OF SAID PARCEL ONE LYING WESTERLY OF THE EXISTING CENTERLINE OF THE MAIN RAILROAD TRACKS RUNNING NORTHERLY AND SOUTHERLY THROUGH THE ENTIRETY OF SAID PARCEL ONE, SAID RAILROAD CENTERLINE BEING FURTHER DESCRIBED AS BEGINNING AT THE INTERSECTION OF SAID CENTERLINE WITH THE NORTHERLY LINE OF SAID PARCEL ONE, FROM WHICH THE NORTHEAST CORNER OF SAID PARCEL ONE BEARS NORTH 89°28'00" EAST 913.41 FEET, SAID NORTHEAST CORNER BEING MARKED BY AN 8" X X 36" GRANITE MONUMENT, SAID NORTHEAST CORNER ALSO BEING THE SOUTHEAST CORNER OF THE TOWN OF HAMILTON AS SHOWN ON THE MAP OF "TOWN OF HAMILTON" RECORDED IN BOOK 1 OF MAPS AND SURVEYS, AT PAGE 163, AS FILED IN THE RECORDER'S OFFICE OF SAID COUNTY; THENCE, FROM SAID POINT OF BEGINNING, ALONG SAID EXISTING CENTERLINE OF TRACKS, SOUTH 29°31'02" EAST 2529.54 FEET TO THE BEGINNING OF A NON-TANGENT CURVE HAVING A RADIUS OF 5,639.81 FEET AND A CENTRAL ANGLE OF 7°59'49", THENCE, CONTINUING ALONG SAID CENTERLINE OF TRACKS, ALONG SAID CURVE TO THE RIGHT, AN ARC DISTANCE OF 787.16 FEET TO THE INTERSECTION OF SAID CENTERLINE WITH THE SOUTHERLY LINE OF SAID PARCEL ONE.

EXCEPTING THEREFROM PARCEL NO. 1 AND PARCEL NO. 2 AS SAID PARCELS ARE DESCRIBED IN THAT INDENTURE RECORDED ON SEPTEMBER 14, 1936 IN BOOK 83, PAGE 447, OFFICIAL RECORDS OF GLENN COUNTY.

BASIS OF BEARINGS: THE NORTHERLY LINE OF SAID PARCEL ONE IS GIVEN THE BEARING OF NORTH 89°28'00" EAST PER SAID QUIT CLAIM DEED.

NOTICE OF VOLUNTARY MERGER RECORDED JUNE 28, 2012 AS GLENN COUNTY RECORDER'S INSTRUMENT NO. 2012-2811, OFFICIAL RECORDS.

TITLE EXCEPTIONS

TITLE EXCEPTIONS 6 THROUGH 18 SHOWN IN THE TITLE REPORT PREPARED BY TIMOS TITLE AND ESCROW, COMMITMENT NUMBER 71-00132606, DATED JANUARY 17, 2017, AFFECT THE PROPERTY AND ARE HEREIN LISTED BELOW.

8. TITLE EXCEPTIONS 6 THROUGH 18 SHOWN IN THE TITLE REPORT PREPARED BY TIMOS TITLE AND ESCROW, COMMITMENT NUMBER 71-00132606, DATED JANUARY 17, 2017, AFFECT THE PROPERTY AND ARE HEREIN LISTED BELOW.

9. THE LIEN OF SUPPLEMENTAL OR ESCAPED ASSESSMENTS OF PROPERTY TAXES, IF ANY, MADE PURSUANT TO THE PROVISIONS OF PART 0.5, CHAPTER 3.5 OR PART 2, CHAPTER 3, ARTICLES 3 AND 4 RESPECTIVELY (COMMENCING WITH SECTION 75) OF THE REVENUE AND TAXATION CODE OF THE STATE OF CALIFORNIA AS A RESULT OF THE TRANSFER OF TITLE TO THE VESTEE NAMED IN SCHEDULE A; OR AS A RESULT OF CHANGES IN OWNERSHIP OR NEW CONSTRUCTION OCCURRING PRIOR TO THE DATE OF THE POLICY.

10. THE LAND HEREIN DESCRIBED LIES WITHIN THE BOUNDARIES OF HAMILTON CITY LEVEE RECLAMATION DISTRICT AND IS SUBJECT TO ALL TAXES, ASSESSMENTS AND OBLIGATIONS THEREOF. ANY AND ALL ASSESSMENTS ARE COLLECTED WITH COUNTY TAXES.

11. TERMS AND PROVISIONS AS CONTAINED IN THAT DEED FROM SACRAMENTO SUGAR COMPANY TO THE COLUSA & HAMILTON RAILROAD COMPANY, DATED NOVEMBER 16, 1911 AND RECORDED DECEMBER 11, 1911 IN BOOK 39 OF DEEDS AT PAGE 182.

12. A RIGHT OF WAY FOR RAILROAD PURPOSES AS CONVEYED TO COLUSA & HAMILTON RAILROAD COMPANY IN THAT INSTRUMENT DATED NOVEMBER 18, 1913 AND RECORDED FEBRUARY 19, 1914 IN BOOK 45 OF DEEDS AT PAGE 135.

13. RIGHTS OF WAY FOR THE MAINTENANCE AND OPERATION OF POLE LINES GRANTED BY SACRAMENTO VALLEY SUGAR COMPANY TO PACIFIC GAS AND ELECTRIC COMPANY, IN DEED DATED MARCH 19TH, 1923, RECORDED MAY 14TH, 1923 IN BOOK 84 OF DEEDS, AT PAGE 268; THE LOCATION OF SAID POLE LINES BEING SHOWN ON THE MAP ATTACHED THERETO AND RECORDED THEREWITH.

14. RIGHT OF WAY DEED FROM SOUTHERN PACIFIC COMPANY, A CORPORATION AND ITS LESSOR, SOUTHERN PACIFIC RAILROAD COMPANY, FIRST PARTIES, COUNTY OF GLENN, A POLITICAL SUBDIVISION, SECOND PARTY AND HOLLY SUGAR CORPORATION, THIRD PARTY, DATED AUGUST 26, 1936 AND RECORDED SEPTEMBER 15, 1936 IN BOOK 83 OF OFFICIAL RECORDS, AT PAGE 463, GRANTING THE RIGHT TO CONSTRUCT AND MAINTAIN A HIGHWAY UPON AND ACROSS .098 OF AN ACRE, MORE OR LESS, TO THE PARTY OF THE SECOND PART.

15. RIGHT OF WAY DEED FROM SOUTHERN PACIFIC COMPANY, A CORPORATION AND ITS LESSOR, SOUTHERN PACIFIC RAILROAD COMPANY, FIRST PARTIES, COUNTY OF GLENN, A POLITICAL SUBDIVISION, SECOND PARTY AND HOLLY SUGAR CORPORATION, THIRD PARTY, DATED AUGUST 26, 1936 AND RECORDED SEPTEMBER 15, 1936 IN BOOK 83 OF OFFICIAL RECORDS, AT PAGE 466.

16. RIGHT OF WAY CONDITIONS IN DEED FROM HOLLY SUGAR CORPORATION, A CORPORATION, TO THE COUNTY OF GLENN, DATED AUGUST 4, 1936 AND RECORDED SEPTEMBER 15, 1936 IN BOOK 83 OF OFFICIAL RECORDS, AT PAGE 469, COVERING A STRIP OF LAND 25 FEET WIDE, LYING WEST OF AND ADJOINING THE WEST RIGHT OF WAY LINE OF THE COLUSA-HAMILTON BRANCH RAILROAD.

17. RIGHT OF WAY FOR RAILROAD PURPOSES GRANTED BY HOLLY SUGAR CORPORATION, A CORPORATION TO SOUTHERN PACIFIC RAILROAD COMPANY, A CORPORATION, BY DEED DATED DECEMBER 1, 1947 AND RECORDED JUNE 3, 1948 IN BOOK 216 OF OFFICIAL RECORDS, AT PAGE 361.

18. RIGHT OF WAY FOR RAILROAD PURPOSES GRANTED BY HOLLY SUGAR CORPORATION, A CORPORATION TO SOUTHERN PACIFIC COMPANY, A CORPORATION, BY DEED DATED DECEMBER 2, 1959 AND RECORDED JANUARY 25, 1960 IN BOOK 395 OF OFFICIAL RECORDS, AT PAGE 504.

BASIS OF BEARING

THE BASIS OF BEARING FOR THE MAP IS THE CENTERLINE OF THE COLUSA-HAMILTON RAILROAD LINE AS ESTABLISHED FROM FOUND MONUMENTS AND SHOWN AS SOUTH 29°31'02" EAST ON THAT CERTAIN RECORD OF SURVEY RECORDED IN BOOK 14 OF MAPS AND SURVEYS PAGES 70-71 (R3)

RECORD REFERENCES

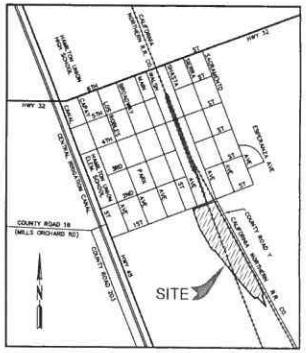
(R1) RECORD DATA PER QUITCLAIM DEED, DOCUMENT NO. 2008-2253 OF OFFICIAL RECORDS, GLENN COUNTY OFFICE OF THE RECORDER

(R2) RECORD DATA PER LOT LINE ADJUSTMENT DEED, DOCUMENT NO. 2012-2828 OF OFFICIAL RECORDS, GLENN COUNTY OFFICE OF THE RECORDER

(R3) RECORD DATA PER RECORD OF SURVEY RECORDED IN BOOK 14 OF MAPS AND SURVEYS PAGES 70-71 IN THE GLENN COUNTY OFFICE OF THE RECORDER

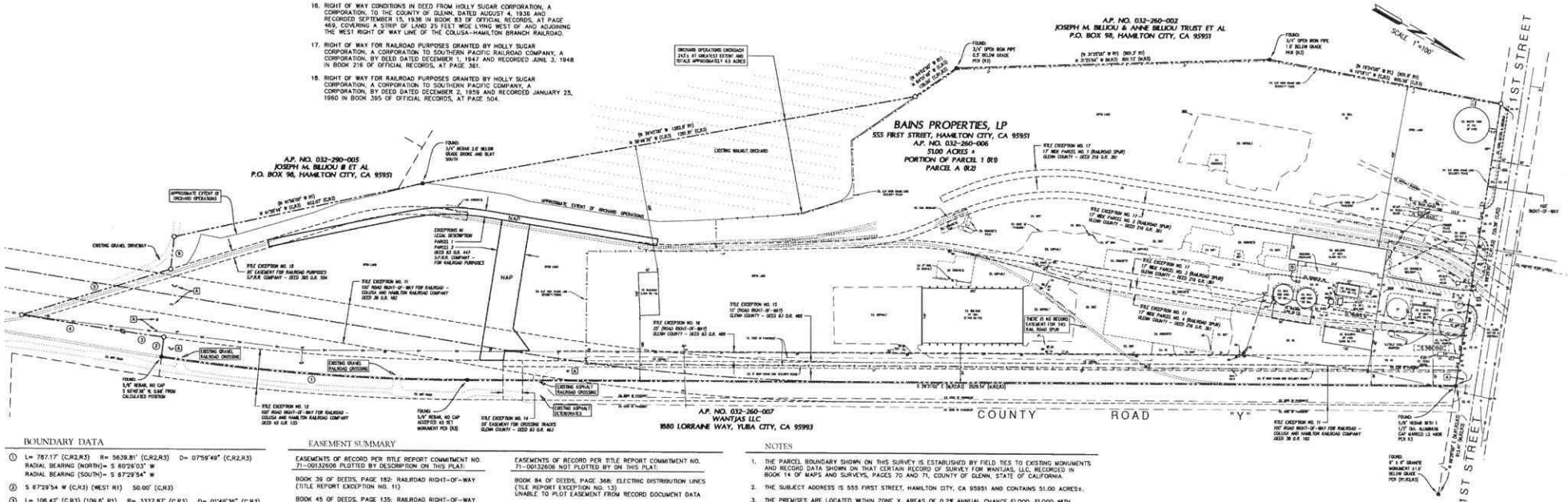
LEGEND

EXISTING BOUNDARY LINE	EXISTING IRRIGATION CONTROL VALVE
EXISTING CENTERLINE EASEMENT	EXISTING JOINT UTILITY POLE
EXISTING EASEMENT	EXISTING LIGHT POLE
EXISTING PROPERTY LINE	EXISTING LIQUID PROPANE GAS TANK
EXISTING RAILROAD SPUR RAIL	EXISTING MONITOR WELL
EXISTING EDGE OF CONCRETE	EXISTING POLE ANCHOR
EXISTING EDGE OF PAVEMENT	EXISTING POWER POLE
EXISTING ORCHARD ROWS	EXISTING RAIL ROAD CROSSING SIGN POST
EXISTING LIMIT OF ORCHARD OPERATIONS	EXISTING STORM DRAIN
EXISTING EDGE OF DIRT OR GRAVEL ROAD	EXISTING STORM DRAIN CATCH BASIN
EXISTING 6-7' HIGH CHAIN LINK SECURITY FENCE	EXISTING STORM DRAIN DROP INLET
EXISTING SANITARY SEWER	EXISTING STREET LIGHT
EXISTING OVERHEAD UTILITY LINES	EXISTING SIGN POST
EXISTING WATER LINE	EXISTING UTILITY VAULT
EXISTING ASPHALT CONCRETE	EXISTING VALLEY GUTTER
EXISTING CONCRETE	EXISTING WATER BACK FLOW PREVENTER
EXISTING UNDERGROUND CONCRETE STRUCTURE WITH HAND RAIL	EXISTING WATER METER
EXISTING CONIFER TREE	EXISTING WATER SHUT-OFF VALVE
EXISTING ELECTRIC DROP POLE	EXISTING WATER TANDER FIXED REACH LOADER
EXISTING DRIVEWAY	FOUND MONUMENT AS NOTED
EXISTING ELECTRIC VAULT	SET 5/8" REBAR AND PLASTIC CAP MARKED LS 8043
EXISTING FIRE HYDRANT	CALCULATED POINT, NO MONUMENT FOUND OR SET
EXISTING FLAG POLE	(C) CALCULATED
EXISTING FIRE HOSE BIB	(M) MEASURED
EXISTING GATE POST	( ) RECORD REFERENCE
EXISTING GUY WIRE	NAP NOT A PART



LOCATION MAP

NO SCALE



BOUNDARY DATA

① L= 787.17' (C,R2,R3) R= 5639.81' (C,R2,R3) D= 07°59'49" (C,R2,R3)
RADIAL BEARING (NORTH)= S 60°26'03" W
RADIAL BEARING (SOUTH)= S 67°29'54" W

② S 67°29'54 W (C,R3) (WEST R1) 50.00' (C,R3)

③ L= 106.42' (C,R3) (109.6' R1) R= 3337.87' (C,R3) D= 01°49'36" (C,R3)
RADIAL BEARING (NORTH)= S 67°29'54" W
RADIAL BEARING (SOUTH)= S 69°18'30" W

④ S 20°40'30 E (C,R1,R3) 262.80' (C,R1,R3)

⑤ N 46°36'00 W (C,R1,R3) 400.27' (C,R3) (403.7' R1)

⑥ S 69°17'00 W (C,R1,R3) 63.49' (C,R3) (81.6' R1)

IMPROVEMENT DESCRIPTION

Ⓐ ABANDONED CONCRETE STORM DRAIN CROSSING HEADWALLS

Ⓑ EXISTING CATWALK 22.7' TO 23.7' CLEARANCE

EASEMENT SUMMARY

EASEMENTS OF RECORD PER TITLE REPORT COMMITMENT NO. 71-00132606 PLOTTED BY DESCRIPTION ON THIS PLAT:

BOOK 39 OF DEEDS, PAGE 182: RAILROAD RIGHT-OF-WAY (TITLE REPORT EXCEPTION NO. 11)

BOOK 45 OF DEEDS, PAGE 135: RAILROAD RIGHT-OF-WAY (TITLE REPORT EXCEPTION NO. 12)

BOOK 83 OF OFFICIAL RECORDS, PAGE 463: RAILROAD TRACK CROSSING (TITLE REPORT EXCEPTION NO. 14)

BOOK 83 OF OFFICIAL RECORDS, PAGE 466: HIGHWAY EASEMENT (TITLE REPORT EXCEPTION NO. 15)

BOOK 83 OF OFFICIAL RECORDS, PAGE 469: HIGHWAY EASEMENT (TITLE REPORT EXCEPTION NO. 18)

BOOK 216 OF OFFICIAL RECORDS, PAGE 361: RAILROAD SPURS (TITLE REPORT EXCEPTION NO. 17)

BOOK 395 OF OFFICIAL RECORDS, PAGE 504: RAILROAD RIGHT-OF-WAY (TITLE REPORT EXCEPTION NO. 18)

EASEMENTS OF RECORD PER TITLE REPORT COMMITMENT NO. 71-00132606 NOT PLOTTED BY ON THIS PLAT:

BOOK 84 OF DEEDS, PAGE 268: ELECTRIC DISTRIBUTION LINES (TITLE REPORT EXCEPTION NO. 13)
UNABLE TO PLOT EASEMENT FROM RECORD DOCUMENT DATA

THE EASEMENTS HEREIN LISTED, EXCEPT FOR THE EASEMENT RECORDED IN BOOK 395, PAGE 504, HAVE THE FOLLOWING PARAGRAPH:
"THE AFORESAID CONVEYANCE IS MADE UPON THE FOLLOWING EXPRESS CONDITION: THAT THE LAND HEREIN CONVEYED IS TO BE USED ONLY FOR RAILROAD/ROAD PURPOSES AND IF THE PARTY OF THE SECOND PART AT ANY TIME CEASES, FOR THE PERIOD OF ONE YEAR, TO USE IT FOR SUCH PURPOSES, THEN THE TITLE HEREIN CONVEYED SHALL REVERT TO THE FIRST PARTY, AS IF THE GRANT HAD NEVER BEEN MADE."

NOTES

1. THE PARCEL BOUNDARY SHOWN ON THIS SURVEY IS ESTABLISHED BY FIELD TIES TO EXISTING MONUMENTS AND RECORD DATA SHOWN ON THAT CERTAIN RECORD OF SURVEY FOR WANTJAS, LLC, RECORDED IN BOOK 14 OF MAPS AND SURVEYS, PAGES 70 AND 71, COUNTY OF GLENN, STATE OF CALIFORNIA.
2. THE SUBJECT ADDRESS IS 555 FIRST STREET, HAMILTON CITY, CA 95951 AND CONTAINS 51.00 ACRES±.
3. THE PREMISES ARE LOCATED WITHIN ZONE X, AREAS OF 0.2% ANNUAL CHANCE FLOOD; FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD. CONDITION IS SHOWN ON FEDERAL FLOOD INSURANCE RATE MAP, COMMUNITY: GLENN COUNTY, COMMUNITY NUMBER 060057, PANEL NUMBER 0425, SUFFIX D, MAP NUMBER 06021C0425D.
4. THERE ARE 13 EXISTING REGULAR PARKING SPACES ON THE PROPERTY.
5. THERE IS A 6 FOOT TALL CHAIN LINK FENCE WITH SECURITY BARB WIRE ATTACHED TO ITS TOP AROUND 32.58 ACRES OF THE NORTH PORTION OF THE SUBJECT PROPERTY. THE FENCE HAS MULTIPLE LOCKED OR LOCKABLE GATES AS SHOWN HEREON.
6. THERE IS ONE PAVED AND TWO GRAVEL RAIL ROAD CROSSINGS ACCESSING THE SUBJECT PROPERTY ALONG THE EAST SIDE THAT EITHER DON'T HAVE OR DON'T FALL WITHIN AN EXISTING ACCESS EASEMENT.
7. AN ORCHARD BEING A PART OF THE ADJOINING PROPERTY TO THE WEST ENCROACHES UP TO 243'± AND OCCUPIES 4.5 ACRES± OF THE SUBJECT PROPERTY.
8. THE BUILDING SETBACK FOR THE SUBJECT PARCEL IS 0.00' ON ALL SIDES PER E-MAIL DATED FEBRUARY 21, 2017 FROM HEATHER WARD, ASSISTANT PLANNER, GLENN COUNTY PLANNING AND PUBLIC WORKS AGENCY.
9. THERE WAS NO EVIDENCE OBSERVED OF RECENT EARTH MOVING WORK, BUILDING CONSTRUCTION OR BUILDING ADDITIONS.
10. TITLE REPORT PREPARED BY TIMOS TITLE AND ESCROW, COMMITMENT NUMBER 71-00132606, DATED JANUARY 17, 2017.
11. WITH REGARD TO TABLE A, ITEM 11, SOURCE INFORMATION FROM PLANS AND MARKINGS WILL BE COMBINED WITH OBSERVED EVIDENCE OF UTILITIES PURSUANT TO SECTION 5.E.iv. TO DEVELOP A VIEW OF THE UNDERGROUND UTILITIES. HOWEVER, LACKING EXCAVATION, THE EXACT LOCATION OF UNDERGROUND FEATURES CANNOT BE ACCURATELY, COMPLETELY AND RELIABLY DEPICTED.
12. TITLE EXCEPTION NO. 13 REFERS TO A BLUE-PRINT MAP MARKED EXHIBIT "A" DELINEATING THE LOCATION OF THE EASEMENT FOR THE BENEFIT OF PACIFIC GAS AND ELECTRIC COMPANY. THE COPY OF SAID EXHIBIT "A" SUPPLIED TO ROLLS, ANDERSON AND ROLLS IS NOT LEGIBLE AND IS THEREFOR NOT SHOWN.

SURVEY CERTIFICATION

TO CROP PRODUCTION SERVICES, A DELAWARE CORPORATION:

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2016 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1, 2, 3, 4, 6B, 7A, 7B1, 8, 9, 11, 13, 14, 16, 19, 21A, OF TABLE A THEREOF.
THE FIELDWORK WAS COMPLETED ON FEBRUARY 2, 2017.

LICENSED LAND SURVEYOR HERBERT L. VOTAW No. 8043 State of California

PRELIMINARY

HERBERT L. VOTAW
LICENSED LAND SURVEYOR
REGISTRATION NO. PLS 8043

DATE: _____

GRAPHIC SCALE

100 0 50 100 200

(IN FEET)
1 inch = 100 ft.

ALTA/NSPS Land Title Survey

A SURVEY OF PARCEL "A" AS DESCRIBED IN THAT CERTAIN LOT LINE ADJUSTMENT 2012-002 RECORDED JUNE 28, 2012 UNDER OFFICIAL RECORDS 2012-2828, AND SHOWN ON THAT CERTAIN RECORD OF SURVEY RECORDED IN BOOK 14 OF MAPS AND SURVEYS, PAGES 70 AND 71 BEING A PORTION OF THE CAPAY RANCHO

GLENN COUNTY, CALIFORNIA

FOR

CROP PRODUCTION SERVICES
A DELAWARE CORPORATION

PREPARED BY:

RAR
ROLLS ANDERSON & ROLLS
CIVIL ENGINEERS
76 YELLOWSTONE DRIVE - CHICO, CALIFORNIA 95973-8911
TELEPHONE 530 895 1422

MARCH 1, 2017 JOB NO. 18161 SHEET 1 OF 1

Appendix K (Site Plan Drawings)

SITE DATA

1. ASSESSOR'S PARCEL NUMBER: 032-260-006
2. SITE ADDRESS: 555 FIRST AVENUE; HAMILTON CITY, CA 95951
3. PARCEL AREA = 51.0 ACRES ±
4. AN EXISTING 6-FOOT TALL CHAIN LINK FENCE WITH BARBED WIRE ON TOP IS LOCATED AROUND THE ENTIRE SITE. DAMAGED FENCING IS PROPOSED TO BE REPLACED.
5. BASED ON INFORMATION FROM THE HAMILTON CITY COMMUNITY SERVICES DISTRICT, SANITARY SEWER IS PROVIDED TO THE SITE VIA A 6-INCH DIAMETER PIPE FROM WALSH AVENUE. AN ONSITE WASTEWATER DISPOSAL SYSTEM IS PROPOSED TO SERVE THE PROPOSED MIXING BUILDING. THE LOCATION OF ONSITE SANITARY SEWER PIPING IS UNKNOWN.
6. DOMESTIC WATER IS PROVIDED TO THE SITE FROM CALIFORNIA WATER SERVICE COMPANY. FIRE PROTECTION FOR THE SITE WAS PROVIDED BY AN ONSITE SYSTEM OF WELLS AND FIRE HYDRANTS. THE EXISTING ONSITE DOMESTIC WATER PIPING IS PROPOSED TO BE REPLACED. THE EXISTING FIRE WATER SYSTEM IS PROPOSED TO BE REPLACED WITH NEW WATER MAINS AND FIRE HYDRANTS CONNECTED TO THE CALIFORNIA WATER SERVICE COMPANY SYSTEM. ALL EXISTING WELLS ON THE SITE ARE PROPOSED TO BE REMOVED AND ABANDONED PER COUNTY REQUIREMENTS.
7. BASED ON INFORMATION FROM THE COUNTY, THERE ARE NO KNOW SEPTIC TANKS OR LEACH LINES LOCATED AT THE SITE.
8. EXISTING STORM DRAIN CATCH BASINS WERE LOCATED ONSITE BETWEEN THE PROPOSED PACKAGE WAREHOUSE AND OFFICE BUILDING. NO OTHER STORM DRAIN INFRASTRUCTURE WAS LOCATED AT THE SITE. NO STORM DRAIN IMPROVEMENTS ARE PROPOSED IN AREAS WHERE THE PROPOSED SITE WORK DOES NOT INCREASE THE EXISTING QUANTITY OF IMPERVIOUS AREA. ANY SITE WORK THAT DOES INCREASE THE EXISTING QUANTITY OF IMPERVIOUS AREAS WILL UTILIZE LEACH TRENCHES SIZED FOR THE 10-YEAR STORM EVENT.
9. THIRTEEN EXISTING PARKING STALLS ARE LOCATED ADJACENT TO THE OFFICE BUILDING ON ASPHALT CONCRETE. TEN 22-FOOT LONG PARKING SPACES ARE LOCATED ALONG 1ST STREET WEST OF THE WESTERN DRIVEWAY. THE PARKING IS PROPOSED TO REMAIN WITH THE ADDITION OF AN ONSITE ACCESSIBLE PARKING STALL.
10. NO MODIFICATIONS TO THE ONSITE LIGHTING IS PROPOSED.
11. LAND USES ADJACENT TO THE SITE CONSIST OF AGRICULTURE TO THE WEST, SOUTH AND EAST, INDUSTRIAL TO THE NORTH AND RESIDENTIAL TO THE NORTHWEST AND NORTHEAST.
12. SEVENTEEN RESIDENTIAL LOTS ARE LOCATED WITHIN 500 FEET OF THE SITE.
13. THERE ARE NO KNOWN HAZARDOUS MATERIALS OR CHEMICAL STORAGE FACILITIES LOCATED AT THE SITE.
14. BASED ON FEMA FIRM PANEL 06021C0425D, THE SITE IS LOCATED WITHIN ZONE X – AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE OF FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD.
15. ALL PROPOSED CHEMICAL STORAGE WOULD OCCUR WITHIN EXISTING STRUCTURES OR IN THE PROPOSED ABOVE GROUND STEEL BULK TANK.
16. THREE MATURE TREES ARE LOCATED AROUND THE OFFICE BUILDING THAT ARE NOT PROPOSED TO BE REMOVED. MATURE TREES LOCATED ALONG THE SITE BOUNDARY ARE NOT PROPOSED TO BE REMOVED.
17. THERE ARE NO RESERVOIRS, RIVERS, CREEKS, PONDS OR IRRIGATION CANALS LOCATED AT THE SITE.
18. THERE ARE NO ROCK OUTCROPPINGS LOCATED AT THE SITE.
19. PROPOSED FIRE HYDRANT LOCATIONS WERE DETERMINED DURING A MEETING WITH THE HAMILTON CITY FIRE DEPARTMENT ON 2-13-17.

APPLICANT

GINNO CONSTRUCTION, INC.
ATTN: BRYAN GINNO
297 CONVAIR AVE., STE. 2
CHICO, CA 95973
(530) 894-6859

PROPERTY OWNER

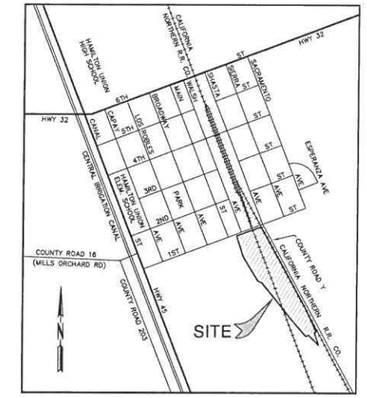
CROP PRODUCTION SERVICES, INC.
ATTN: G. REY REINHARDT
3005 ROCKY MOUNTAIN AVENUE
LOVELAND, CO 80538
(970) 685-3300

ENGINEER

ROLLS, ANDERSON & ROLLS
ATTN: KEITH DOGLIO
R.C.E. 66358
115 YELLOWSTONE DRIVE
CHICO, CA 95973
(530) 895-1422

LEGEND

- EXISTING PROPERTY LINE
- PROPOSED FIRE WATER MAIN
- EXISTING SANITARY SEWER
- EXISTING RAILROAD SPUR RAIL
- EXISTING EDGE OF CONCRETE
- EXISTING EDGE OF PAVEMENT
- EXISTING FENCE
- EXISTING OVERHEAD UTILITY LINES
- EXISTING JOINT UTILITY POLE
- EXISTING DRIVEWAY
- EXISTING BUILDING TO BE DEMOLISHED
- EXISTING 5' GROUND CONTOUR (ASSUMED DATUM)
- EXISTING 1' GROUND CONTOUR (ASSUMED DATUM)
- EXISTING DIRECTION OF GROUND
- PROPOSED FIRE HYDRANT LOCATION

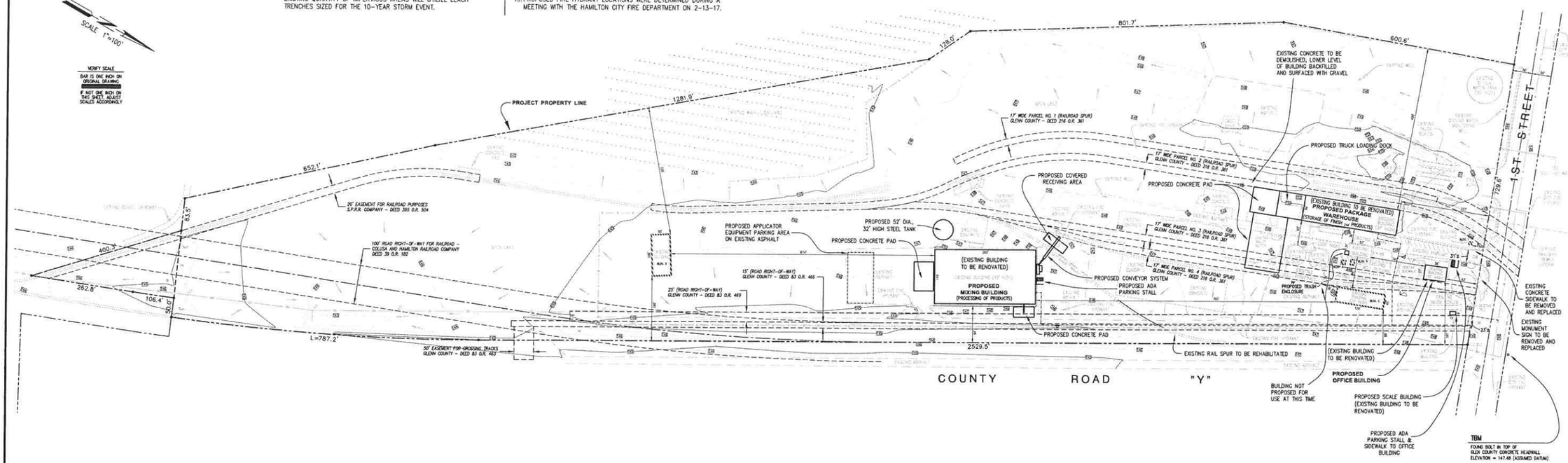


LOCATION MAP

NO SCALE

SCALE 1"=100'

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY



COUNTY OF GLENN

USE PERMIT SITE PLAN

FOR

CROP PRODUCTION SERVICES

HOLLY SUGAR PLANT SITE

HAMILTON CITY

RAR
ROLLS ANDERSON & ROLLS
CIVIL ENGINEERS
115 YELLOWSTONE DRIVE - CHICO, CALIFORNIA 95973-5811
TELEPHONE 530-895-1422

FEBRUARY 13, 2017 | 16161 | SHEET 1 OF 1

JULY 20, 2017

HOLLY SUGAR PLANT
LIME REMOVAL PROJECT

APN: 032-260-006

START DATE: June 21, 2017
COMPLETION DATE: July 10, 2017

PRESENTED BY: TJC DEMOLITION AND DEVELOPMENT / DRAGON DEMOLIION

536 W 12TH AVE, CHICO, CA 95926
THOMAS CARPENTER: (530) 514-7999
CALIFORNIA STATE LICENSE BOARD NUMBER: 763896
LICENSE CLASIFICATION: A, C-12, C-21, HAZMAT, ASBESTOS

HOLLY SUGAR PLANT LIME REMOVAL PROJECT

PROJECT COMMUNICATION DOCUMENTS

The following documents are attached to this report for reference regarding this project

PROJECT COMMUNICATION TABLE

Document	Recipients
California Regional Water Quality Control Board Order No. 5-00-184	Mr. Jaswant Bains, Wantjas, LLC, Yuba City Crop Production Services, Inc. Ginnos Construction TJC Demolition and Development / Dragon Demolition
Origional Lime Map **Remnant PCC in 2014 – Designates original piles needed for removal (includes some PCC previously removed)**	Mr. Jaswant Bains, Wantjas, LLC, Yuba City Crop Production Services, Inc. Ginno Construction Inc. TJC Demolition and Development / Dragon Demolition
TJC Demolition and Development Project Scope for Lime Removal	Ginno Construction, Inc. Crop Production Services, Inc. California Water Board /Waste Discharge Requirements Unit – George Low, P.G.
Letter of agreement from Schill Farms to accept the Lime	TJC Demolition and Development / Dragon Demolition Ginno Construction, Inc. Crop Production Services, Inc. California Water Board /Waste Discharge Requirements Unit – George Low, P.G.
Central Valley Regional Water Quality Control Board WDID: 5A112000001 Review of Waste Disposal Plan	Mr. Jaswant Bains, Wantjas, LLC, Yuba City Mr. James Gribi, Gribi Associates, Benicia Crop Production Services, Inc. Ginno Construction Inc. TJC Demolition and Development / Dragon Demolition
Tuck Logs & Tags	Ginno Construction Inc. Crop Production Services, Inc. California Water Board /Waste Discharge Requirements Unit – George Low, P.G.

CONTRACT

Ginno Construction Inc. was hired by Crop Production Services, Inc. to oversee this project as the General Contractor. TJC Demolition and Development (company name has changed to Dragon Demolition during this project) was hired by Ginno Construction Inc., as a subcontractor, to remove and haul all specified Lime, per the report, map and site walk provided by the California Water Board, Waste Discharge Requirement Unit – George Low, P.G.

SITE WALK THROUGHS – CALIFORNIA WATER BOARD

- Initial site walk through conducted by CWB/WDRU - George Low, P.G. – February 7, 2017
- Site Inspection Conducted by CWB/WDRU - George Low, P.G. – July 6, 2017
- Final Site Inspection Conducted CWB/WDRU - George Low, P.G. – July 14, 2017

LIME SITE ORIGION

Holly Sugar Plant – 555 W 1st Street, Hamilton City, CA 95951

LIME SITE DESTINATION

Schill Farm – 14693 Hamilton Nord Cana Hwy., Chico, CA

Owner – Kurt Schill – (530) 514-7530

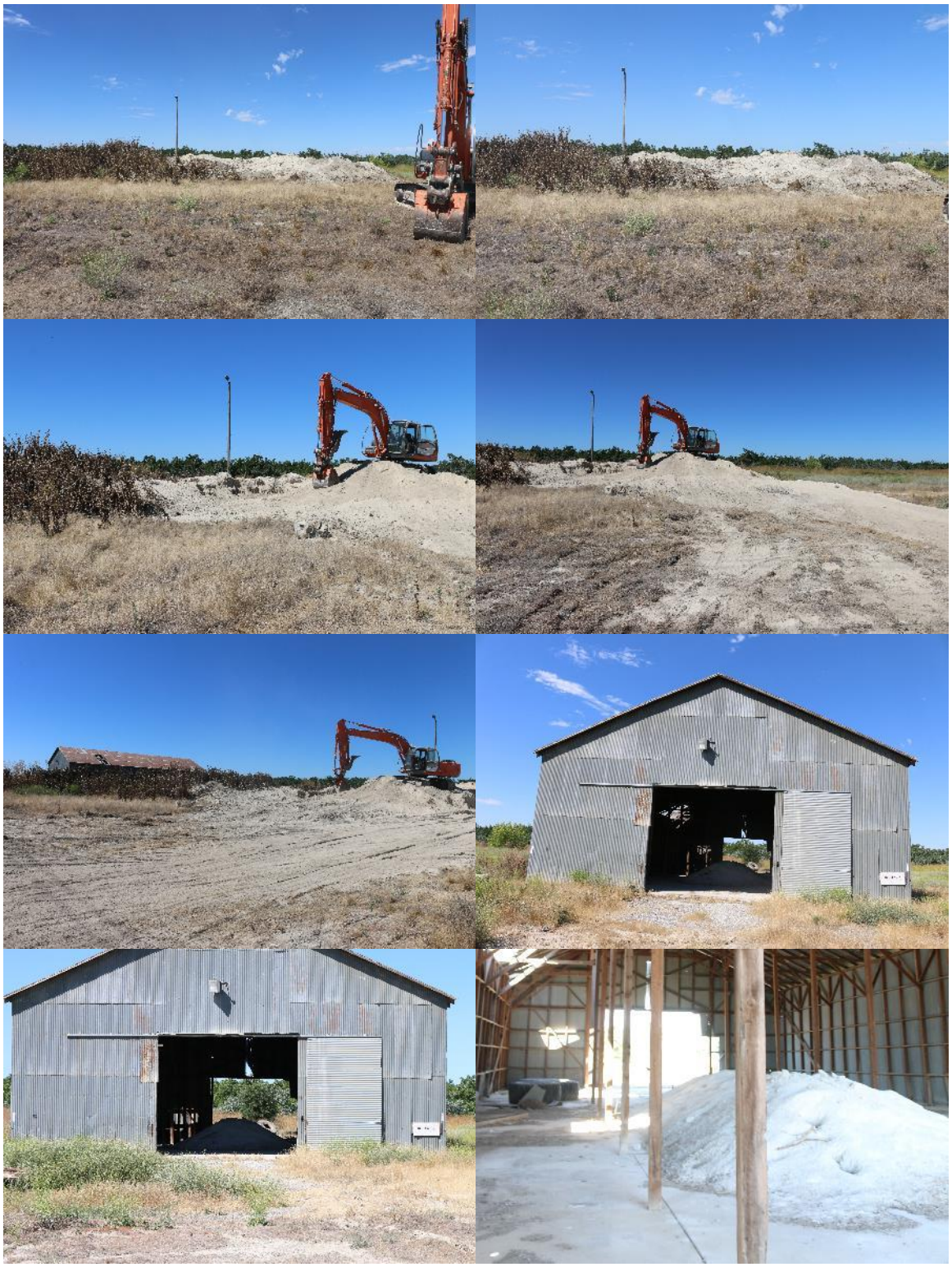
*Lime to be used for agricultural purposes.

Date	Loads Hauled from Holly Sugar Plant to Schill Farm	Approximate Tons
6/21/17	10	350
6/23/17	10	350
6/26/17	9	360
6/27/17	13	520
6/28/17	14	560
6/29/17	13	520
6/30/17	7	280
7/5/17	8	320
7/6/17	7	280
7/7/17	8	320
7/8/17	6	240
7/10/17	6	240
Totals:	**111 Loads**	**4,340 tons (approximately)**

CONCLUSION

All lime containing material was removed per the approved Work Plan. Representatives from the Water Board conducted site inspections during and after removal activities to confirm lime removal was complete. The completion of this work should satisfy the requirements contained in the Water Board Order for the Crop Production Service owned property, and no further action is necessary.

LIME SITE ORIGION PHOTOS – 555 W 1ST STREET, HAMILTON CITY, CA



LIME SITE DESTINATION PHOTOS – 14693 HAMILTON NORD CANA HIGHWAY, CHICO, CA

Appendix D (all materials to be stored at the site)

As discussed in greater detail in Appendix A, below is a list of possible products that may be stored at the site. Please note that not all of these products would be stored at the site at any given time. Nor would the maximum quantities of all products be stored at the site on a regular basis. Rather, the exact mix of products and quantities of those products to be stored at the site will vary greatly over time depending on the needs of CPS customers. Although it is rare that the maximum quantities listed below would actually be stored at the site for any significant period of time, if at all, CPS has nevertheless chosen to list maximum quantities rather than average quantities in order to show what could potentially be on the site for a particular product during peak storage times. In reality, CPS would typically have on site just a fraction of the total products listed below in quantities well below the maximum storage quantities.

Hamilton City, CA

Projected Stock Items - Bulk Fertilizer Items

Product	Product Description	State	Maxmimum Amount Stored	Hazardous, Corrossive, or Flammable
00-00-00-90(S) Tiger 90	Prilled basic Sulfur	Dry	3000 tons	
00-00-25-17(S) KTS	Potassium Thiosulfate	Liquid	30,000 gallons	
00-00-50 SOP Ag Gran	Sulfate of Potash	Dry	3000 tons	
00-00-60 MOP Gr	Muriate of Potash	Dry	3000 tons	
10-34-0 Liq (Green)	Ammonium Phosphate	Liquid	30,000 gallons	
11-52-00 MAP	Monoammonium Phosphate	Dry	3000 tons	
12-00-00-26(S) ATS	Ammonium Thiosulfate	Liquid	30,000 gallons	
17-0-0 (CAN 17% Sol)	Calcium Ammonium Nitrate	Liquid	30,000 gallons	
46-0-0 Prilled Urea	Urea	Dry	3000 tons	
9-0-0 CN Liq	Calcium Nitrate	Liquid	30,000 gallons	
Aqua Ammonia 24-0-0	Aqua Ammonia	Liquid	120,0000 gallons	Corrosive
Bio Humic Acid 6%	Humic Acid	Liquid	30,000 gallons	
Calcium Thiosulfate (Thiocal)	Calcium Thiosulfate	Liquid	30,000 gallons	
Zinc Sulf 12% Liq	Zinc Sulfate	Liquid	12,000 gallons	
32-0-0 UAN	Urea Ammonium Nitrate	Liquid	500,000 gallons	
N-Phuric 15-0-0 49(S)	Urea / Sulfuric acid (1:1) ratio	Liquid	12,000 gallons	
0-68-0	Phosphoric Acid	Liquid	12,000 gallons	Corrosive
22-0-0	Solublized Urea	Liquid	30,000 gallons	
Accelerate	refer to MSDS	Liquid	30,000 gallons	
Riser	refer to MSDS	Liquid	30,000 gallons	
Accomplish	refer to MSDS	Liquid	30,000 gallons	
9-0-1 7% Zinc		Liquid	30,000 gallons	
Hot Water	Boiler/Heater Insulated Tank	Liquid	12,000 gallons	
21-0-0-24s	Ammonium Sulfate	Dry	3000 tons	
Dolomite Ag 7	Dry Filler	Dry	2000 tons	
ESN 44-0-0	ESN	Dry	1000 tons	
0-0-62 Sol	Soluble Muriate of Potash	Dry	3000 tons	
Stanchion(7-21-0)	Stanchion	Liquid	12,000 gallons	

Appendix E (MSDS Sheets for all hazardous and flammable materials)

Hamilton City, CA

Projected Stock Items - Packaged Fertilizers

SKU Item Description	Unit of Measure	Pack Size	Maximum Stocking Level	Hazardous	Flammable
0-0-52 SOP SOLUBLE FINE 2000#	lbs	1 X 2000	12,000		
FOLIAR PRIDE 7-14-8 5GA	gals	1 X 5	180		
ZINC SULFATE POWDER 35.5% 50LB	lbs	1 X 50	24,000		
ZINC SULFATE MAXIMO 362 50LB	lbs	1 X 50	24,000		
4-0-0 MICRO-PLEX ZN-FE-MN 275GA	gals	1 X 275	2,750		
0-0-50 ULTRA FINES DIAMOND K 50LB	gals	1 X 50	15,000		
BIOMIN CAL-BORO 5 GA	gals	1 X 5	900		
LOKOMOTIVE 2-0-25 2X2.5GA	gals	2 X 2.5	1,800		
0-0-0 QMIN ZINC 7.5% 2X2.5GA	gals	2 X 2.5	1,800		
MAXIMUM N-PACT 24-0-0 2X2.5GA	gals	2 X 2.5	1,800		
9-0-1 PLUS 7% ZINC GOLD'N GRO 5GA	gals	1 X 5	1,800		
3.5-0-0 QMIN MAGNESIUM 3.0% 2X2.5GA	gals	2 X 2.5	1,800		
FUSION 360 INTEG CA-O 2.5 GA	gals	2 X 2.5	1,800		
15-15-15 YARAMILA 50LB	lbs	1 X 50	12,000		
ZINC SULFATE MAXIMO 360 50LB	lbs	1 X 50	12,000		
3-12-3 PHOCON ACTAGRO 5 GA	gals	1 X 5	1,800		
8-32-4 SYNERGIZER 2X2.5GA	gals	2 X 2.5	900		
21-0-0-24S AMSUL 50#	lbs	1 X 50	12,000		
0-0-0 QMIN MANGANESE 5.5% 2X2.5GA	gals	2 X 2.5	900		
BIOMIN ZINC 2.5 GA	gals	2 X 2.5	900		
NUTRISYNC SULFUR 6-0-0 2X2.5GA	gals	2 X 2.5	1,800		
BRANDT SEQUESTAR 4.5 FE HEDTA 2X2.5GA	gals	2 X 2.5	900		
BRANDT 20-20-20 MICRO 25LB	gals	1 X 25	12,000		
6-3-2 TRUE ORGANIC 2000LB	lbs	1 X 2000	20,000		
4-0-0 MICRO-PLEX ZN-FE-MN 5GA	gals	1 X 5	1,800		
13.75-0-46 P/N GG CR CH 50LB	lbs	1 X 50	24,000		
9-0-0 CALMAX TREE/VINE 2X2.5GA	gals	2 X 2.5	1,800		
SIAPTON 10-0-0 2X2.5GA	gals	2 X 2.5	900		
HUMAX 5GA	gals	1 X 5	900		
SOLUBOR 20.5% PWD 50#	lbs	1 X 50	12,000		
1-0-5 ACADIAN ORGANIC LIQ SEAWEED 2.5GA	gals	1 X 2.5	3,600		
NUTRISYNC BORON 2X2.5GA	gals	2 X 2.5	1,800		
MAXIMUM N-PACT 24-0-0 275GA	gals	1 X 275	2,750		
BLACK JACK ZN 265GA	gals	1 X 265	2,650		
PHOSGARD 0-28-25 2.5 GA	gals	2 X 2.5	1,800		
10-12-0 FOLIAR NUTRIENT 5GA	gals	1 X 5	900		
ACADIAN LIQ SEAWEED .1-0-5 2.5GA	gals	1 X 2.5	1,800		
ZINC BASIC MICRO 52% 25#	lbs	1 X 25	2,500		
NUTRISYNC ZINC 2X2.5GA	gals	2 X 2.5	1,800		
QUICK ULTRA+AWAKEN 2X2.5GA	gals	2 X 2.5	1,800		
FUSION 360 FOLIAR-O 0-0-1 2X2.5GA	gals	2 X 2.5	1,800		

Hamilton City, CA

Projected Stock Items - Chemistry

SKU Item Description	Base UOM	Manufacturer Vendor	Ingredient Name	Maximum Stocking Level	Hazardous	Flammable	Bulk Item
INTREPID 2F 4X1GA	GA	DOW AGROSCIENCES	METHOXYFENOZIDE	1,800			
GALIGAN 2E 2X2.5GA	GA	ADAMA	OXYFLUORFEN	180	X	X	
QUADRIS TOP 2X2.5GA	GA	SYNGENTA	AZOXYSTROBIN	1,800			
SURFLAN AS 2X2.5GA	GA	UNITED PHOSPHORUS, INC	ORYZALIN	1,800	X		
CENTAUR WDG 6X4.32LB	LB	NICHINO AMERICA INC	BUPROFEZIN	180	X		
ESTEEM ANT BAIT 25LB	LB	VALENT USA CORPORATION	PYRIPROXYFEN	5,000			
ORTHENE TT&O 97 SPRAY 12X1CN (EA=.773LB)	CN	AMVAC CHEMICAL CORPORATION	ACEPHATE	100			
MYCOSHIELD 10X2LB	LB	NUFARM AMERICAS INC	OXYTETRACYCLINE	500			
AXIAL XL 2X2.56GA	GA	SYNGENTA	PINOXADEN	180		X	
GRANITE GR 45LB (CA)	LB	DOW AGROSCIENCES	PENOXSULAM	5,000	X		
TRELLIS 6X4X1LB	LB	DOW AGROSCIENCES	ISOXABEN	200	X		
FONTELIS 2X2.5GA	GA	DUPONT	PENTHIOPYRAD	1,800			
FUSILADE DX 4X1GA	GA	SYNGENTA	FLUAZIFOP	360			
SIVANTO 200 SL 4X1GA	GA	BAYER CROPSCIENCE LP	FLUPYRADIFURONE	180	X		
AZAGUARD 2X1GA	GA	BIOSAFE SYSTEMS LLC	AZADIRACHTIN	180			
TRILOGY 2X2.5GA	GA	CERTIS USA LLC	NEEM OIL	360			
COMITE 2X2.5GA	GA	CHEMTURA CORPORATION	PROPARGITE	360		X	
LI 700 LECITECH 2X2.5GA	GA	LOVELAND PRODUCTS INC	LECITHIN	360			
GARLON 3A 2X2.5GA	GA	DOW AGROSCIENCES	TRICLOPYR	180	X	X	
SHARK EW 6X1QT	QT	FMC CORP	CARFENTRAZONE	400	X		
DELEGATE WG 6X26OZ	OZ	DOW AGROSCIENCES	SPINETORAM	5,000	X		
MAD DOG 5.4# 2X2.5GA	GA	LOVELAND PRODUCTS INC	GLYPHOSATE	5,000			
MATRIX SG 12X20OZ	OZ	E I DUPONT DE NEMOURS & CO	RIMSULFURON	10,000			
KANEMITE 15 SC 4X124OZ	OZ	ARYSTA LIFESCIENCE NA CORP	ACEQUINOCYL	1,000	X		
GARLON 4 ULTRA 2X2.5GA	GA	DOW AGROSCIENCES	BUTOXYETHYL TRICLOPYR	180	X		
NU FILM P 4X1GA (90930)	GA	MILLER CHEMICAL & FERTILIZER	POLY-1-P-MENTHENE	144			
VERIMARK 4X80OZ	OZ	DUPONT	CYANTRANILIPROLE	4,200			
SATELLITE HYDROCAP 2X2.5GA	GA	UNITED PHOSPHORUS, INC	PENDIMETHALIN	900	X		
PARAZONE 3SL 265GA	GA	ADAMA	PARAQUAT DICHLORIDE	540	X		
QUADRIS 2X2.5GA	GA	SYNGENTA	AZOXYSTROBIN	1,800			
ROUNDUP POWERMAX 265GA CUBE	GA	MONSANTO	GLYPHOSATE	7,420			
ROUNDUP POWERMAX BULK	GA	MONSANTO	GLYPHOSATE	5,000			X
NU FILM P 4X1GA	GA	MILLER CHEMICAL & FERTILIZER	POLY-1-P-MENTHENE	180			
WEATHER GARD COMPLETE 2X2.5GA	GA	LOVELAND PRODUCTS INC	LECITHIN	180			
SNIPER 4X1GA	GA	LOVELAND PRODUCTS INC	BIFENTHRIN	144	X		
ETHEPHON 2 2X2.5GA	GA	ARYSTA LIFESCIENCE NA CORP	ETHEPHON	900	X		
PROPANIL 80CHS 30LB	LB	WILLOWOOD USA, LLC	PROPANIL	12,000	X		
VANGARD WG 4X50OZ	OZ	SYNGENTA	CYPRODINIL	3,000		X	
DIAZINON AG500 2X2.5GA	GA	ADAMA	DIAZINON	540	X	X	
TEMPO SC ULTRA 6X1BT (BT=240ML)	BO	BAYER CROPSCIENCE LP	CYFLUTHRIN	56			
MAD DOG 5.4# 30GA	GA	LOVELAND PRODUCTS INC	GLYPHOSATE	900			
CHOICE WEATHER MASTER 275GA	GA	LOVELAND PRODUCTS INC	PHOSPHATE ESTER	275			
WARHAWK CLEARFORM 2X2.5GA	GA	LOVELAND PRODUCTS INC	CHLORPYRIFOS	900	X	X	
KARMEX DF 10X5LB	LB	ADAMA	DIURON	300	X		
MOVENTO SC 4X1GA	GA	BAYER CROPSCIENCE LP	SPIROTETRAMAT	180			
MAKAZE 2X2.5GA	GA	LOVELAND PRODUCTS INC	GLYPHOSATE	3,600			
MAKAZE BULK	GA	LOVELAND PRODUCTS INC	GLYPHOSATE	5,000			X
DEFOL 750 2X2.5GA	GA	DREXEL CHEMICAL COMPANY	SODIUM CHLORATE	360	X		
FRANCHISE 2X2.5GA	GA	LOVELAND PRODUCTS INC	LECITHIN	180			
SHARK H2O 4X2LB	LB	FMC CORP	CARFENTRAZONE	280			
ET 8X.5GA	GA	NICHINO AMERICA INC	PYRAFLUFEN ETHYL	190	X	X	
SULFUR DUST 98 YELLOWJACKT 50LB	LB	GEORGIA GULF SULFUR CORP	SULFUR	20,000			
WETTABLE YELLOW JACKET 50LB	LB	GEORGIA GULF SULFUR CORP	SULFUR	20,000			
ABOUND 2X2.5GA	GA	SYNGENTA	AZOXYSTROBIN	180			
DIURON 4L 2X2.5GA	GA	LOVELAND PRODUCTS INC	DIURON	900	X		
HELMQUAT 3SL 2X2.5GA	GA	HELM AGRO US INC	PARAQUAT DICHLORIDE	900	X		
BOLERO ULTRAMAX 50LB	LB	VALENT USA CORPORATION	THIOBENCARB	20,000	X		
GRAMOXONE SL 2.0 2X2.5GA	GA	SYNGENTA	PARAQUAT DICHLORIDE	3,600	X		
GRAMOXONE SL 2.0 BULK	GA	SYNGENTA	PARAQUAT DICHLORIDE	5,000	X		X
CHATEAU SW 4X2.5LB	LB	VALENT USA CORPORATION	FLUMIOXAZIN	2,000	X		
PROPANIL 4SC 30GA	GA	WILLOWOOD USA, LLC	PROPANIL	720	X		
ALTACOR (CA ONLY) 8X40OZ	OZ	DUPONT	CHLORANTRANILIPROLE	8,000			
TREEVIX 6X10OZ	OZ	BASF CORPORATION	SAFLUFENACIL	12,000			
PINDAR GT 2X2.5GA	GA	DOW AGROSCIENCES	OXYFLUORFEN	900			
CHOICE WEATHER MASTER 2X2.5GA	GA	LOVELAND PRODUCTS INC	PHOSPHATE ESTER	720			
GRANDSTAND CA 2X2.5GA	GA	DOW AGROSCIENCES	TRICLOPYR	360	X	X	
MANZATE PRO-STICK 8X6LB	LB	UNITED PHOSPHORUS, INC	MANCOZEB	24,000	X		
CAPTAN 80WDG 30LB	LB	ARYSTA LIFESCIENCE NA CORP	CAPTAN	2,400	X		
AGRI-MYCIN 17 10X2LB	LB	NUFARM AMERICAS INC	STREPTOMYCIN	2,000			
ORCHARD STAR 2X2.5GA	GA	ALBAUGH INC	2,4-D	1,800	X		
TRELLIS SC 2X2.5GA	GA	DOW AGROSCIENCES	ISOXABEN	900			
PFR-97 20% WDG 4X5LB	LB	CERTIS USA LLC	ISARIA FUMOSOROSEA	600			

Safety Data Sheet

Issue Date: 31-Jul-2008 **Revision Date:** 30-Oct-2015 **Version** 2

1. IDENTIFICATION

Product Identifier

Product Name **Galigan 2E**

Other means of identification

SDS # ADAMA-029

Registration Number(s) EPA Reg. No. 66222-28

UN/ID No UN3082

Recommended use of the chemical and restrictions on use

Recommended Use EPA registered pesticide.

Details of the supplier of the safety data sheet

Manufacturer Address

Makhteshim Agan of North America, Inc. (d/b/a ADAMA)
3120 Highwoods Blvd., Suite 100
Raleigh, NC 27604
1-919-256-9300

Emergency Telephone Number

Emergency Telephone (24 hr) For fire, spill and/or leak contact INFOTRAC:
1-800-535-5053 (North America) 1-352-323-3500 (International)
For medical emergencies and health/safety inquiries, contact PROSAR:
1-877-250-9291

2. HAZARDS IDENTIFICATION

This chemical is a product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-EPA registered chemicals. Please see Section 15 for additional EPA information.

Appearance Amber liquid **Physical State** Liquid **Odor** Aromatic Solvent like

Classification

Acute Toxicity – Inhalation (Dusts/Mists)	Category 4
Eye Damage/ Irritation	Category 2
Reproductive toxicity	Category 1B
Aspiration toxicity	Category 1
Flammable Liquids	Category 4

Signal Word

Danger

Hazard Statements

Harmful if inhaled
Causes serious eye irritation
May damage fertility or the unborn child
May be fatal if swallowed and enters airways

Combustible liquid

Precautionary Statements - Prevention
Avoid breathing dusts/mists
Use only outdoors or in a well-ventilated area
Wear eye/face protection
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Keep away from heat/sparks/open flames/hot surfaces. — No smoking

Precautionary Statements - Response
If exposed or concerned: Get medical advice/attention
IF INHALED: Remove person to fresh air and keep comfortable for breathing
Call a poison center/doctor if you feel unwell
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing.
If eye irritation persists: Get medical advice/attention
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
Do not induce vomiting
IN CASE OF FIRE: Use CO_2, dry chemical, or foam for extinction

Precautionary Statements - Storage
Store locked up
Store in a well-ventilated place. Keep cool

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Other Hazards
Toxic to aquatic life with long lasting effects

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No	Weight-%
Oxyfluorfen	42874-03-3	22.2
Proprietary Solvent	Proprietary	<60
Proprietary Additive	Proprietary	<10

If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. FIRST-AID MEASURES

First Aid Measures

General Advice — When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment. If exposed or concerned: Get medical advice/attention.

Eye Contact — Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.

Skin Contact	Wash off immediately with plenty of water for at least 15 minutes. Consult a physician if necessary.
Inhalation	Give oxygen if breathing is difficult. If breathing has stopped, call 911, give artificial respiration.
Ingestion	Immediately call a poison center or doctor/physician. Do not induce vomiting.

Most important symptoms and effects

Symptoms	Causes mild skin irritation. Inhalation may cause irritation of respiratory tract. Prolonged breathing of vapors may cause nausea, headache, weakness and/or dizziness. Ingestion may cause irritation of the gastrointestinal tract, cramps, vomiting or diarrhea. Aspiration of material into lungs can cause chemical pneumonitis, which can be fatal.

Indication of any immediate medical attention and special treatment needed

Notes to Physician	Treat symptomatically. If the product is ingested, probable mucosal damage may contraindicate the use of gastric lavage.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Foam. Carbon dioxide (CO2). Dry chemical. Water spray (fog).

Unsuitable Extinguishing Media Not determined.

Specific Hazards Arising from the Chemical
Combustible liquid. Vapors may travel to source of ignition and flash back. Vapors may form explosive mixtures with air.

Hazardous Combustion Products Chlorides. Fluorides. Nitrogen oxides (NOx).

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions	Wear protective clothing as described in Section 8 of this safety data sheet. Isolate hazard area. Keep unnecessary and unprotected personnel from entering.
Environmental Precautions	Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, ECOLOGICAL INFORMATION. See Section 13: DISPOSAL CONSIDERATIONS.

Methods and material for containment and cleaning up

Methods for Containment	Prevent further leakage or spillage if safe to do so.
Methods for Clean-Up	Cover liquid spill with sand, earth or other non-combustible absorbent material. Sweep up and shovel into suitable containers for disposal. Dispose of in accordance with federal, state and local regulations.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling Handle in accordance with good industrial hygiene and safety practice. Use personal protection recommended in Section 8. Avoid contact with skin, eyes or clothing. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. — No smoking. Do not eat, drink or smoke when using this product.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep container tightly closed and store in a cool, dry and well-ventilated place. Keep out of the reach of children. Do not contaminate water, food, or feed by storage or disposal. Keep/store only in original container. Store at ambient conditions. Do not transport or store below 0° C/ 32° F. Protect from freezing. Store locked up.

Packaging Materials Do not reuse container.

Incompatible Materials Oxidizing agents. Acids. Alkalis.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies

Appropriate engineering controls

Engineering Controls Please refer to the product label. Use only with adequate ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures, such as personal protective equipment

Eye/Face Protection Wear safety glasses with side shields (or goggles).

Skin and Body Protection Wear appropriate clothing to prevent repeated or prolonged skin contact. Wear long-sleeved shirt, long pants, and shoes plus socks. Use chemical resistant gloves, such as P.V.C., butyl-rubber, nitrile-rubber, or neoprene.

Respiratory Protection NIOSH-approved respirator or mask in the absence of adequate ventilation.

General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practice. Wash face, hands and any exposed skin thoroughly after handling. Take off all contaminated clothing and wash it before reuse. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning and maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Liquid		
Appearance	Amber liquid	**Odor**	Aromatic Solvent like
Color	Amber	**Odor Threshold**	Not determined

Property	Values	Remarks • Method
pH	5.0-7.0	
Melting Point/Freezing Point	Not determined	
Boiling Point/Boiling Range	Not determined	
Flash Point	71 °C / 160 °F	
Evaporation Rate	Not determined	
Flammability (Solid, Gas)	Liquid-not applicable	
Upper Flammability Limits	7% by volume	
Lower Flammability Limit	0.8% by volume	
Vapor Pressure	Not determined	
Vapor Density	Not determined	
Specific Gravity	1.08	@ 24°C/75°F
Water Solubility	Not determined	
Solubility in other solvents	Not determined	
Partition Coefficient	Not determined	
Auto-ignition Temperature	Not determined	
Decomposition Temperature	Not determined	
Kinematic Viscosity	Not determined	
Dynamic Viscosity	10.51 mm2/s cSt	@ 22°C
Explosive Properties	Not determined	
Oxidizing Properties	Not determined	
Bulk Density	240 g/L (2lb/gal)	

10. STABILITY AND REACTIVITY

Reactivity
Not reactive under normal conditions.

Chemical Stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous Polymerization Hazardous polymerization does not occur.

Conditions to Avoid
Keep out of reach of children.

Incompatible Materials
Oxidizing agents. Acids. Alkalis.

Hazardous Decomposition Products
Chlorides. Fluorides. Nitrogen oxides (NOx).

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Eye Contact Avoid contact with eyes.

Skin Contact May be harmful in contact with skin. Causes mild skin irritation.

Inhalation Harmful if inhaled.

Ingestion Do not taste or swallow.

Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Proprietary Solvent	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 590 mg/m^3 (Rat) 4 h
Proprietary Additive	= 3598 mg/kg (Rat)	= 8 g/kg (Rabbit)	= 3.1 mg/L (Rat) 4 h

Information on physical, chemical and toxicological effects

Symptoms Please see section 4 of this SDS for symptoms.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Carcinogenicity This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.

Reproductive toxicity May damage fertility or the unborn child.

Aspiration hazard May be fatal if swallowed and enters airways.

Product Information (Numerical measures of toxicity)
Acute Oral LD50 (Rat): >2,500 mg/kg
Acute Dermal LD50 (Rabbit): >2,000 mg/kg
Acute Inhalation LC50 (Rat): >2.02 mg/L (4-hr)
Eye Irritation: Severely irritating.
Dermal Irritation: Mildly irritating.
Dermal Sensitization: Not a skin sensitizer.

12. ECOLOGICAL INFORMATION

Ecotoxicity
Toxic to aquatic life with long lasting effects. Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water by cleaning or equipment or disposal of equipment washwaters. This product is highly toxic to aquatic invertebrates, aquatic plants, wildlife, and fish. Use with care when applying in areas frequented by wildlife or adjacent to any body of water or wetland area. Do not apply when weather conditions favor drift or erosion from target areas.

Component Information

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Proprietary Solvent	2.5: 72 h Skeletonema costatum mg/L EC50	19: 96 h Pimephales promelas mg/L LC50 static 2.34: 96 h Oncorhynchus mykiss mg/L LC50 1740: 96 h Lepomis macrochirus mg/L LC50 static 45: 96 h Pimephales promelas mg/L LC50 flow-through 41: 96 h Pimephales promelas mg/L LC50		0.95: 48 h Daphnia magna mg/L EC50
Proprietary Additive	500: 72 h Desmodesmus subspicatus mg/L EC50	832: 96 h Lepomis macrochirus mg/L LC50 static 1072: 96 h Pimephales promelas mg/L LC50 static 1400: 96 h Poecilia reticulata mg/L LC50 static		4897: 48 h Daphnia magna mg/L EC50

Persistence/Degradability
Not determined.

Bioaccumulation
Not determined.

Mobility

Chemical Name	Partition Coefficient
Proprietary Solvent	6.1
Proprietary Additive	-0.46

Other Adverse Effects
Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes

END USERS MUST DISPOSE OF ANY UNUSED PRODUCT AS PER THE LABEL RECOMMENDATIONS.
Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide spray mixture, or rinsate is a violation of federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.
Under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste.

Contaminated Packaging

Disposal should be in accordance with applicable regional, national and local laws and regulations.

14. TRANSPORT INFORMATION

DOT

Package less than 119 Gallons (450 Lt): Not regulated

Package over 119 Gallons (450 Lt):
UN3082, Environmentally Hazardous Substance, liquid, n.o.s. (oxyfluorfen), 9, PG III, Marine Pollutant

IATA

UN 3082, Environmentally Hazardous Substance, liquid, n.o.s. (oxyfluorfen)

IMDG

UN/ID No	UN3082
Proper Shipping Name	Environmentally Hazardous Substance, liquid, n.o.s. (oxyfluorfen)
Hazard Class	9
Packing Group	III
Marine Pollutant	This product contains a chemical which is listed as a marine pollutant according to IMDG/IMO

15. REGULATORY INFORMATION

International Inventories

TSCA All ingredients are listed or exempt from listing on Chemical Substance Inventory

Legend:
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

US Federal Regulations

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

SARA 313

Chemical Name	CAS No	Weight-%	SARA 313 - Threshold Values %
Proprietary Additive	Proprietary	8.8-9.8	1.0

US State Regulations

California Proposition 65
This product contains the following Proposition 65 chemicals.

Chemical Name	California Proposition 65
Proprietary Additive	Developmental

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Proprietary Additive	X	X	X

EPA Pesticide Registration Number 66222-28
EPA Statement
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

EPA Pesticide Label
Signal Word: Warning

Causes substantial but temporary eye injury. Harmful if swallowed or absorbed through the skin. Do not get in eyes or on clothing. Avoid contact with skin. Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove contaminated clothing and wash clothes before reuse.

Difference between SDS and EPA pesticide label

Signal Word	Warning	Danger
Acute toxicity - Oral	Harmful if swallowed	N/A
Acute toxicity - Dermal	Harmful if absorbed through the skin	N/A
Acute toxicity – Inhalation	N/A	Harmful if inhaled
Serious eye damage/eye irritation	Causes substantial but temporary eye injury	Causes serious eye irritation
Reproductive toxicity	N/A	May damage fertility or the unborn child
Aspiration Hazard	N/A	May be fatal if swallowed and enters air

16. OTHER INFORMATION

NFPA	**Health Hazards**	**Flammability**	**Instability**	**Special Hazards**
	2	2	0	None
HMIS	**Health Hazards**	**Flammability**	**Physical Hazards**	**Personal Protection**
	2	2	0	See section 8

Issue Date:	31-Jul-2008
Revision Date:	30-Oct-2015
Revision Note:	Updated format from 24-Jul-2014

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

Safety Data Sheet

United Phosphorus, Inc.

Preparation Date 07-May-2015 **Revision date** 04-Nov-2015 **Revision Number:** 2

1. Identification of the Substance/Preparation and of the Company/Undertaking

Product identifier

Product Description: Surflan AS Specialty

Other means of identification

Item#: 12U-125
UN-No UN3082
Synonyms Not Available
Registration number(s) 70506-44

Recommended use of the chemical and restrictions on use

Recommended use Herbicide.
Uses advised against Activties contrary to label recomendation

Details of the Supplier of the Safety Data Sheet

Supplier Address
United Phosphorus Inc.
630 Freedom Business Center
Suite 402
King of Prussia, PA 19406

Emergency telephone number

Company Phone Number 1-800-438-6071
Emergency telephone number Chemtrec: (800) 424-9300 (24hrs) or (703) 527-3887
Medical: Rocky Mountain Poison Control Center
(866) 673-6671 (24hrs)

2. Hazards Identification

Classification

OSHA Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute toxicity - Inhalation (Dusts/Mists)	Category 4

Label elements

EMERGENCY OVERVIEW

WARNING

hazard statements
HARMFUL IF INHALED

appearance Opaque Orange **Physical state** liquid **Odor** Slight aromatic

Precautionary Statements - Prevention
Do not get in eyes, on skin, or on clothing
Use only outdoors or in a well-ventilated area

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor if you feel unwell

Hazards Not Otherwise Classified (HNOC)
OTHER INFORMATION
• May be harmful in contact with skin

3. Composition/information on Ingredients

Chemical name	CAS-No	Weight %	Trade secret
Oryzalin	19044-88-3	40.4	
Glycerin	56-81-5	<30	

If CAS number is "proprietary", the specific chemical identity and percentage of composition has been withheld as a trade secret.

4. First aid measures

FIRST AID MEASURES

Eye contact Hold eye open and rinse slowly and gently with water for 15 - 20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

Skin contact Take off contaminated clothing. Wash off immediately with plenty of water for at least 15 minutes. Call poison control center or doctor for treatment advice. Wash face, hands and any exposed skin thoroughly after handling.

Inhalation Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a physician or poison control center immediately.

Ingestion Call a physician or poison control center immediately. Never give anything by mouth to an unconscious person. Do not induce vomiting without medical advice.

Most Important Symptoms and Effects, Both Acute and Delayed

Most Important Symptoms and Effects No information available.

Indication of Any Immediate Medical Attention and Special Treatment Needed

Notes to physician No information available.

5. Fire-fighting measures

Suitable extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media No information available.

Specific hazards arising from the chemical
No information available.

Hazardous combustion products Oxides of nitrogen. Can emit toxic fumes under fire conditions.

Explosion data

Protective equipment and precautions for firefighters

Use personal protective equipment. As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal Precautions Avoid contact with the skin and the eyes. Use personal protective equipment. Wear protective gloves/clothing and eye/face protection. Wash thoroughly after handling.

Environmental Precautions

Environmental precautions Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinenet environmental permits.

Methods and material for containment and cleaning up

Methods for Clean-Up Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Sweep up and shovel into suitable containers for disposal.

7. Handling and Storage

Precautions for safe handling

Handling Keep out of reach of children. Do not eat, drink or smoke when using this product. Avoid contact with skin and eyes. Wear personal protective equipment. Remove and wash contaminated clothing before re-use. Wash thoroughly after handling.

Conditions for safe storage, including any incompatibilities

Storage Keep out of the reach of children. Keep containers tightly closed in a cool, well-ventilated place.

incompatible materials No materials to be especially mentioned.

8. Exposure Controls/Personal Protection

Exposure guidelines

Chemical name	ACGIH TLV	OSHA PEL
Glycerin		TWA: 15 mg/m³ mist, total particulate TWA: 5 mg/m³ mist, respirable fraction (vacated) TWA: 10 mg/m³ mist, total particulate (vacated) TWA: 5 mg/m³ mist, respirable fraction

Engineering controls Investigate engineering techniques to reduce exposures. Local mechanical exhaust ventilation is preferred. Consult ACGIH ventilation manual or NFPA Standard 91 for design of exhaust systems. PESTICIDE APPLICATORS & WORKERS. THESE WORKERS MUST REFER TO PRODUCT LABELING AND DIRECTIONS FOR USE IN ACCORDANCE WITH EPA WORKER PROTECTION STANDARD 40 CFR PART 170.

Personal protective equipment

Eye/Face Protection Where there is potential for eye contact have eye flushing equipment available. Use eye protection to avoid eye contact.

Skin protection Long sleeved clothing. Long pants. Socks and footwear.

Respiratory protection Where airborne exposure is likely, use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. Full facepiece equipment is recommended and, if used, replaces need for face shield and/or chemical goggles. If exposures cannot be kept at a minimum with engineering controls, consult respirator manufacturer to determine appropriate type equipment for given application. Observe

respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where there may be a potential for significant exposure, use an approved full face positive-pressure, self-contained breathing apparatus. Respiratory protection programs must comply with 29 CFR 1910.134.

General hygiene considerations
Do not eat, drink or smoke when using this product. Wear suitable gloves and eye/face protection. Wash hands before breaks and immediately after handling the product. Remove and wash contaminated clothing before re-use.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Physical state	liquid		
appearance	Opaque Orange	**Odor**	Slight aromatic
color	No information available		

Property	**VALUES**	**Remarks/ • Method**
pH	5.9	
Melting point/freezing point	6.9 °C / 44 °F	
Boiling Point/Range	No information available	
Flash Point	>93 C >200 F	
Evaporation Rate	No information available	
flammability (solid, gas)	No information available	
Flammability limit in air		
Upper Flammability Limit	No information available	
Lower Flammability Limit	No information available	
vapor pressure	No information available	
Vapor Density	No information available	
Specific gravity	1.138 to 1.239 @ 25 C	
Water solubility	No information available	
Solubility in Other Solvents	No information available	
Partition coefficient: n-octanol/water	No information available	
Autoignition temperature	No information available	
decomposition temperature	No information available	
Viscosity, kinematic	No information available	
Dynamic viscosity	No information available	
Explosive properties	No information available	
Oxidizing properties	No information available	

OTHER INFORMATION

Softening point	No information available
molecular weight	No information available
VOC Content	No information available
density	No information available
Bulk density	No information available

10. Stability and Reactivity

Reactivity
no data available

Chemical stability
Stable under recommended storage conditions.
Possibility of hazardous reactions
None under normal processing.
Conditions to avoid
Keep away from open flames, hot surfaces and sources of ignition.
incompatible materials
No materials to be especially mentioned.
Hazardous decomposition products

Toxic gases and fumes may be formed if product is involved in fire. Oxides of nitrogen.

11. Toxicological Information

Information on Likely Routes of Exposure

Inhalation May cause irritation of respiratory tract. HARMFUL IF INHALED.

Eye contact Moderately irritating to the eyes.

Skin contact Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.

Ingestion MAY BE HARMFUL IF SWALLOWED.

Component Information Oryzalin -
In animals has been shown to cause liver, kidney, bladder, spleen, and/or blood effects. Repeated excessive exposure to crystalline silica may affect lung function and cause silicosis, a progressive and disabling disease of the lungs. Some evidence suggests that kidney effects may also result from excessive exposure. Glycerin:
No skin allergy was observed in guinea pigs or humans following repeated exposure. Oral administration in clinical use has caused nausea and vomiting. Repeated or long-term oral exposure produced no adverse effects in rats. No adverse effects on fertility or birth defects were observed in rats or their offspring following oral exposure before and during pregnancy. Generally, no genetic changes were observed in tests using bacteria or animal cells.

Single exposure studies indicate that this material is practically non-toxic if swallowed (rat LD50 12,600- 27,200 mg/kg) or absrobed through skin (rabbit LD50 >10,000 mg/kg), no more than slightly toxic if inhaled (rat 1 hr LC50 >0.57 mg/l), and slightly irritating to rabbit eyes and skin.

Chemical name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Oryzalin 19044-88-3	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 4.79 mg/L
Glycerin 56-81-5	-	> 10 g/kg (Rabbit)	570 mg/m³ (Rat) 1 h

Information on Toxicological Effects

Symptoms No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

sensitization No information available.
Mutagenic effects No information available.
Carcinogenicity The information below indicates whether any agency has listed any ingredient as a carcinogen.
Reproductive effects Not Available.
STOT - Single Exposure No information available.
STOT - repeated exposure No information available.
Target organ effects kidney, Respiratory System, EYES, skin.
Aspiration hazard No information available.

Numerical Measures of Toxicity - Product information

The following values are calculated based on chapter 3.1 of the GHS document . 5290 mg/kg (rat) 1697.9 mg/kg (rat) 0 mg/l (mist) (dust) mg/m³ 0 ml/m³ (Vapor)

12. Ecological Information

Marine Pollutant.

ecotoxicity

Oryzalin:
Highly toxic to aquatic organisms LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species. Slightly toxic to birds on an acute basis LD50 between 501 and 2000 mg/kg.
Bobwhite quail acute oral LD50 1046 mg/kg
Honeybee acute oral LD50 >100 ug/bee

Persistence/Degradability
No information available.

Bioaccumulation/ Accumulation
Bioaccumulative potential.

Chemical name	Log Pow
Oryzalin 19044-88-3	> 2
Glycerin 56-81-5	-1.76

Other Adverse Effects
No information available

13. Disposal Considerations

Waste Treatment Methods

Waste Disposal Method Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide or rinsate is a violation of Federal law. If the wastes cannot be disposed of by use or according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. Do not apply directly to wetlands or water.

Contaminated packaging Refer to product label.

14. Transport Information

DOT When shipped domestically by highway in non-bulk containers this product can be shipped as not regulated.

UN-No	UN3082
Proper shipping name	Environmentally hazardous substance, liquid, n.o.s (Oryzalin)
Hazard class	9
Packing group	PG III
Marine Pollutant	Marine Pollutant.

ICAO

UN-No	UN3082
Proper shipping name	Environmentally hazardous substance, liquid, n.o.s (Oryzalin)
Hazard class	9
Packing group	PG III
Description	Marine Pollutant

IATA

UN-No	UN3082

Proper shipping name	Environmentally hazardous substances, liquid, n.o.s (Oryzalin)
Hazard class	9
Packing group	PG III
Description	Marine Pollutant

IMDG/IMO

UN-No	UN3082
Proper shipping name	Environmentally hazardous substances, liquid, n.o.s (Oryzalin)
Hazard class	9
Packing group	PG III
Marine Pollutant	Yes

15. Regulatory Information

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

signal word	CAUTION
Ventilation Control	PESTICIDE APPLICATORS & WORKERS THESE WORKERS MUST REFER TO PRODUCT LABELING AND DIRECTIONS FOR USE IN ACCORDANCE WITH EPA WORKER PROTECTION STANDARD 40 CFR PART 170.

Keep out of Reach of Children. Causes moderate eye irritation. Prolonged or frequent repeated skin contact may cause allergic reaction in some individuals. Toxic to fish.

International Inventories

USINV	Not determined
DSL/NDSL	Not determined
EINECS/ ELINCS	Does not comply
ENCS	Does not comply
China	Does not comply
KECL	Does not comply
PICCS	Does not comply
AICS	Does not comply
TSCA	Does not comply

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and and Title 40n of the Code of Federal Regulations, Part 372:

Chemical name	SARA 313 - Threshold Values
Oryzalin - 19044-88-3	1.0

SARA 311/312 Hazardous Categorization

Acute health hazard	yes
Chronic health hazard	NO
Fire hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

CERCLA
SARA Product RQ 0

RCRA
Pesticide Information

State Regulations

Component	CAS-No	CATEGORY	California Prop. 65	Non-additive, corrosive chemical type
Oryzalin 19044-88-3 (40.4)	19044-88-3	Carcinogen	Carcinogen	

State Right-to-Know

Chemical name	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Oryzalin		X			
Glycerin	X	X	X		

International regulations
U.S. EPA Label information
EPA Pesticide registration number 70506-44

16. Other Information

NFPA **HEALTH** 0 **flammability** 1 **Instability** 0 **Physical hazard** -

Preparation Date 07-May-2015
Revision date 04-Nov-2015
Revision Summary
Correct spelling error(s)
Disclaimer
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End of MSDS

Nichino America, Inc.
CENTAUR® WDG Insect Growth Regulator
Safety Data Sheet

1. IDENTIFICATION

Product Name: CENTAUR® WDG Insect Growth Regulator
General Use: Insecticide
Product Description: Water Dispersible Granule
EPA Reg. No.: 71711-21

Manufacturer
Main Headquarters: Nihon Nohyaku Co., Ltd., Kyobashi OM Building, 19-8 Kyobashi 1-chome, Chuo-ku, Tokyo 104-8386 JAPAN

US Connection: Nichino America Inc.
4550 New Linden Hill Road, Suite 501
Wilmington, Delaware 19808, USA
Phone: 302-636-9001
Fax: 302-636-9122

Emergency and health and safety inquiries: (800) 348-5832 (24 hours)
In case of fire or spills: (800) 424-9300 (24 hours)
In case of international shipments: (703) 527-3887 (24 hours)

2. HAZARD(S) IDENTIFICATION

Classified according to OSHA 29 CFR 1910.1200 HCS

Classification: Carcinogenicity 1A
Combustible Dust

Signal word: **DANGER**

Hazard statements: May cause cancer.

May form combustible dust concentrations in the air.

Precautionary statements

Prevention:

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection.

Response:

If exposed or concerned: Get medical advice/attention.

Storage:

Store locked up.

Disposal:

Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	Percentage
Buprofezin CAS Name: 4H-1,3,5-Thiadiazin-4-one, 2-[(1,1-dimethylethyl)imino]tetrahydro-3-(1-methylethyl)-5-phenyl-, (2Z)-	953030-84-7	70.00%
Titanium dioxide	13463-67-7	0.1% to 1%
Citric acid	77-92-9	0.1% to 1%
Quartz	14808-60-7	0% to 1%
Kaolin	1332-58-7	10% to 20%
*Other ingredients:		19.80% to 7.00%

***Specific chemical identity and percentage of composition withheld as a trade secret**

4. FIRST AID MEASURES

Inhalation: Move person to fresh air. If person is not breathing, call 911 or an ambulance; then give artificial respiration, preferably by mouth-to-mouth if possible. Call a poison control center or doctor immediately for treatment advice.

Skin Contact: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Eye Contact: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

Ingestion: Call poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induct vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed: Refer to Section 11 Toxicological Information.

Note to physician: There is no specific antidote. All treatment should be based on observed signs and symptoms of distress in the patient. Overexposure to materials other than this product may have occurred.

5. FIRE FIGHTING MEASURES

Suitable extinguishing media	Alcohol-resistant foam, carbon dioxide, dry chemicals, and water spray.
Unsuitable extinguishing media	No information available
Specific hazards arising from the chemical (e.g. nature of any hazardous combustion products)	Carbon dioxide, carbon monoxide, nitrogen oxides, and sulfur dioxide.
Special protective equipment and precautions for fire-fighters	Firemen should wear positive pressure self-contained breathing apparatus (SCBA).

6. ACCIDENTAL RELEASE MEASURES

General and Disposal: Use proper protective equipment to minimize personal exposure (see Section 8). Take all necessary action to prevent and to remedy

the effects of the spill. Ensure that the disposal is in compliance with federal or local disposal regulations (see Section 13). Notify the appropriate authorities immediately (see Section 15 for any applicable Reportable Quantity (RQ)). Report to authorities if water enters watercourse or sewer.

Land Spill or Leak:
Evacuate non-essential personnel. Carefully sweep up, place in a metal drum and hold for waste disposal. Avoid raising dust. If a large spill occurs, wear protective clothing and self-contained breathing apparatus to avoid contact. Prevent spills from entering sewers, watercourse, or low areas.

Liquid spills on the floor or other impervious surfaces should be contained or diked and then absorbed with sawdust, sand, bentonite, or other absorbent clay. Collect contaminated absorbent, and place it in a metal drum. Thoroughly scrub the floor or other impervious surface with a strong industrial-type detergent and rinse with water.

Liquid spills that soak into the ground should be dug up and placed in metal drums. When a large spill or leakage is found, wear protective clothing and respirator to avoid exposure.

Avoid contaminated absorbents or water flow into ponds, rivers, and lakes, due to the danger of acute toxicity to aquatic organisms.

7. HANDLING AND STORAGE

Handling Precautions:

- Open container with care.
- Use adequate ventilation.
- Avoid handling near an open flame or heat source or ignition source.
- Do not contaminate water by cleaning of equipment or disposal of waste.
- Avoid contact with skin, eyes, or clothing.
- Do not eat, drink, smoke, or chew gum or tobacco while handling this product and until hands and face are thoroughly washed with soap and water.
- Do not use the toilet before thoroughly washing hands.
- Remove contaminated clothing immediately and wash thoroughly before reuse.

Storage Precautions:

- Keep container closed. Store in original container.
- Keep container at room temperature or store in a cool, dry place.

- Avoid storage in direct sunlight, excessive heat or cold.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls
(Local exhaust): Ventilation may be necessary under certain confined conditions. If practical, use ventilation at the sources of air contamination. Control airborne contaminants below the exposure guidelines (see below for any applicable OSHA / ACGIH exposure limits).

Personal Protective Equipment (PPE):

Applicators and other handlers of agricultural products must wear:

- Long-sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks

Agricultural Use Requirements – for uses of this product that are covered by the Worker Protection Standard 40 CFR Part 170 - PPE required for early entry into treated areas:

- Coveralls over long-sleeved shirt and long pants
- Waterproof gloves
- Socks and chemical-resistant footwear

Manufacturing and packaging personnel:

- When there is significant potential for eye contact, wear chemical safety goggles.
- Waterproof gloves, especially when prolonged or repeated contact is anticipated.
- Ensure good ventilation. Avoid breathing dust. If ventilation is inadequate, use approved respiratory protection equipment when airborne exposure limits are exceeded.

Exposure Limits:

Ingredient:	ACGIH	OSHA
Kaolin CAS 1332-58-7	2 mg/m^3 TWA (particulate matter containing no asbestos and <1% crystalline silica, respirable fraction)	15 mg/m^3 TWA (total dust); 5 mg/m^3 TWA (respirable fraction)
Quartz CAS 14808-60-7	0.025 mg/m^3 TWA (respirable fraction)	Not established
Titanium dioxide CAS 13463-67-7	10 mg/m^3 TWA	15 mg/m^3 TWA (total dust)

Key to abbreviations
ACGIH = American Conference of Governmental Industrial Hygiene
OSHA = Occupational Safety and Health Administration
TWA = Time Weighted Averages are based on 8h/day, 40h/week exposures

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Tan
Odor:	Faint Odor
Physical state:	Solid
pH:	6.3 (as a 1 % w/w solution)
Melting point/freezing point	104.8°C (220.64°F) (technical active ingredient)
Initial boiling point and boiling range	252.3°C (486.14°F) (technical active ingredient)
Flash point	No data available
Evaporation rate	No data available
Flammability (solid, gas)	No data available
Upper/lower flammability or explosive limits	No data available
Vapor pressure	5×10^{-5} Pa at 25°C (technical active ingredient)
Vapor density	No data available
Relative density	15.6 lbs./cubic ft.
Solubility	637 µg/L at 20°C (technical active ingredient)
Partition coefficient (n-octanol/water)	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Viscosity	Not applicable

10. STABILITY AND REACTIVITY

Reactivity	No dangerous reaction known under conditions of normal use.
Chemical stability	Stable for at least two years at ambient temperature.
Possibility of hazardous reactions	Hazardous polymerization will not occur.

Conditions to avoid	None known.
Incompatible materials	No data available.
Hazardous decomposition products	In the event of fire, carbon dioxide, carbon monoxide, and nitrogen oxides, and sulfur dioxide.

11. TOXICOLOGICAL INFORMATION

The following data were developed using formulated product:

Acute Studies:

Oral LD_{50} (rat):	> 5000 mg/kg (males and females)
Dermal LD_{50} (rat):	> 2000 mg/kg (males and females)
Inhalation LC_{50} (rat):	> 2.2 mg/L (4 hrs.) (males and females)
Eye irritation (rabbit):	Mild irritant
Skin irritation (rabbit):	Slight irritant
Skin sensitization (guinea pig):	Not a sensitizer

The following data were developed using buprofezin technical:

Subchronic and Chronic Effects:

In a 24-day dermal toxicity study, histopathologic alterations were observed in the liver of high-dose female rats (1000 mg/kg/day) and the skin of high-dose male rats (1000 mg/kg/day). In subchronic (90-day) studies with buprofezin, increased organ weight and microscopic changes in the liver and thyroid of both male and female rats, and in the kidney of male rats, were observed in animals exposed to approximately 69 mg/kg/day. Upon chronic (up to 2-year) exposure to buprofezin, effects included increased liver weight (dogs, rats, mice at doses ≥ to approximately 17 mg/kg/day), increased thyroid weight (dogs, rats at doses ≥ approximately 9 mg/kg/day), elevated incidences of hyperplasia or hypertrophy of hepatocytes (rats, mice at doses ≥ 90 mg/kg/day), and hyperplasia of thyroid epithelial cells (rats only at ≥ approximately 9 mg/kg/day).

Cancer Effects:

No treatment-related increases in tumor incidence were reported in male or female rats or male mice; female mice from the high-dose group (493 mg/kg/day) had an elevated incidence of liver tumors. The EPA has classified buprofezin into the category "Suggestive Evidence of Carcinogenicity, but not sufficient to assess human carcinogenic potential". The relevance of this finding to humans is

unknown. Buprofezin has not been classified as a carcinogen by NTP, IARC, or OSHA.

Teratogenicity (Birth Defects):
Buprofezin is not a developmental toxicant.

Reproductive Effects:
Buprofezin is not a reproductive toxicant.

Neurotoxicity:
There was no evidence of neurotoxicity in rats upon subchronic (90-day) exposure to buprofezin.

Immunotoxicity:
In a 28-day immunotoxicity study in rats, the high-dose (346 mg/kg/day) female group had statistically significantly decreases in antigen-specific, T-cell dependent antibody formation. These changes were concomitant with a 38% decrease in body weight gain in this group. The relevance of the immunosuppressive effect of buprofezin is unknown given the systemic toxicity observed at the same dose level.

Mutagenicity (Genetic Effects):
Buprofezin is not mutagenic or genotoxic.

Carcinogenic Effects				
	CAS Number	**OSHA**	**IARC**	**NTP**
Quartz	14808-60-7	-	Group 1-Carcinogenic to humans	Known Human Carcinogen
Titanium dioxide	13463-67-7	-	Group 2B-Possible carcinogenic to humans	Not listed

12. ECOLOGICAL INFORMATION

Ecological data were developed using buprofezin technical.

Environmental Precautions:
For terrestrial uses, do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean highwater mark. Do not contaminate water by cleaning of equipment or disposal of equipment washwaters.

13. DISPOSAL CONSIDERATIONS

General Disposal:

Any disposal practice must be in compliance with all federal, state/provincial, and local laws and regulations. State (provincial) and local requirements for waste disposal may be more restrictive or otherwise different from federal laws and regulations. Chemical additions, processing, storage or otherwise altering this material may make the waste disposal information presented in this MSDS incomplete, inaccurate, or otherwise inappropriate. Waste characterization and disposal compliance are the responsibility solely of the party generating the waste or deciding to discard or dispose of the material.

Refer to appropriate federal (RCRA: 40 CFR.261), state/provincial, or local requirements for proper classification information. For regulatory information on the ingredient components, see Section 15.

Do not contaminate water, food, or feed by storage or disposal. Open dumping is prohibited. Pesticide wastes are toxic. Improper disposal of excess pesticide, pesticide spray, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Disposal:
For nonrefillable flexible containers (i.e., bags): Do not reuse or refill this container. Offer for recycling, if available.

14. TRANSPORT INFORMATION

DOT:	Not regulated
IATA:	UN 3077, Environmentally hazardous substance, solid, n.o.s., (buprofezin), Class 9, PG III.
IMDG:	UN 3077, Environmentally hazardous substance, solid, n.o.s., (buprofezin), Class 9, PG III, MARINE POLLUTANT; EmS: F-A, S-F

CENTAUR WDG is not regulated for transport unless shipped by water or air.

15. REGULATORY INFORMATION

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide

law. These requirements differ from the classification criteria and hazard information required for safety data sheets and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

CAUTION

Harmful if swallowed

U.S. Federal Regulatory Information:
EPA Registration Number: 71711-21
TSCA Inventory: Registered pesticide; exempt from TSCA.
Components on the TSCA inventory: Citric acid (77-92-9), Kaolin (1332-58-7), Quartz (14808-60-7), and Titanium dioxide (13463-67-7).

SARA Title III Notification and Information:
Section 302 (EHS) Ingredients: None
Section 304 (EHS)
or CERCLA Ingredients (RQ): None
Section 313 Ingredients: None

U.S. State Regulatory Information:

U.S. State Right-to-Know (RTK) Ingredients:

- Kaolin (CAS 1332-58-7)
- Crystalline silica, quartz (CAS 14808-60-7)
- Titanium dioxide (CAS 13463-67-7)
- Silica, amorphous, precipitated and gel (CAS 112926-00-8)

California Proposition 65 List:

- Titanium dioxide (13463-67-7) – This product contains a chemical known to the State of California to cause cancer (airborne, unbound particles of respirable size).
- Quartz (14808-60-7) – This product contains a chemical known to the State of California to cause cancer (airborne particles of respirable size).

16. OTHER INFORMATION

HMIS® Hazard Rating:
Health: 1*
Flammability: 0
Physical Hazard.: 0

*indicates both acute and chronic health hazard

NFPA Hazard Rating:

Health:	2
Flammability:	0
Reactivity:	0
Specific Hazard:	0

Prepared by: Regulatory Affairs
Date: 3/4/2016
Reason for Editing: Updated section 3.

Disclaimer of Expressed and Implied Warranties:
This information is provided in good faith but without express or implied warranty. Buyer assumes all responsibility for safety and use not in accordance with FIFRA label instructions.

Safety Data Sheet

syngenta®

AXIAL® XL HERBICIDE

Date: 6/22/2015
Replaces: 2/10/2015

1. PRODUCT IDENTIFICATION

Product identifier on label: **AXIAL® XL HERBICIDE**

Product No.: A13617V

Use: Herbicide

Manufacturer: Syngenta Crop Protection, LLC
Post Office Box 18300
Greensboro NC 27419

Manufacturer Phone: 1-800-334-9481

Emergency Phone: 1-800-888-8372

2. HAZARDS IDENTIFICATION

Classifications:

Skin Corrosion/Irritation: Category 2
Reproductive Toxicity: Category 2
Aspiration Hazard: Category 1
Flammable Liquid: Category 4
Eye Damage/Irritation: Category 2B
Carcinogenicity: Category 1B

Signal Word (OSHA): Danger

Hazard Statements:

Combustible liquid
May be fatal if swallowed and enters airways
Causes skin irritation
Causes eye irritation
May cause cancer
Suspected of damaging fertility or the unborn child

Hazard Symbols:

Precautionary Statements:

Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat, sparks, open flames, hot surfaces. No smoking.
Wash hands and face thoroughly after handling.
Wear protective gloves, protective clothing, eye protection.
If swallowed: Immediately call a poison center, doctor or Syngenta.
If on skin: Wash with plenty of soap and water.
If skin irritation occurs: Get medical advice.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical advice.

If exposed or concerned: Get medical advice/attention.

See Section 4 First Aid Measures.

Do NOT induce vomiting.

Take off contaminated clothing and wash it before reuse.

In case of fire: Use dry chemical, foam or CO2 for extinction.

Store in a well-ventilated place. Keep cool.

Store locked up.

Dispose of contents and container in accordance with local regulations.

Other Hazard Statements: None

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Common Name	CAS Number	Concentration
Naphthalene	Naphthalene	91-20-3	<3.0%
Tetrahydrofurfuryl Alcohol	Tetrahydrofurfuryl Alcohol	97-99-4	Trade Secret
Petroleum Solvent	Petroleum Solvent	Trade Secret	Trade Secret
Cloquintocet-Mexyl	Cloquintocet-Mexyl	99607-70-2	1.26%
Other ingredients	Other ingredients	Trade Secret	>90.69%
Propanoic acid, 2,2-dimethyl-,8-(2,6-diethyl-4-methylphenyl)-1,2,4,5-tetrahydro-7-oxo-7H-pyrazolo[1,2-d][1,4,5]oxadiazepin-9-yl ester	Pinoxaden	243973-20-8	5.05%

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.

4. FIRST AID MEASURES

Have the product container, label or Safety Data Sheet with you when calling Syngenta (800-888-8372), a poison contol center or doctor, or going for treatment.

Ingestion: If swallowed: Call Syngenta (800-888-8372), a poison control center or doctor immediately for treatment advice. Do not give any liquid to the person. Do not induce vomiting unless told to do so after calling 800-888-8372 or by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

Eye Contact: If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.

Skin Contact: If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.

Inhalation: If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call Syngenta (800-888-8372), a poison control center or doctor for further treatment advice.

Most important symptoms/effects:

Eye irritation

Skin irritation

Indication of immediate medical attention and special treatment needed:

There is no specific antidote if this product is ingested.

Treat symptomatically.

Contains petroleum distillate - vomiting may cause aspiration pneumonia.

5. FIRE FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media:

Use dry chemical, foam or CO2 extinguishing media. If water is used to fight fire, dike and collect runoff.

Specific Hazards:

Combustible liquid. Can release vapors that form explosive mixtures at temperatures at or above the flash point. Heavy vapors can flow along surfaces to distant ignition sources and flash back.

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

Special protective equipment and precautions for firefighters:

Wear full protective clothing and self-contained breathing apparatus. Evacuate nonessential personnel from the area to prevent human exposure to fire, smoke, fumes or products of combustion.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures:

Follow exposure controls/personal protection outlined in Section 8.

Methods and materials for containment and cleaning up:

Control the spill at its source. Contain the spill to prevent from spreading or contaminating soil or from entering sewage and drainage systems or any body of water. Clean up spills immediately, observing precautions outlined in Section 8. Cover entire spill with absorbing material and place into compatible disposal container. Scrub area with hard water detergent (e.g. commercial products such as Tide, Joy, Spic and Span). Pick up wash liquid with additional absorbent and place into compatible disposal container. Once all material is cleaned up and placed in a disposal container, seal container and arrange for disposition.

7. HANDLING AND STORAGE

Precautions for safe handling:

Store the material in a well-ventilated, secure area out of reach of children and domestic animals. Do not store food, beverages or tobacco products in the storage area. Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

Conditions for safe storage, including any incompatibilities:

Store locked up.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION AND PACKAGING OF THIS PRODUCT.

FOR COMMERCIAL APPLICATIONS AND/OR ON-FARM APPLICATIONS CONSULT THE PRODUCT LABEL.

Occupational Exposure Limits:

Chemical Name	OSHA PEL	ACGIH TLV	Other	Source
Naphthalene	10 ppm TWA	10 ppm TWA (skin)	10 ppm TWA	NIOSH

Tetrahydrofurfuryl Alcohol	Not Established	Not Established	0.5 ppm TWA	AIHA
Petroleum Solvent	Not Established	Not Established	50 mg/m³ (8 ppm) TWA	Manufacturer
Cloquintocet-Mexyl	Not Established	Not Established	5 mg/m³ TWA	Syngenta
Other ingredients	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Pinoxaden	Not Established	Not Established	0.1 mg/m³ (ceiling)	Syngenta

Appropriate engineering controls:
Use effective engineering controls to comply with occupational exposure limits (if applicable).

Individual protection measures:

Ingestion:
Prevent eating, drinking, tobacco usage and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

Eye Contact:
Where eye contact is likely, use chemical splash goggles.

Skin Contact:
Where contact is likely, wear chemical-resistant gloves (such as barrier laminate, nitrile rubber, neoprene rubber or Viton), coveralls, socks and chemical-resistant footwear.

Inhalation:
A combination particulate/organic vapor respirator should be used until effective engineering controls are installed to comply with occupational exposure limits, or until exposure limits are established. Use a NIOSH certified respirator with an organic vapor (OV) cartridge or canister with any R, P or HE filter.

Use a self-contained breathing apparatus in cases of emergency spills, when exposure levels are unknown, or under any circumstances where air-purifying respirators may not provide adequate protection.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Yellow orange to orange brown liquid
Odor: Aromatic
Odor Threshold: Not Available
pH: 3 - 7 @ 1% w/v
Melting point/freezing point: Not Applicable
Initial boiling point and boiling range: Not Available
Flash Point (Test Method): 174°F
Flammable Limits (% in Air): Not Available
Flammability: Combustible liquid
Vapor Pressure: Pinoxaden 3.5 x 10(-9) mmHg @ 77°F (25°C)
Vapor Density: Not Available
Relative Density: 0.989 g/ml @ 68°F (20°C)
Solubility (ies): Pinoxaden 200 mg/l @ 77°F (25°C)
Partition coefficient: n-octanol/water: Not Available

Autoignition Temperature: Not Available

Decomposition Temperature: Not Available

Viscosity: Not Available

Other: None

10. STABILITY AND REACTIVITY

Reactivity: Not reactive.

Chemical stability: Stable under normal use and storage conditions.

Possibility of hazardous reactions: Will not occur.

Conditions to Avoid: None known.

Incompatible materials: None known.

Hazardous Decomposition Products: None known.

11. TOXICOLOGICAL INFORMATION

Health effects information

Likely routes of exposure: Dermal, Inhalation

Symptoms of exposure: Eye irritation, Skin irritation

Delayed, immediate and chronic effects of exposure: Possible carcinogenicity, Eye irritation, Skin irritation

Numerical measures of toxicity (acute toxicity/irritation studies (finished product))

Ingestion:	Oral (LD50 Female Rat) :	> 5000 mg/kg body weight
Dermal:	Dermal (LD50 Rat) :	> 5000 mg/kg body weight
Inhalation:	Inhalation (LC50 Rat) :	> 2.53 mg/l air - 4 hours
Eye Contact:	Mildly Irritating (Rabbit)	
Skin Contact:	Severely Irritating (Rabbit)	
Skin Sensitization:	Not a Sensitizer (Guinea Pig)	

Reproductive/Developmental Effects

Pinoxaden: Teratogenicity: Not teratogenic in rats or rabbits.
Reproduction: No reproductive effects observed.

Chronic/Subchronic Toxicity Studies

Pinoxaden: Subchronic: Predominantly kidney and liver effects at high doses.
Chronic: Predominantly kidney and liver effects at high doses.
Neurotoxicity: No neurotoxic effects (acute or subchronic).

Carcinogenicity

Pinoxaden: No compound-related tumors in rats or mice.

Chemical Name	NTP/IARC/OSHA Carcinogen
Naphthalene	See "Toxicity", Sec. 11
Tetrahydrofurfuryl Alcohol	No
Petroleum Solvent	No
Cloquintocet-Mexyl	No
Other ingredients	No
Propanoic acid, 2,2-dimethyl-,8-(2,6-diethyl-4-methylphenyl)-1,2,4,5-tetrahydro-7-oxo-7H-pyrazolo[1,2-d][1,4,5]oxadiazepin-9-yl ester	No

Other Toxicity Information

None

Toxicity of Other Components

Cloquintocet-Mexyl

Causes mild eye and skin irritation. Toxic if inhaled or swallowed. May cause sensitization by skin contact.

Naphthalene

Exposure to naphthalene can cause cataracts, liver damage, kidney failure, respiratory failure, hematuria, anemia, damage to red blood cells, leukocytosis, or coma.
Carcinogen Status:
NTP: Anticipated Carcinogen
IARC: Group 2B Possible Human Carcinogen

Other ingredients

Not Applicable

Petroleum Solvent

Repeated exposure may case skin dryness or cracking. If swallowed, may be aspirated and cause lung damage. May be irritating to the eyes, nose, throat and lungs.
Breathing of high vapor concentrations may cause central nervous system (CNS) depression resulting in dizziness, light-headedness, headache, nausea and loss of coordination.

Tetrahydrofurfuryl Alcohol

Acute exposure causes slight irritation of the skin. Prolonged exposure may cause mild nervous system effects, liver and kidney damage.

Target Organs

Active Ingredients

Pinoxaden:	Kidney

Inert Ingredients

Cloquintocet-Mexyl:	Eye, skin, lung, digestive tract
Naphthalene:	Eye, liver, kidney, respiratory tract, blood, CNS
Other ingredients:	Not Applicable
Petroleum Solvent:	Respiratory tract, stomach, liver, thyroid, urinary bladder, CNS, skin
Tetrahydrofurfuryl Alcohol:	Skin, central nervous system, liver, kidney

12. ECOLOGICAL INFORMATION

Eco-Acute Toxicity

Pinoxaden:

Fish (Rainbow Trout) 96-hour LC50 10.3 mg/l (Dynamic conditions)

Green Algae 72-hour ErC50 41 mg/l

Invertebrate (Water Flea) Daphnia Magna 48-hour EC50 52 mg/l

Environmental Fate

Pinoxaden:

The information presented here is for the active ingredient, pinoxaden.
Compound degrades rapidly in the environment with a DT50 of less than 5 days in field and laboratory studies.

13. DISPOSAL CONSIDERATIONS

Disposal:

Do not reuse product containers. Dispose of product containers, waste containers, and residues according to local, state, and federal health and environmental regulations.

Characteristic Waste: Not Applicable

Listed Waste: Not Applicable

14. TRANSPORT INFORMATION

DOT Classification

Ground Transport - NAFTA
< 119 gal: Not regulated
> 119 gal:
Proper Shipping Name: Compounds, Weed Killing, Liquid, (Naphthalene)
Hazard Class: Combustible liquid
Identification Number: NA 1993
Packing Group: PG III
RQ > 375 gallons (for naphthalene)

Comments

Water Transport - International
Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S. (Cloquintocet-Mexyl, Naphthalene), Marine Pollutant
Hazard Class: Class 9
Identification Number: UN 3082
Packing Group: PG III

Air Transport
Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S. (Cloquintocet-Mexyl, Naphthalene)
Hazard Class: Class 9
Identification Number: UN 3082
Packing Group: PG III

15. REGULATORY INFORMATION

Pesticide Registration:

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

Warning: Causes skin irritation. Do not get on skin or clothing. Causes moderate eye irritation. Avoid contact with eyes. Harmful if swallowed or inhaled. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Remove and wash contaminated clothing before reuse.

EPA Registration Number(s):

100-1256

EPCRA SARA Title III Classification:

Section 311/312 Hazard Classes: Acute Health Hazard
Fire Hazard

Section 313 Toxic Chemicals: Naphthalene <3.0% (CAS No. 91-20-3)

California Proposition 65:

This Product contains trace amounts of chemicals, known to the State of California to cause cancer and birth defects or other reproductive harm, as unintended impurities resulting from other entities manufacturing or processing operations which Syngenta cannot control.

CERCLA/SARA 304 Reportable Quantity (RQ):

Report product spills > 375 gal (based on naphthalene [RQ = 100 lbs.] content in the formulation)

RCRA Hazardous Waste Classification (40 CFR 261):

Not Applicable

TSCA Status:

Exempt from TSCA, subject to FIFRA

16. OTHER INFORMATION

NFPA Hazard Ratings		HMIS Hazard Ratings	
Health:	2	Health:	1
Flammability:	2	Flammability:	2
Instability:	0	Reactivity:	0

0	Minimal
1	Slight
2	Moderate
3	Serious
4	Extreme
*	Chronic

Syngenta Hazard Category: C,S

For non-emergency questions about this product call:

1-800-334-9481

Original Issued Date: 11/12/2009

Revision Date: 6/22/2015 Replaces: 2/10/2015

Section(s) Revised: 2, 4, 11

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.

Dow AgroSciences

SAFETY DATA SHEET
DOW AGROSCIENCES LLC

Product name: GRANITE™ GR Herbicide

Issue Date: 05/18/2015
Print Date: 05/22/2015

DOW AGROSCIENCES LLC encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: GRANITE™ GR Herbicide

Recommended use of the chemical and restrictions on use
Identified uses: End use herbicide product

COMPANY IDENTIFICATION
DOW AGROSCIENCES LLC
9330 ZIONSVILLE RD
INDIANAPOLIS IN 46268-1053
UNITED STATES

Customer Information Number: 800-992-5994
info@dow.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 800-992-5994
Local Emergency Contact: 352-323-3500

2. HAZARDS IDENTIFICATION

Hazard classification
This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.
Carcinogenicity - Category 2

Label elements
Hazard pictograms

Signal word: **WARNING!**

Hazards
Suspected of causing cancer.

Precautionary statements

Prevention
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Use personal protective equipment as required.

Response
IF exposed or concerned: Get medical advice/ attention.

Storage
Store locked up.

Disposal
Dispose of contents/ container to an approved waste disposal plant.

Other hazards
no data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a mixture.

Component	CASRN	Concentration
Penoxsulam	219714-96-2	0.2%
Cellulose	9004-34-6	>= 46.8 - <= 52.7 %
Kaolin	1332-58-7	>= 27.9 - <= 33.8 %
Calcium carbonate	471-34-1	>= 13.9 - <= 19.9 %
Balance	Not available	>= 0.0 - <= 11.2 %

4. FIRST AID MEASURES

Description of first aid measures
Inhalation: Move person to fresh air; if effects occur, consult a physician.

Skin contact: Wash off with plenty of water.

Eye contact: Flush eyes with plenty of water; remove contact lenses after the first 1-2 minutes then continue flushing for several minutes. Only mechanical effects expected. If effects occur, consult a physician, preferably an ophthalmologist.

Ingestion: If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

Most important symptoms and effects, both acute and delayed: Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed
Notes to physician: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: Water. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam.

Unsuitable extinguishing media: no data available

Special hazards arising from the substance or mixture
Hazardous combustion products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Sulfur oxides. Nitrogen oxides. Hydrogen fluoride. Fluorinated hydrocarbons. Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: Container may rupture from gas generation in a fire situation. Pneumatic conveying and other mechanical handling operations can generate combustible dust. To reduce the potential for dust explosions, do not permit dust to accumulate.

Advice for firefighters
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Soak thoroughly with water to cool and prevent re-ignition. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Hand held dry chemical or carbon dioxide extinguishers may be used for small fires. Move container from fire area if this is possible without hazard. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Small spills: Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling: Keep out of reach of children. Do not swallow. Avoid contact with eyes, skin, and clothing. Avoid breathing dust or mist. Wash thoroughly after handling. Use with adequate ventilation. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage: Store in a dry place. Store in original container. Do not store near food, foodstuffs, drugs or potable water supplies.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Cellulose	ACGIH	TWA	10 mg/m3
	OSHA Z-1	TWA total dust	15 mg/m3
	OSHA Z-1	TWA respirable fraction	5 mg/m3
Kaolin	ACGIH	TWA Respirable fraction	2 mg/m3
	OSHA Z-1	TWA total dust	15 mg/m3
	OSHA Z-1	TWA respirable fraction	5 mg/m3

RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.

Exposure controls

Engineering controls: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use safety glasses (with side shields). If there is a potential for exposure to particles which could cause eye discomfort, wear chemical goggles.

Skin protection

Hand protection: Chemical protective gloves should not be needed when handling this material. Consistent with general hygienic practice for any material, skin contact should be minimized.

Other protection: No precautions other than clean body-covering clothing should be needed.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator.
The following should be effective types of air-purifying respirators: Particulate filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	Granules.
Color	Gray
Odor	Musty
Odor Threshold	no data available
pH	8.8 *pH Electrode*
Melting point/range	No test data available
Freezing point	Not applicable
Boiling point (760 mmHg)	Not applicable
Flash point	**closed cup** Not applicable
Evaporation Rate (Butyl Acetate = 1)	Not applicable
Flammability (solid, gas)	no data available
Lower explosion limit	Not applicable
Upper explosion limit	Not applicable
Vapor Pressure	Not applicable
Relative Vapor Density (air = 1)	Not applicable
Relative Density (water = 1)	Not applicable
Water solubility	No test data available
Partition coefficient: n-octanol/water	no data available
Auto-ignition temperature	No test data available
Decomposition temperature	no data available
Dynamic Viscosity	Not applicable
Kinematic Viscosity	Not applicable
Explosive properties	no data available
Oxidizing properties	no data available
Liquid Density	0.67 g/cm3*Calculated.*
Bulk density	670 kg/m3 *Loose Volumetric*
Molecular weight	no data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: no data available

Chemical stability: Thermally stable at typical use temperatures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Avoid temperatures above 200 °C (392 °F) Some components of this product can decompose at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible materials: Avoid contact with oxidizing materials.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Gases are released during decomposition.

11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Acute toxicity

Acute oral toxicity
Low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

Single dose oral LD50 has not been determined. Typical for this family of materials.
LD50, > 5,000 mg/kg Estimated.

Acute dermal toxicity
Prolonged skin contact is unlikely to result in absorption of harmful amounts.

The dermal LD50 has not been determined.
LD50, > 2,000 mg/kg Estimated.

Acute inhalation toxicity
Inhalation is unlikely due to physical state.

Skin corrosion/irritation
Essentially nonirritating to skin.

Serious eye damage/eye irritation
Mechanical injury only.

Sensitization
For skin sensitization:
No relevant data found.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)
Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Specific Target Organ Systemic Toxicity (Repeated Exposure)
For the active ingredient(s):
In animals, effects have been reported on the following organs:
Kidney.
Liver.

Carcinogenicity
Lung fibrosis and tumors have been observed in rats exposed to titanium dioxide in two lifetime inhalation studies. Effects are believed to be due to overloading of the normal respiratory clearance mechanisms caused by the extreme study conditions. Workers exposed to titanium dioxide in the workplace have not shown an unusual incidence of chronic respiratory disease or lung cancer. Titanium dioxide was not carcinogenic in laboratory animals in lifetime feeding studies.

Teratogenicity

For the active ingredient(s): Did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother. For the major component(s): Did not cause birth defects or any other fetal effects in laboratory animals.

Reproductive toxicity
For the active ingredient(s): In animal studies, did not interfere with reproduction.

Mutagenicity
For the active ingredient(s): In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Aspiration Hazard
Based on physical properties, not likely to be an aspiration hazard.

COMPONENTS INFLUENCING TOXICOLOGY:

Penoxsulam

Acute inhalation toxicity
No adverse effects are anticipated from single exposure to dust. Excessive exposure may cause irritation to upper respiratory tract (nose and throat).

Maximum attainable concentration. LC50, Rat, male and female, 4 Hour, dust/mist, > 3.50 mg/l No deaths occurred at this concentration.

Cellulose

Acute inhalation toxicity
No adverse effects are anticipated from single exposure to dust.

The LC50 has not been determined.

Kaolin

Acute inhalation toxicity
The LC50 has not been determined.

Calcium carbonate

Acute inhalation toxicity

LC50, Rat, male and female, 4 Hour, dust/mist, > 3 mg/l The LC50 value is greater than the Maximum Attainable Concentration. No deaths occurred at this concentration.

Balance

Acute inhalation toxicity
The LC50 has not been determined.

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

Toxicity

Penoxsulam

Acute toxicity to fish
Material is very highly toxic to aquatic organisms on an acute basis (LC50/EC50 <0.1 mg/L in the most sensitive species).
LC50, Oncorhynchus mykiss (rainbow trout), static test, 96 Hour, > 100 mg/l, OECD Test Guideline 203

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), static test, 48 Hour, > 100 mg/l, OECD Test Guideline 202

Acute toxicity to algae/aquatic plants
ErC50, Pseudokirchneriella subcapitata (green algae), static test, 72 Hour, Growth rate inhibition, 0.126 mg/l, OECD Test Guideline 201
EbC50, Lemna minor (duckweed), 14 d, Biomass, 0.00329 mg/l, OECD 221.

Toxicity to bacteria
EC50, activated sludge, 3 Hour, > 1,000 mg/l

Toxicity to Above Ground Organisms
Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).
Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).
oral LD50, Anas platyrhynchos (Mallard duck), mortality, > 2000mg/kg bodyweight.
dietary LC50, Colinus virginianus (Bobwhite quail), 8 d, mortality, > 5063mg/kg diet.
contact LD50, Apis mellifera (bees), 48 Hour, mortality, > 100µg/bee
oral LD50, Apis mellifera (bees), 48 Hour, mortality, > 100µg/bee

Toxicity to soil-dwelling organisms
LC50, Eisenia fetida (earthworms), 14 d, > 1,000 mg/kg
NOEC, Eisenia fetida (earthworms), 56 d, 1,000 mg/kg

Cellulose

Acute toxicity to fish
Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).
LC50, Fish., 96 Hour, > 100 mg/l

Acute toxicity to algae/aquatic plants
EC50, Algae, 96 Hour, Growth rate inhibition, > 100 mg/l

Toxicity to bacteria
LC50, Bacteria, > 100 mg/l

Kaolin

Acute toxicity to fish
Not expected to be acutely toxic to aquatic organisms.

Calcium carbonate

Acute toxicity to fish
Material is practically non-toxic to fish on an acute basis (LC50 > 100 mg/L).

Balance

Acute toxicity to fish
No relevant data found.

Persistence and degradability

Penoxsulam

Biodegradability: Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.
10-day Window: Fail
Biodegradation: 14.7 %
Exposure time: 28 d
Method: OECD Test Guideline 301B or Equivalent

Photodegradation
Sensitizer: OH radicals
Atmospheric half-life: 2.1 Hour
Method: Estimated.

Cellulose

Biodegradability: Biodegradation rate may increase in soil and/or water with acclimation.

Theoretical Oxygen Demand: 1.18 mg/mg

Kaolin

Biodegradability: Biodegradation is not applicable.

Calcium carbonate

Biodegradability: Biodegradation is not applicable.

Balance

Biodegradability: No relevant data found.

Bioaccumulative potential

Penoxsulam

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): -0.602 Measured

Cellulose

Bioaccumulation: No bioconcentration is expected because of the relatively high molecular weight (MW greater than 1000).

Kaolin

Bioaccumulation: Partitioning from water to n-octanol is not applicable.

Calcium carbonate

Bioaccumulation: Partitioning from water to n-octanol is not applicable.

Balance

Bioaccumulation: No relevant data found.

Mobility in soil

Penoxsulam

Potential for mobility in soil is high (Koc between 50 and 150).
Partition coefficient(Koc): 73 Measured

Cellulose

No data available.

Kaolin

No relevant data found.

Calcium carbonate

No relevant data found.

Balance

No relevant data found.

13. DISPOSAL CONSIDERATIONS

Disposal methods: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

14. TRANSPORT INFORMATION

DOT

Not regulated for transport

Classification for SEA transport (IMO-IMDG):

Not regulated for transport

Transport in bulk Consult IMO regulations before transporting ocean bulk

according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code

Classification for AIR transport (IATA/ICAO):
Not regulated for transport

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312
Chronic Health Hazard

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Pennsylvania (Worker and Community Right-To-KnowAct): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:
The following product components are cited in the Pennsylvania Hazardous Substance List and/or the Pennsylvania Environmental Substance List, and are present at levels which require reporting.

Components	CASRN
Titanium dioxide	13463-67-7

United States TSCA Inventory (TSCA)
This product contains chemical substance(s) exempt from U.S. EPA TSCA Inventory requirements. It is regulated as a pesticide subject to Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requirements.

Federal Insecticide, Fungicide and Rodenticide Act
EPA Registration Number: 62719-501
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

16. OTHER INFORMATION

Hazard Rating System
NFPA

Health	Fire	Reactivity
1	0	0

Revision
Identification Number: 101197745 / A211 / Issue Date: 05/18/2015 / Version: 5.0
DAS Code: GF-947
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

ACGIH	USA. ACGIH Threshold Limit Values (TLV)
OSHA Z-1	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
TWA	8-hour, time-weighted average

Information Source and References
This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

DOW AGROSCIENCES LLC urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

Dow AgroSciences

SAFETY DATA SHEET
DOW AGROSCIENCES LLC

Product name: TRELLIS Herbicide

Issue Date: 05/18/2015
Print Date: 05/19/2015

DOW AGROSCIENCES LLC encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: TRELLIS Herbicide

Recommended use of the chemical and restrictions on use
Identified uses: End use herbicide product

COMPANY IDENTIFICATION
DOW AGROSCIENCES LLC
9330 ZIONSVILLE RD
INDIANAPOLIS IN 46268-1053
UNITED STATES

Customer Information Number: 800-992-5994
info@dow.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 800-992-5994
Local Emergency Contact: 352-323-3500

2. HAZARDS IDENTIFICATION

Hazard classification
This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.
Combustible dust
Carcinogenicity - Category 2

Label elements
Hazard pictograms

Signal word: **WARNING!**

Hazards
May form combustible dust concentrations in air
Suspected of causing cancer.

Precautionary statements

Prevention
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Use personal protective equipment as required.

Response
IF exposed or concerned: Get medical advice/ attention.

Storage
Store locked up.

Disposal
Dispose of contents/ container to an approved waste disposal plant.

Other hazards
no data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a mixture.

Component	CASRN	Concentration
Isoxaben	82558-50-7	75.0%
Kaolin	1332-58-7	8.5%
Titanium dioxide	13463-67-7	0.2%
Balance	Not available	16.3%

4. FIRST AID MEASURES

Description of first aid measures
General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice.

Skin contact: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. Suitable emergency safety shower facility should be available in work area.

Eye contact: Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice. Suitable emergency eye wash facility should be immediately available.

Ingestion: No emergency medical treatment necessary.

Most important symptoms and effects, both acute and delayed: Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed
Notes to physician: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam.

Unsuitable extinguishing media: no data available

Special hazards arising from the substance or mixture
Hazardous combustion products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Nitrogen oxides. Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: Container may rupture from gas generation in a fire situation. Do not permit dust to accumulate. When suspended in air dust can pose an explosion hazard. Minimize ignition sources. If dust layers are exposed to elevated temperatures, spontaneous combustion may occur. Dense smoke is produced when product burns.

Advice for firefighters
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Consider feasibility of a controlled burn to minimize environment damage. Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Move container from fire area if this is possible without hazard. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers,

boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Isolate area. Refer to section 7, Handling, for additional precautionary measures. Keep unnecessary and unprotected personnel from entering the area. Keep upwind of spill. Spilled material may cause a slipping hazard. Ventilate area of leak or spill. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Small spills: Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling: Keep out of reach of children. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Do not swallow. Avoid breathing dust or mist. Use with adequate ventilation. Keep container closed. Keep away from heat, sparks and flame. No smoking, open flames or sources of ignition in handling and storage area. Good housekeeping and controlling of dusts are necessary for safe handling of product. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage: Store in a dry place. Store in original container. Do not store near food, foodstuffs, drugs or potable water supplies.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Kaolin	ACGIH	TWA Respirable fraction	2 mg/m3
	OSHA Z-1	TWA total dust	15 mg/m3
	OSHA Z-1	TWA respirable fraction	5 mg/m3
Titanium dioxide	OSHA Z-1	TWA total dust	15 mg/m3
	ACGIH	TWA	10 mg/m3 , Titanium dioxide

RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.

Exposure controls
Engineering controls: Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use chemical goggles.

Skin protection

Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Examples of preferred glove barrier materials include: Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Wear clean, body-covering clothing.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use an approved respirator. Selection of air-purifying or positive-pressure supplied-air will depend on the specific operation and the potential airborne concentration of the material. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus.
The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	Granules.
Color	Tan
Odor	Aromatic
Odor Threshold	No test data available
pH	8.5 - 10.0 *pH Electrode* (aqueous 50/50)
Melting point/range	No test data available
Freezing point	Not applicable
Boiling point (760 mmHg)	Not applicable
Flash point	**closed cup** Not applicable
Evaporation Rate (Butyl Acetate = 1)	Not applicable
Flammability (solid, gas)	May form combustible dust concentrations in air
Lower explosion limit	Not applicable
Upper explosion limit	Not applicable
Vapor Pressure	Not applicable

Relative Vapor Density (air = 1)	Not applicable
Relative Density (water = 1)	Not applicable
Water solubility	Disperses in water
Partition coefficient: n-octanol/water	no data available
Auto-ignition temperature	415 °C (779 °F)
Decomposition temperature	No test data available
Kinematic Viscosity	Not applicable
Explosive properties	No
Oxidizing properties	no data available
Bulk density	0.384 g/cm3 *Unspecified*
Molecular weight	no data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: no data available

Chemical stability: Stable under recommended storage conditions. See Storage, Section 7. Unstable at elevated temperatures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Active ingredient decomposes at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems. Avoid direct sunlight.

Incompatible materials: None known.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Carbon monoxide. Carbon dioxide. Nitrogen oxides. Toxic gases are released during decomposition.

11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Acute toxicity

Acute oral toxicity
Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

As product:
LD50, Rat, male and female, > 5,000 mg/kg

Acute dermal toxicity
Prolonged skin contact is unlikely to result in absorption of harmful amounts.

As product:
LD50, Rabbit, male and female, > 5,000 mg/kg

Acute inhalation toxicity
Inhalation is unlikely due to physical state. Prolonged excessive exposure to dust may cause adverse effects.

The LC50 has not been determined.
LC50, Rat, Dust, > 2 mg/l Estimated.

Skin corrosion/irritation
Prolonged contact may cause moderate skin irritation with local redness.

Serious eye damage/eye irritation
May cause moderate eye irritation which may be slow to heal.
May cause slight temporary corneal injury.
Solid or dust may cause irritation or corneal injury due to mechanical action.

Sensitization
For the active ingredient(s):
Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)
Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Specific Target Organ Systemic Toxicity (Repeated Exposure)
For the active ingredient(s):
In animals, effects have been reported on the following organs:
Kidney.
Liver.

Carcinogenicity
For the minor component(s): Lung fibrosis and tumors have been observed in rats exposed to titanium dioxide in two lifetime inhalation studies. Effects are believed to be due to overloading of the normal respiratory clearance mechanisms caused by the extreme study conditions. Workers exposed to titanium dioxide in the workplace have not shown an unusual incidence of chronic respiratory disease or lung cancer. Titanium dioxide was not carcinogenic in laboratory animals in lifetime feeding studies.

For the active ingredient(s): An increase in nonmalignant liver tumors was observed with isoxaben in one of two species tested.

Teratogenicity
For the active ingredient(s): Has caused birth defects in laboratory animals only at doses toxic to the mother.

Reproductive toxicity
For the active ingredient(s): In animal studies, has been shown to interfere with reproduction in females.

Mutagenicity
For the active ingredient(s): In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were predominantly negative.

Aspiration Hazard
Based on physical properties, not likely to be an aspiration hazard.

Carcinogenicity

Component	List	Classification
Titanium dioxide	IARC	Group 2B: Possibly carcinogenic to humans

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

Toxicity

Isoxaben

Acute toxicity to fish
Material is very highly toxic to aquatic organisms on an acute basis (LC50/EC50 <0.1 mg/L in the most sensitive species).
The LC50 value is above the water solubility.
LC50, Oncorhynchus mykiss (rainbow trout), static test, 96 Hour, 1.2 mg/l, OECD Test Guideline 203 or Equivalent
The LC50 value is above the water solubility.
LC50, Cyprinodon variegatus (sheepshead minnow), static test, 96 Hour, > 0.87 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates
The EC50 value is above the water solubility.
EC50, Daphnia magna (Water flea), static test, 48 Hour, > 1.3 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
EbC50, Lemna minor (duckweed), static test, 7 d, Biomass, 0.011 mg/l, OECD Test Guideline 201 or Equivalent
The EC50 value is above the water solubility.
ErC50, Pseudokirchneriella subcapitata (green algae), static test, 72 Hour, Growth rate inhibition, > 1.2 mg/l
The EC50 value is above the water solubility.
ErC50, Skeletonema costatum, static test, 72 Hour, > 0.49 mg/l

Toxicity to bacteria
EC50, activated sludge, Respiration inhibition, 3 Hour, Respiration rates., > 100 mg/l

Chronic toxicity to fish
NOEC, Pimephales promelas (fathead minnow), semi-static test, 33 d, growth, 0.4 mg/l
LOEC, Pimephales promelas (fathead minnow), semi-static test, 33 d, growth, > 0.40 mg/l
MATC (Maximum Acceptable Toxicant Level), Pimephales promelas (fathead minnow), semi-static test, 33 d, growth, > 0.40 mg/l

Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), static test, 21 d, growth, 0.69 mg/l
NOEC, Midge (Chironomus riparius), static test, 28 d, mortality, 32 mg/l
LOEC, Daphnia magna (Water flea), static test, 21 d, growth, 1.01 mg/l
LOEC, Midge (Chironomus riparius), static test, 28 d, mortality, 64 mg/l
MATC (Maximum Acceptable Toxicant Level), Daphnia magna (Water flea), static test, 21 d, growth, 0.85 mg/l
MATC (Maximum Acceptable Toxicant Level), Midge (Chironomus riparius), static test, 28 d, mortality, 48 mg/l

Toxicity to Above Ground Organisms
Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).
Material is moderately toxic to birds on a dietary basis (LC50 between 501 and 1000 ppm).
oral LD50, Colinus virginianus (Bobwhite quail), 14 d, > 2000mg/kg bodyweight.
LC50, Colinus virginianus (Bobwhite quail), 8 d, > 937mg/kg diet.
oral LD50, Apis mellifera (bees), > 100micrograms/bee
contact LD50, Apis mellifera (bees), 48 Hour, > 100micrograms/bee

Toxicity to soil-dwelling organisms
LC50, Eisenia fetida (earthworms), 14 d, > 1,000 mg/kg

Kaolin

Acute toxicity to fish
Not expected to be acutely toxic to aquatic organisms.

Titanium dioxide

Acute toxicity to fish
Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).
NOEC mortality, Leuciscus idus (Golden orfe), static test, 48 Hour, > 1,000 mg/l

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), static test, 48 Hour, > 1,000 mg/l

Balance

Acute toxicity to fish
No relevant data found.

Persistence and degradability

Isoxaben

Biodegradability: Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability. Biodegradation rate may increase in soil and/or water with acclimation.

Theoretical Oxygen Demand: 1.98 mg/mg

Chemical Oxygen Demand: 1.77 mg/g

Stability in Water (1/2-life)
Hydrolysis, half-life, > 5 d, pH 7.0

Photodegradation

Test Type: Half-life (direct photolysis)
Method: Measured
Photodegradation
Test Type: Half-life (direct photolysis)
Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 0.628 Hour
Method: Estimated.

Kaolin

Biodegradability: Biodegradation is not applicable.

Titanium dioxide

Biodegradability: Biodegradation is not applicable.

Balance

Biodegradability: No relevant data found.

Bioaccumulative potential

Bioaccumulation: No data available.

Mobility in soil

Isoxaben

Potential for mobility in soil is low (Koc between 500 and 2000).
Partition coefficient(Koc): 700 - 1290

Kaolin

No relevant data found.

Titanium dioxide

No data available.

Balance

No relevant data found.

13. DISPOSAL CONSIDERATIONS

Disposal methods: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

14. TRANSPORT INFORMATION

DOT

Not regulated for transport

Classification for SEA transport (IMO-IMDG):

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.(Isoxaben)
UN number	UN 3077
Class	9
Packing group	III
Marine pollutant	Isoxaben
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Proper shipping name	Environmentally hazardous substance, solid, n.o.s.(Isoxaben)
UN number	UN 3077
Class	9
Packing group	III

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312
Acute Health Hazard
Chronic Health Hazard

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

Pennsylvania (Worker and Community Right-To-KnowAct): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:
The following product components are cited in the Pennsylvania Hazardous Substance List and/or the Pennsylvania Environmental Substance List, and are present at levels which require reporting.

Components	CASRN
Kaolin	1332-58-7

Pennsylvania (Worker and Community Right-To-KnowAct): Pennsylvania Special Hazardous Substances List:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

United States TSCA Inventory (TSCA)
This product contains chemical substance(s) exempt from U.S. EPA TSCA Inventory requirements. It is regulated as a pesticide subject to Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requirements.

Federal Insecticide, Fungicide and Rodenticide Act
EPA Registration Number: 62719-580
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

DANGER

Causes moderate eye irritation
Harmful if inhaled or absorbed through skin

16. OTHER INFORMATION

Hazard Rating System
NFPA

Health	Fire	Reactivity
2	0	1

Revision
Identification Number: 101199835 / A211 / Issue Date: 05/18/2015 / Version: 3.0
DAS Code: FN-3133
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

ACGIH	USA. ACGIH Threshold Limit Values (TLV)

OSHA Z-1	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
TWA	8-hour, time-weighted average

Information Source and References
This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

DOW AGROSCIENCES LLC urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

Dow AgroSciences

SAFETY DATA SHEET
DOW AGROSCIENCES LLC

Product name: TRELLIS™ SC Herbicide

Issue Date: 05/18/2015
Print Date: 06/09/2015

DOW AGROSCIENCES LLC encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: TRELLIS™ SC Herbicide

Recommended use of the chemical and restrictions on use
Identified uses: End use herbicide product

COMPANY IDENTIFICATION
DOW AGROSCIENCES LLC
9330 ZIONSVILLE RD
INDIANAPOLIS IN 46268-1053
UNITED STATES

Customer Information Number: 800-992-5994
info@dow.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 800-992-5994
Local Emergency Contact: 352-323-3500

2. HAZARDS IDENTIFICATION

Hazard classification
This material is not hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.

Other hazards
no data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a mixture.

Component	CASRN	Concentration
Isoxaben	82558-50-7	45.45%

Propylene glycol	57-55-6	4.5%
Ethanol	64-17-5	0.2%
Balance	Not available	49.85%

4. FIRST AID MEASURES

Description of first aid measures
General advice: If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice.

Skin contact: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Eye contact: Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice.

Ingestion: No emergency medical treatment necessary.

Most important symptoms and effects, both acute and delayed: Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed
Notes to physician: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam.

Unsuitable extinguishing media: no data available

Special hazards arising from the substance or mixture
Hazardous combustion products: Under fire conditions some components of this product may decompose. The smoke may contain unidentified toxic and/or irritating compounds. Combustion products may include and are not limited to: Nitrogen oxides. Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: This material will not burn until the water has evaporated. Residue can burn. If exposed to fire from another source and water is evaporated, exposure to high temperatures may cause toxic fumes.

Advice for firefighters
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. Spills or discharge to natural waterways is likely to kill aquatic organisms.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling: Keep out of reach of children. Do not swallow. Avoid contact with eyes, skin, and clothing. Avoid breathing vapor or mist. Wash thoroughly after handling. Use with adequate ventilation. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage: Store in a dry place. Store in original container. Keep container tightly closed when not in use. Do not store near food, foodstuffs, drugs or potable water supplies.

Storage stability

Storage temperature:	**Shelf life: Use within**
0 - 30 °C (32 - 86 °F)	24 Month

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Propylene glycol	US WEEL	TWA	10 mg/m3

Ethanol	ACGIH	TWA	1,000 ppm
	ACGIH	STEL	1,000 ppm
	OSHA Z-1	TWA	1,900 mg/m3 1,000 ppm

RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.

Exposure controls
Engineering controls: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations.

Individual protection measures

Eye/face protection: Use safety glasses (with side shields).

Skin protection

Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Examples of preferred glove barrier materials include: Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Wear clean, body-covering clothing.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator.
The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	Suspension
Color	White
Odor	Odorless
Odor Threshold	No test data available
pH	7.7 1% *pH Electrode* (1% aqueous suspension)
Melting point/range	Not applicable
Freezing point	No test data available
Boiling point (760 mmHg)	> 100 °C (> 212 °F)
Flash point	**closed cup** > 100 °C (> 212 °F)
Evaporation Rate (Butyl Acetate = 1)	No test data available

Flammability (solid, gas)	No
Lower explosion limit	No test data available
Upper explosion limit	No test data available
Vapor Pressure	Not applicable
Relative Vapor Density (air = 1)	No test data available
Relative Density (water = 1)	1.09 at 20 °C (68 °F) / 4 °C
Water solubility	No test data available
Partition coefficient: n-octanol/water	no data available
Auto-ignition temperature	> 400 °C (> 752 °F) *Unspecified*
Decomposition temperature	No test data available
Kinematic Viscosity	Not applicable
Explosive properties	Not explosive
Oxidizing properties	No significant increase (>5C) in temperature.
Molecular weight	no data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: No dangerous reaction known under conditions of normal use.

Chemical stability: Thermally stable at typical use temperatures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Active ingredient decomposes at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible materials: None known.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Carbon monoxide. Carbon dioxide. Nitrogen oxides. Toxic gases are released during decomposition.

11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Acute toxicity

Acute oral toxicity

Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

As product:
LD50, Rat, > 5,000 mg/kg No deaths occurred at this concentration.

Acute dermal toxicity
Prolonged skin contact is unlikely to result in absorption of harmful amounts.

As product:
LD50, Rat, > 5,000 mg/kg No deaths occurred at this concentration.

Acute inhalation toxicity
No adverse effects are anticipated from inhalation. Based on the available data, respiratory irritation was not observed.

As product:
LC50, Rat, male and female, dust/mist, > 5.71 mg/l No deaths occurred at this concentration.

Skin corrosion/irritation
Brief contact is essentially nonirritating to skin.

Serious eye damage/eye irritation
Essentially nonirritating to eyes.

Sensitization
For similar material(s):
Did not demonstrate the potential for contact allergy in mice.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)
Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Specific Target Organ Systemic Toxicity (Repeated Exposure)
For the active ingredient(s):
In animals, effects have been reported on the following organs:
Liver.
Kidney.

Carcinogenicity
For the active ingredient(s): An increase in nonmalignant liver tumors was observed with isoxaben in one of two species tested.

Teratogenicity
For the active ingredient(s): Has caused birth defects in laboratory animals only at doses toxic to the mother.

Reproductive toxicity
For the active ingredient(s): In animal studies, has been shown to interfere with reproduction in females. Effects have been seen only at doses that produced significant toxicity to the parent animals.

Mutagenicity
For the active ingredient(s): In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were predominantly negative.

Aspiration Hazard
Based on physical properties, not likely to be an aspiration hazard.

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

Toxicity

Acute toxicity to fish
Material is very highly toxic to aquatic organisms on an acute basis (LC50/EC50 <0.1 mg/L in the most sensitive species).

LC50, Oncorhynchus mykiss (rainbow trout), flow-through test, 96 Hour, > 200 mg/l, OECD Test Guideline 203

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), static test, 48 Hour, 544 mg/l, OECD Test Guideline 202

Acute toxicity to algae/aquatic plants
ErC50, Desmodesmus subspicatus (green algae), static test, 72 Hour, Growth rate inhibition, 60.21 mg/l, OECD Test Guideline 201

EbC50, Lemna minor (duckweed), static test, 14 d, Biomass, 0.044 mg/l

Chronic aquatic toxicity
Chronic toxicity to fish
Information refers to the main component.
NOEC, Pimephales promelas (fathead minnow), semi-static test, 33 d, growth, 0.4 mg/l

Chronic toxicity to aquatic invertebrates
Information refers to the main component.
NOEC, Daphnia magna (Water flea), semi-static test, 21 d, growth, 0.69 mg/l

Toxicity to Above Ground Organisms
contact LD50, Apis mellifera (bees), 48 Hour, > 100micrograms/bee

oral LD50, Apis mellifera (bees), 48 Hour, > 100micrograms/bee

Toxicity to soil-dwelling organisms
LC50, Eisenia fetida (earthworms), 14 d, mortality, > 1,000 mg/kg

Persistence and degradability

Isoxaben

Biodegradability: Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability. Biodegradation rate may increase in soil and/or water with acclimation.

Theoretical Oxygen Demand: 1.98 mg/mg

Chemical Oxygen Demand: 1.77 mg/g

Stability in Water (1/2-life)
Hydrolysis, half-life, > 5 d, pH 7.0

Photodegradation
Test Type: Half-life (direct photolysis)
Method: Measured
Photodegradation
Test Type: Half-life (direct photolysis)
Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 0.628 Hour
Method: Estimated.

Propylene glycol

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Biodegradation may occur under anaerobic conditions (in the absence of oxygen).
10-day Window: Pass
Biodegradation: 81 %
Exposure time: 28 d
Method: OECD Test Guideline 301F or Equivalent
10-day Window: Not applicable
Biodegradation: 96 %
Exposure time: 64 d
Method: OECD Test Guideline 306 or Equivalent

Theoretical Oxygen Demand: 1.68 mg/mg

Chemical Oxygen Demand: 1.53 mg/mg

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	69.000 %
10 d	70.000 %
20 d	86.000 %

Photodegradation
Atmospheric half-life: 10 Hour
Method: Estimated.

Ethanol

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Pass
Biodegradation: > 70 %
Exposure time: 5 d
Method: OECD Test Guideline 301D or Equivalent

Theoretical Oxygen Demand: 2.08 mg/mg

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals

Atmospheric half-life: 2.99 d
Method: Estimated.

Balance
Biodegradability: No relevant data found.

Bioaccumulative potential

Isoxaben
Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): 2.64 Measured

Propylene glycol
Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): -1.07 Measured
Bioconcentration factor (BCF): 0.09 Estimated.

Ethanol
Bioaccumulation: Bioaccumulation is unlikely. Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): -0.31 Measured

Balance
Bioaccumulation: No relevant data found.

Mobility in soil

Isoxaben
Potential for mobility in soil is low (Koc between 500 and 2000).
Partition coefficient(Koc): 700 - 1290

Propylene glycol
Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.
Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient(Koc): < 1 Estimated.

Ethanol
Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient(Koc): 1.0 Estimated.

Balance
No relevant data found.

13. DISPOSAL CONSIDERATIONS

Disposal methods: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal

methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

14. TRANSPORT INFORMATION

DOT

Not regulated for transport

Classification for SEA transport (IMO-IMDG):

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(Isoxaben)
UN number	UN 3082
Class	9
Packing group	III
Marine pollutant	Isoxaben
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Proper shipping name	Environmentally hazardous substance, liquid, n.o.s.(Isoxaben)
UN number	UN 3082
Class	9
Packing group	III

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

OSHA Hazard Communication Standard
This product is not a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312
Acute Health Hazard
Chronic Health Hazard

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

Pennsylvania (Worker and Community Right-To-KnowAct): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:
The following product components are cited in the Pennsylvania Hazardous Substance List and/or the Pennsylvania Environmental Substance List, and are present at levels which require reporting.

Components	CASRN
Propylene glycol	57-55-6

Pennsylvania (Worker and Community Right-To-KnowAct): Pennsylvania Special Hazardous Substances List:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

United States TSCA Inventory (TSCA)
This product contains chemical substance(s) exempt from U.S. EPA TSCA Inventory requirements. It is regulated as a pesticide subject to Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requirements.

Federal Insecticide, Fungicide and Rodenticide Act
EPA Registration Number: 62719-659
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

CAUTION

Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

16. OTHER INFORMATION

Hazard Rating System
NFPA

Health	Fire	Reactivity
0	1	0

Revision
Identification Number: 101200104 / A211 / Issue Date: 05/18/2015 / Version: 2.0
DAS Code: EAF-496
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

ACGIH	USA. ACGIH Threshold Limit Values (TLV)
OSHA Z-1	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
STEL	Short-term exposure limit
TWA	8-hour, time-weighted average
US WEEL	USA. Workplace Environmental Exposure Levels (WEEL)

Information Source and References

This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

DOW AGROSCIENCES LLC urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product identifier	
Trade name	SIVANTO™ 200 SL
Product code (UVP)	79718845
SDS Number	102000021884
EPA Registration No.	264-1141
Relevant identified uses of the substance or mixture and uses advised against	
Use	Insecticide
Restrictions on use	See product label for restrictions.
Information on supplier	
Supplier	Bayer CropScience 2 T.W. Alexander Drive Research Triangle PK, NC 27709 United States
Responsible Department	Email: SDSINFO.BCS-NA@bayer.com
Emergency telephone no.	
Emergency Telephone Number (24hr/ 7 days)	1-800-334-7577
Product Information Telephone Number	1-866-99BAYER (1-866-992-2937)

SECTION 2: HAZARDS IDENTIFICATION

Classification in accordance with regulation HCS 29CFR §1910.1200
Skin sensitisation: Category 1
Acute toxicity(Inhalation): Category 4

Labelling in accordance with regulation HCS 29CFR §1910.1200

Signal word: Warning

Hazard statements
May cause an allergic skin reaction.
Harmful if inhaled.

Precautionary statements
Avoid breathing mist and spray.

Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves.
Use only outdoors or in a well-ventilated area.
IF ON SKIN: Wash with plenty of water/ soap.
If skin irritation or rash occurs: Get medical advice/ attention.
Specific treatment (see supplemental first aid instructions on this label).
Wash contaminated clothing before reuse.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Call a POISON CENTER/doctor/physician if you feel unwell.
Dispose of contents/container in accordance with local regulation.

Hazards Not Otherwise Classified (HNOC)
No physical hazards not otherwise classified.
No health hazards not otherwise classified.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Component Name	CAS-No.	Concentration % by weight
Flupyradifurone	951659-40-8	17.09
Propylene carbonate	108-32-7	42.88

SECTION 4: FIRST AID MEASURES

Description of first aid measures

General advice	When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.
Inhalation	Move to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a physician or poison control center immediately.
Skin contact	Take off contaminated clothing and shoes immediately. Wash off immediately with plenty of water for at least 15 minutes. Call a physician or poison control center immediately.
Eye contact	Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a physician or poison control center immediately.
Ingestion	Call a physician or poison control center immediately. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Rinse out mouth and give water in small sips to drink. Never give anything by mouth to an unconscious person. Do not leave victim unattended.

Most important symptoms and effects, both acute and delayed

Symptoms	No symptoms known or expected.

Indication of any immediate medical attention and special treatment needed

Treatment	Appropriate supportive and symptomatic treatment as indicated by the patient's condition is recommended. There is no specific antidote.

SECTION 5: FIREFIGHTING MEASURES

Extinguishing media

Suitable	Water spray, Carbon dioxide (CO2), Foam, Sand
Unsuitable	None known.
Special hazards arising from the substance or mixture	In the event of fire the following may be released:, Hydrogen chloride (HCl), Hydrogen cyanide (hydrocyanic acid), Hydrogen fluoride, Carbon monoxide (CO), Nitrogen oxides (NOx)

Advice for firefighters

Special protective equipment for firefighters	In the event of fire and/or explosion do not breathe fumes. In the event of fire, wear self-contained breathing apparatus.
Further information	Contain the spread of the fire-fighting media. Do not allow run-off from fire fighting to enter drains or water courses. Keep out of smoke. Fight fire from upwind position.
Flash point	> 100 °C
Auto-ignition temperature	420 °C / 788 °F
Lower explosion limit	No data available
Upper explosion limit	No data available
Explosivity	Not explosive 92/69/EEC, A.14 / OECD 113

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Precautions	Keep unauthorized people away. Isolate hazard area. Avoid contact with spilled product or contaminated surfaces.

Methods and materials for containment and cleaning up

Methods for cleaning up	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Collect and transfer the product into a properly labelled and tightly closed container. Clean contaminated floors and objects thoroughly, observing environmental regulations.
Additional advice	Use personal protective equipment. If material is accidentally spilled, do not allow to enter soil, waterways or waste water canal.

Reference to other sections Information regarding safe handling, see section 7.
Information regarding personal protective equipment, see section 8.
Information regarding waste disposal, see section 13.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Use only in area provided with appropriate exhaust ventilation.

Hygiene measures Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics.
Remove Personal Protective Equipment (PPE) immediately after handling this product. Before removing gloves clean them with soap and water. Remove soiled clothing immediately and clean thoroughly before using again. Wash thoroughly and put on clean clothing.

Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers Store in a cool, dry place and in such a manner as to prevent cross contamination with other crop protection products, fertilizers, food, and feed. Store in original container and out of the reach of children, preferably in a locked storage area. Protect from freezing. Keep away from direct sunlight.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Components	CAS-No.	Control parameters	Update	Basis
Flupyradifurone	951659-40-8	2.2 mg/m3 (TWA)		OES BCS*
Propylene carbonate	108-32-7	500ug/m3 (ST ESL)	03 2014	TX ESL
Propylene carbonate	108-32-7	50ug/m3 (AN ESL)	03 2014	TX ESL
Propylene carbonate	108-32-7	5ug/m3 (AN ESL)	03 2014	TX ESL
Propylene carbonate	108-32-7	50ug/m3 (ST ESL)	03 2014	TX ESL

*OES BCS: Internal Bayer AG, Crop Science Division "Occupational Exposure Standard"

Exposure controls

Personal protective equipment
In normal use and handling conditions please refer to the label and/or leaflet. In all other cases the following recommendations would apply.

Respiratory protection When respirators are required, select NIOSH approved equipment based on actual or potential airborne concentrations and in

	accordance with the appropriate regulatory standards and/or industry recommendations.
Hand protection	Chemical resistant nitrile rubber gloves
Eye protection	Tightly fitting safety goggles
Skin and body protection	Wear long-sleeved shirt and long pants and shoes plus socks.
General protective measures	Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and warm/tepid water. Keep and wash PPE separately from other laundry.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	light yellow to brown, shades of orange
Physical State	Liquid slightly turbid
Odor	characteristic
Odour Threshold	No data available
pH	5.0 - 7.0 at 1 % (23 °C) (deionized water)
Vapor Pressure	No data available
Vapor Density (Air = 1)	No data available
Density	ca. 1.17 g/cm³ at 20 °C
Evaporation rate	No data available
Boiling Point	No data available
Melting / Freezing Point	No data available
Water solubility	soluble
Minimum Ignition Energy	Not applicable
Decomposition temperature	Not applicable
Partition coefficient: n-octanol/water	No data available
Viscosity	No data available
Flash point	> 100 °C
Auto-ignition temperature	420 °C / 788 °F
Lower explosion limit	No data available
Upper explosion limit	No data available
Explosivity	Not explosive 92/69/EEC, A.14 / OECD 113

Other information	Further safety related physical-chemical data are not known.

SECTION 10: STABILITY AND REACTIVITY

Reactivity

Thermal decomposition	Not applicable
Chemical stability	Stable under recommended storage conditions.
Possibility of hazardous reactions	No hazardous reactions when stored and handled according to prescribed instructions.
Conditions to avoid	Extremes of temperature and direct sunlight.
Incompatible materials	No data available
Hazardous decomposition products	No decomposition products expected under normal conditions of use.

SECTION 11: TOXICOLOGICAL INFORMATION

Exposure routes	Ingestion, Skin contact, Eye contact
Immediate Effects	
Eye	Moderate eye irritation.
Skin	Harmful if absorbed through skin. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.
Ingestion	Harmful if swallowed.

Information on toxicological effects

Acute oral toxicity	LD50 (female Rat) > 2,000 mg/kg
Acute inhalation toxicity	LC50 (female Rat) ca. 3.496 mg/l Exposure time: 4 h Determined in the form of a respirable aerosol.
Acute dermal toxicity	LD50 (male/female combined Rat) > 2,000 mg/kg
Skin irritation	No skin irritation (Rabbit)
Eye irritation	No eye irritation (Rabbit)
Sensitisation	Sensitising (Mouse) OECD Test Guideline 429, local lymph node assay (LLNA)

Assessment STOT Specific target organ toxicity – repeated exposure

Flupyradifurone did not cause specific target organ toxicity in experimental animal studies.

Assessment mutagenicity

Flupyradifurone was not mutagenic or genotoxic in a battery of in vitro and in vivo tests.

Assessment carcinogenicity

Flupyradifurone was not carcinogenic in lifetime feeding studies in rats and mice.

ACGIH

None.

NTP

None.

IARC

None.

OSHA

None.

Assessment toxicity to reproduction

Flupyradifurone did not cause reproductive toxicity in a two-generation study in rats.

Assessment developmental toxicity

Flupyradifurone did not cause developmental toxicity in rats and rabbits.

Further information

Only acute toxicity studies have been performed on the formulated product.
The non-acute information pertains to the active ingredient(s).

SECTION 12: ECOLOGICAL INFORMATION

Toxicity to fish	LC50 (Oncorhynchus mykiss (rainbow trout)) > 585 mg/l Exposure time: 96 h
Toxicity to aquatic invertebrates	EC50 (Daphnia magna (Water flea)) 684 mg/l Exposure time: 48 h
Chronic toxicity to aquatic invertebrates	NOEC (Chironomus riparius (non-biting midge)): 0.0702 mg/l Exposure time: 28 d
Toxicity to aquatic plants	IC50 (Raphidocelis subcapitata (freshwater green alga)) > 250 mg/l Growth rate; Exposure time: 72 h
Biodegradability	Flupyradifurone: Not rapidly biodegradable
Koc	Flupyradifurone: Koc: 93
Bioaccumulation	Flupyradifurone: Does not bioaccumulate.
Mobility in soil	Flupyradifurone: Moderately mobile in soils

Additional ecological information	No other effects to be mentioned.
Environmental precautions	Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate surface or ground water by cleaning equipment or disposal of wastes, including equipment wash water. Drift and runoff from treated areas may be hazardous to aquatic organisms in adjacent sites. Apply this product as specified on the label.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods

Product	Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.
Contaminated packaging	Follow advice on product label and/or leaflet. Do not re-use empty containers. Consult state and local regulations regarding the proper disposal of container.
RCRA Information	Characterization and proper disposal of this material as a special or hazardous waste is dependent upon Federal, State and local laws and are the user's responsibility. RCRA classification may apply.

SECTION 14: TRANSPORT INFORMATION

49CFR	Not dangerous goods / not hazardous material
IMDG	
UN number	**3082**
Class	9
Packaging group	III
Marine pollutant	YES
Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (FLUPYRADIFURONE SOLUTION)
IATA	
UN number	**3082**
Class	9
Packaging group	III
Environm. Hazardous Mark	YES

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (FLUPYRADIFURONE SOLUTION)

This transportation information is not intended to convey all specific regulatory information relating to this product. It does not address regulatory variations due to package size or special transportation requirements.

SECTION 15: REGULATORY INFORMATION

EPA Registration No. 264-1141
US Federal Regulations
TSCA list
Propylene carbonate 108-32-7
US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)
None.
SARA Title III - Section 302 - Notification and Information
None.
SARA Title III - Section 313 - Toxic Chemical Release Reporting
None.
US States Regulatory Reporting
CA Prop65
This product does not contain any substances known to the State of California to cause cancer.

This product does not contain any substances known to the State of California to cause reproductive harm.

US State Right-To-Know Ingredients
None.

Canadian Regulations
Canadian Domestic Substance List
None.

Environmental
CERCLA
None.
Clean Water Section 307 Priority Pollutants
None.
Safe Drinking Water Act Maximum Contaminant Levels
None.

EPA/FIFRA Information:
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information required on the pesticide label:

Signal word: Caution!

Hazard statements: Harmful if swallowed or absorbed through skin.
Moderate eye irritation.
Avoid contact with skin and clothing.
Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.
Remove and wash contaminated clothing before re-use.

SECTION 16: OTHER INFORMATION

Abbreviations and acronyms

49CFR	Code of Federal Regulations, Title 49
ACGIH	US. ACGIH Threshold Limit Values
ATE	Acute toxicity estimate
CAS-Nr.	Chemical Abstracts Service number
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
EINECS	European inventory of existing commercial substances
ELINCS	European list of notified chemical substances
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
N.O.S.	Not otherwise specified
NTP	US. National Toxicology Program (NTP) Report on Carcinogens
OECD	Organization for Economic Co-operation and Development
TDG	Transportation of Dangerous Goods
TWA	Time weighted average
UN	United Nations
WHO	World health organisation

NFPA 704 (National Fire Protection Association):
Health - 1 Flammability - 1 Instability - 0 Others - none

HMIS (Hazardous Materials Identification System, based on the Third Edition Ratings Guide)
Health - 1 Flammability - 1 Physical Hazard - 0 PPE -

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

Reason for Revision: Reviewed and updated for general editorial purposes. The following sections have been revised: Section 2: Hazards Identification.

Revision Date: 01/23/2017

This information is provided in good faith but without express or implied warranty. The customer assumes all responsibility for safety and use not in accordance with label instructions. The product names are registered trademarks of Bayer.

Material Safety Data Sheet

COMITE®

Version: 1.1 | Revision Date: 04/18/2013 | Print Date: 05/01/2013

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name:	*COMITE®*
Synonyms:	Comite
Company:	Chemtura Corporation 199 Benson Road Middlebury, CT 06749 United States of America Telephone: (US) +1 866-430-2775
Emergency telephone number:	CHEMTREC: (24 hours) 800-424-9300 : Chemtura Corporation Emergency Response: CHEMTURA : 800-292-5898 For additional emergency telephone numbers see section 16 of the Safety Data Sheet.
Prepared by: 04/18/2013	Product Safety Department (US) +1 866-430-2775 MSDSRequest@chemtura.com

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

DANGER!

Form: liquid Colour: brown Odour: characteristic

Hazard Summary	: Combustible liquid Toxic by inhalation. Harmful if swallowed. Risk of serious damage to eyes. May cause skin irritation. Limited evidence of a carcinogenic effect. Potential oxidizer.
OSHA Hazards	: COMBUSTIBLE LIQUID TOXIC BY INHALATION. HARMFUL BY INGESTION. SEVERE SKIN IRRITANT CARCINOGEN

Carcinogenicity:

IARC No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

NTP No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

ACGIH No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous components

Component / CAS-No.	Weight percent
propargite 2312-35-8	73.6034 %
Distillates (petroleum), hydrotreated light 64742-47-8	10.76 %
butan-1-ol 71-36-3	>= 1 - < 5 %
propargite 2312-35-8	73.6034 >= 60 - <= 100 %
butan-1-ol 71-36-3	1.488 >= 1 - < 5 %

SECTION 4. FIRST AID MEASURES

First aid procedures

Inhalation : Move to fresh air.
If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible.
Call a POISON CENTER or doctor/ physician.

Skin contact : Remove contaminated clothing and shoes.
Wash off immediately with plenty of water for at least 15 minutes.
Call a POISON CENTER or doctor/ physician.

Eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.
Call a POISON CENTER or doctor/ physician.

Ingestion : Call a physician or poison control centre immediately.
If swallowed, DO NOT induce vomiting unless directed to do so by medical personnel.
If a person vomits when lying on his back, place him in the recovery position.
Never give anything by mouth to an unconscious person.

SECTION 5. FIREFIGHTING MEASURES

Flammable properties

Flash point	:	145 °F (63 °C)
Lower explosion limit	:	Remarks: no data available
Upper explosion limit	:	Remarks: no data available

Fire fighting

Suitable extinguishing media	:	Extinguishing media - large fires Alcohol-resistant foam (on small fires) Carbon dioxide (CO2) Dry chemical
Unsuitable extinguishing media	:	Water spray jet
Further information	:	Do not discharge extinguishing waters into streams, rivers and lakes.

Protective equipment and precautions for firefighters

Special protective equipment for firefighters	:	Body covering protective clothing, full "turn-out" gear. Self-contained breathing apparatus (EN 133)

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions	:	Evacuate unnecessary personnel. Avoid all contact with material. Wear suitable protective equipment.
Environmental precautions	:	Prevent leaks and prevent soil / water pollution caused by leaks.
Methods for containment / Methods for cleaning up	:	Absorb on inert material such as sand, earth, vermiculite. Collect for disposal. Dam up. Large spills should be collected mechanically (remove by pumping) for disposal. Pump excess material into suitable container (metal drums, metal tank, or such). In accordance with local and national regulations.

SECTION 7. HANDLING AND STORAGE

Handling

Handling procedures	:	Wear suitable protective equipment. Warn personnel about the dangers of the product. Keep container tightly closed. NOTE TO END-USERS: The employee protection recommendations on this

MSDS may differ from those on the product label. For normal use of this product, always refer to the personal protective equipment requirements on the product label.

Storage

Requirements for storage areas and containers : Keep in a dry, cool place.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Components with workplace control parameters

Components / CAS-No.	Value / Basis / Update	Control parameters	Further information
butan-1-ol 71-36-3	TWA ACGIH 2007-01-01	20 ppm	
	TWA OSHA Z-1 1997-08-04	100 ppm 300 mg/m3	
	C OSHA P0 1989-01-19	50 ppm 150 mg/m3	

Components with workplace control parameters

Components / CAS-No.	Value / Basis / Update	Control parameters	Further information
butan-1-ol 71-36-3	TWA ACGIH 2007-01-01	20 ppm	
	TWA OSHA Z-1 1997-08-04	100 ppm 300 mg/m3	
	C OSHA P0 1989-01-19	50 ppm 150 mg/m3	

Engineering measures

Personal protective equipment

Eye protection	:	Face-shield
Hand protection	:	Impervious gloves
Skin and body protection	:	Preventive skin protection
Respiratory protection	:	In case of insufficient ventilation, wear suitable respiratory equipment. Use NIOSH approved respiratory protection.
Hygiene measures	:	Provide adequate ventilation. Wash hands and face before breaks and immediately after handling the product.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	:	liquid
Colour	:	brown
Odour	:	characteristic

Safety data

Flash point	:	145 °F (63 °C)
Lower explosion limit	:	Note: no data available
Upper explosion limit	:	Note: no data available
Vapour pressure	:	no data available
Density	:	1.063 g/cm3
Water solubility	:	Note: emulsifiable
Partition coefficient: n-octanol/water	:	Note: no data available
Solubility in other solvents	:	Note: no data available

SECTION 10. STABILITY AND REACTIVITY

Materials to avoid	:	Remarks: Oxidizing agents Strong acids and strong bases
Hazardous decomposition products	:	Note: Carbon oxides Other hazardous decomposition products may be formed.
Hazardous reactions	:	Hazardous polymerisation does not occur.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	: LD50: 600 mg/kg Species: rat
Acute inhalation toxicity	: LC50: 0.75 mg/l Exposure time: 4 h Species: rat
Acute dermal toxicity	: LD50: > 5,000 mg/kg Species: rat
Skin irritation	: Species: rabbit Result: Severe skin irritation
Eye irritation	: Species: rabbit Result: Corrosive
Sensitisation	: Species: guinea pig Result: negative

Toxicology Assessment

CMR effects	: Carcinogenicity: Limited evidence of a carcinogenic effect. Mutagenicity: negative Reproductive toxicity: negative

12. ECOLOGICAL INFORMATION

Ecotoxicity effects

Toxicity to fish	: LC50: 0.143 mg/l Exposure time: 96 h
	: LC50: 0.118 mg/l Species: Salmo gairdneri
Toxicity to daphnia and other aquatic invertebrates	: EC50: 0.075 mg/l Exposure time: 48 h

Toxicity to algae	:	IC50: 0.31 mg/l Exposure time: 72 h

Further information on ecology

SECTION 13. DISPOSAL CONSIDERATIONS

Further information	:	Dispose of waste material in compliance with all federal, state, and local regulations. The product should not be allowed to enter drains, water courses or the soil.

SECTION 14. TRANSPORT INFORMATION

DOT

UN number	:	3082
Description of the goods	:	Environmentally hazardous substances, liquid, n.o.s.
	:	(propargite, n-butanol)
Class	:	9
Packing group	:	III
ERG Code	:	171

IATA

UN number	:	3082
Description of the goods	:	Environmentally hazardous substance, liquid, n.o.s. (propargite, n-butanol)
Class	:	9
Packing group	:	III
Labels	:	9
Environmentally hazardous	:	yes

IMDG

UN number	:	3082
Description of the goods	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (propargite, n-butanol)
Class	:	9
Packing group	:	III
EmS Number 1	:	F-A
EmS Number 2	:	S-F
Marine pollutant	:	yes propargite
Environmentally hazardous	:	yes propargite

SECTION 15. REGULATORY INFORMATION

OSHA Hazards : Combustible Liquid, Toxic by inhalation., Harmful by ingestion., Severe skin irritant, Carcinogen

CERCLA Reportable Quantity : 14 lbs

SARA 302 Reportable Quantity :

propargite 2312-35-8 10 lbs

SARA 311/312 Hazards : Fire Hazard
Acute Health Hazard
Chronic Health Hazard

EPCRA - EMERGENCY PLANNING COMMUNITY RIGHT - TO - KNOW

SARA 302 Reportable Quantity :

SARA 304 Components : This material does not contain any components with a section 304 EHS RQ.

SARA 313 Components : propargite 2312-35-8
butan-1-ol 71-36-3

California Prop. 65 Components : WARNING! This product contains a chemical known to the State of California to cause cancer.

propargite 2312-35-8
propargite

WARNING! This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

propargite 2312-35-8
propargite

The components of this product are reported in the following inventories:

US.TSCA Not On TSCA Inventory

DSL This product contains the following components that are not on the Canadian DSL nor NDSL lists.

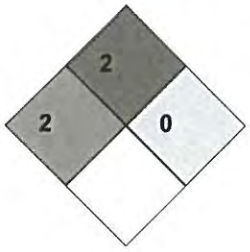
AICS	On the inventory, or in compliance with the inventory
NZIoC	On the inventory, or in compliance with the inventory
ENCS	Not in compliance with the inventory
ISHL	Not in compliance with the inventory
KECI	Not in compliance with the inventory
PICCS	On the inventory, or in compliance with the inventory
IECSC	On the inventory, or in compliance with the inventory
TSCA list Information	US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D) ZUS_T12B Not relevant

SECTION 16. OTHER INFORMATION

Further information

HMIS Classification : Health hazard: 3
Chronic Health Hazard: *
Flammability: 2
Physical hazards: 0
PPI:Ask supervisor or safety specialist for handling instructions

NFPA Classification : Health hazard: 2
Fire Hazard: 2
Reactivity Hazard: 0



Other Emergency Phone Number

Latin America:	Brazil	+55 113 711 9144
	All other countries	+44 (0) 1235 239 670
Mexico:		+52 555 004 8763

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Material Safety Data Sheet

Chemtura

COMITE® II

Version: 1.8 | Revision Date: 03/28/2013 | Print Date: 04/05/2013

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name: *COMITE® II*

Company:
Chemtura Corporation
199 Benson Road
Middlebury, CT
06749
United States of America

Telephone: (US) +1 866-430-2775

Emergency telephone number:
CHEMTREC: (24 hours) 800-424-9300
:
Chemtura Corporation Emergency Response: CHEMTURA : 800-292-5898

For additional emergency telephone numbers see section 16 of the Safety Data Sheet.

Prepared by:
Product Safety Department
(US) +1 866-430-2775

03/28/2013

MSDSRequest@chemtura.com

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

DANGER!

Form: liquid | Colour: red brown to black | Odour: slight sulphurous

Hazard Summary :
Corrosive
Risk of serious damage to eyes.
Severe skin irritation
May be fatal if inhaled.
Harmful in contact with skin and if swallowed.
May cause cancer.

Potential Health Effects

Symptoms of Overexposure : Breathing difficulties
discomfort in the chest
Drowsiness
irritant effects
carcinogenic effects

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous components

SECTION 4. FIRST AID MEASURES

First aid procedures

Inhalation : Move to fresh air.
If not breathing, give artificial respiration.
If breathing is difficult, give oxygen.
Call a POISON CENTER or doctor/ physician.

Skin contact : Remove contaminated clothing and shoes.
Wash off immediately with plenty of water for at least 15 minutes.
Call a POISON CENTER or doctor/ physician.

Eye contact : In case of contact, immediately flush eyes with plenty of water for at least 15 minutes.
Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.
Call a POISON CENTER or doctor/ physician.

Ingestion : Call a physician or poison control centre immediately.
If swallowed, DO NOT induce vomiting unless directed to do so by medical personnel.
Do not give anything to drink.
Never give anything by mouth to an unconscious person.

Do not induce vomiting without medical advice.

Notes to physician

Symptoms : Breathing difficulties
discomfort in the chest
Drowsiness
irritant effects
carcinogenic effects

Treatment : The first aid procedure should be established in consultation with the doctor responsible for industrial medicine.

SECTION 5. FIREFIGHTING MEASURES

Flammable properties

Flash point : 151 °F (66 °C)
Method: Tag closed cup

Ignition temperature	:	Remarks: not determined

Fire fighting

Suitable extinguishing media	:	Extinguishing media - large fires Alcohol-resistant foam (on small fires) Carbon dioxide (CO2) Dry chemical
Unsuitable extinguishing media	:	Water spray jet
Further information	:	Do not discharge extinguishing waters into streams, rivers and lakes.

Protective equipment and precautions for firefighters

Specific hazards during firefighting	:	Do not allow run-off from fire fighting to enter drains or water courses. Burning produces noxious and toxic fumes.
Special protective equipment for firefighters	:	Body covering protective clothing, full "turn-out" gear. Self-contained breathing apparatus (EN 133)

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions	:	Evacuate unnecessary personnel. Avoid all contact with material. Wear suitable protective equipment.
Environmental precautions	:	Prevent leaks and prevent soil / water pollution caused by leaks.
Methods for containment / Methods for cleaning up	:	Absorb on inert material such as sand, earth, vermiculite. Collect for disposal. Dam up. Large spills should be collected mechanically (remove by pumping) for disposal. Pump excess material into suitable container (metal drums, metal tank, or such). In accordance with local and national regulations.

SECTION 7. HANDLING AND STORAGE

Handling

Handling procedures	:	Wear suitable protective equipment. Warn personnel about the dangers of the product. Keep container tightly closed.

Storage

Requirements for storage areas and containers	:	Keep in a dry, cool place.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Engineering measures

Personal protective equipment

Eye protection	:	Face-shield
Hand protection	:	Impervious gloves
Skin and body protection	:	Preventive skin protection
Respiratory protection	:	When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. In case of insufficient ventilation, wear suitable respiratory equipment.
Hygiene measures	:	Provide adequate ventilation.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	:	liquid
Colour	:	red brown to black
Odour	:	slight sulphurous

Safety data

Flash point	:	151 °F (66 °C) Method: Tag closed cup
Ignition temperature	:	Remarks: not determined
pH	:	Note: no data available
Melting point/range	:	Note: no data available
Boiling point/boiling range	:	Note: no data available
Vapour pressure	:	no data available
Density	:	1.045 g/cm3

Water solubility	:	Note: emulsifiable
Partition coefficient: n-octanol/water	:	log Pow: 5.7
Solubility in other solvents	:	Note: completely miscible

SECTION 10. STABILITY AND REACTIVITY

Conditions to avoid	:	Remarks: Heat, flames and sparks.
Materials to avoid	:	Remarks: Strong acids and strong bases
Hazardous decomposition products	:	Note: Sulphur oxides Other hazardous decomposition products may be formed.
Thermal decomposition	:	Remarks: no data available
Hazardous reactions	:	No dangerous reaction known under conditions of normal use.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	:	LD50: 960 mg/kg Species: rat
Acute inhalation toxicity	:	LC50: 0.46 mg/l Exposure time: 4 h Species: rat
Acute dermal toxicity	:	LD50: 4,500 mg/kg Species: rabbit
Skin irritation	:	Species: rabbit Result: Corrosive
Eye irritation	:	Species: rabbit Result: Severe irritation
Sensitisation	:	Species: guinea pig Result: negative
Aspiration toxicity	:	Harmful: may cause lung damage if swallowed.

Toxicology Assessment

CMR effects	:	Carcinogenicity: Limited evidence of a carcinogenic effect.

Mutagenicity:
negative
Reproductive toxicity:
Not classified due to lack of data.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects
Elimination information (persistence and degradability)

Bioaccumulation	:	Remarks: no data available
Mobility	:	Remarks: no data available
Biodegradability	:	Remarks: no data available

Further information on ecology

Additional ecological information	:	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

SECTION 13. DISPOSAL CONSIDERATIONS

Further information	:	In accordance with local and national regulations. The product should not be allowed to enter drains, water courses or the soil.

SECTION 14. TRANSPORT INFORMATION

DOT

UN number	:	3082
Description of the goods	:	Environmentally hazardous substances, liquid, n.o.s.
	:	(propargite)
Class	:	9
Packing group	:	III
ERG Code	:	171

IATA

UN number	:	3082
Description of the goods	:	Environmentally hazardous substance, liquid, n.o.s. (propargite)
Class	:	9

Packing group	: III
Labels	: 9
Environmentally hazardous	: no

IMDG

UN number	: 3082
Description of the goods	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (propargite)
Class	: 9
Packing group	: III
EmS Number 1	: F-A
EmS Number 2	: S-F
Marine pollutant	: yes propargite
Environmentally hazardous	: yes propargite

RQ may apply if the package is greater than 2 gallons.

SECTION 15. REGULATORY INFORMATION

CERCLA Reportable Quantity	: 13 lbs	
	propargite 2312-35-8	10 lbs
SARA 302 Reportable Quantity	:	

EPCRA - EMERGENCY PLANNING COMMUNITY RIGHT - TO - KNOW

SARA 302 Reportable Quantity	:
SARA 304 Components	: This material does not contain any components with a section 304 EHS RQ.
SARA 313 Components	: propargite 2312-35-8
Massachusetts Right To Know Components	: propargite 2312-35-8CERCLA hazardous substances. 40 cfr part 302. May be subject to emergency release notification under SARA Title III.
Pennsylvania Right To Know Components	: propargite 2312-35-8CERCLA hazardous substances. 40 cfr part 302. May be subject to emergency release notification under SARA Title III.

Sponto C-5863
Distillates (petroleum), hydrotreated light 64742-47-8

New Jersey Right To Know Components : propargite 2312-35-8 CERCLA hazardous substances. 40 cfr part 302. May be subject to emergency release notification under SARA Title III.

Distillates (petroleum), hydrotreated light 64742-47-8
Sponto C-5863

California Prop. 65 Components : WARNING! This product contains a chemical known to the State of California to cause cancer.

propargite	2312-35-8 propargite

WARNING! This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

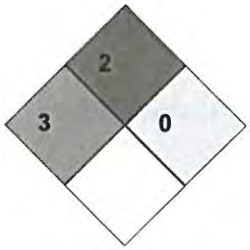
propargite	2312-35-8 propargite

SECTION 16. OTHER INFORMATION

Further information

HMIS Classification : Health hazard: 3
Flammability: 2
Physical hazards: 0
PPI:Ask supervisor or safety specialist for handling instructions

NFPA Classification : Health hazard: 3
Fire Hazard: 2
Reactivity Hazard: 0



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Mexico:		+52 555 004 8763

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Dow AgroSciences

SAFETY DATA SHEET
DOW AGROSCIENCES LLC

Product name: GARLON™ 3A Herbicide

Issue Date: 11/30/2015
Print Date: 11/30/2015

DOW AGROSCIENCES LLC encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: GARLON™ 3A Herbicide

Recommended use of the chemical and restrictions on use
Identified uses: End use herbicide product

COMPANY IDENTIFICATION
DOW AGROSCIENCES LLC
9330 ZIONSVILLE RD
INDIANAPOLIS IN 46268-1053
UNITED STATES

Customer Information Number: 800-992-5994
info@dow.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 800-992-5994
Local Emergency Contact: 352-323-3500

2. HAZARDS IDENTIFICATION

Hazard classification
This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.
Flammable liquids - Category 3
Eye irritation - Category 2A
Specific target organ toxicity - repeated exposure - Category 2

Label elements
Hazard pictograms

Signal word: **WARNING!**

Hazards
Flammable liquid and vapour.
Causes serious eye irritation.
May cause damage to organs (Kidney) through prolonged or repeated exposure.

Precautionary statements

Prevention
Keep away from heat/sparks/open flames/hot surfaces. No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ ventilating/ lighting/ equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Wear protective gloves/ eye protection/ face protection.

Response
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Get medical advice/ attention if you feel unwell.
If eye irritation persists: Get medical advice/ attention.
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Storage
Store in a well-ventilated place. Keep cool.

Disposal
Dispose of contents/ container to an approved waste disposal plant.

Other hazards
No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature: Mixture
This product is a mixture.

Component	CASRN	Concentration
Triclopyr Triethylamine Salt	57213-69-1	44.4%
Ethanol	64-17-5	2.1%
Alkylphenol alkoxylate	69029-39-6	1.0%
Balance	Not available	52.5%

4. FIRST AID MEASURES

Description of first aid measures
General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice.

Skin contact: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Eye contact: Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice. Suitable emergency eye wash facility should be immediately available.

Ingestion: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed: Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed
Notes to physician: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. General purpose synthetic foams (including AFFF type) or protein foams are preferred if available. Alcohol resistant foams (ATC type) may function.

Unsuitable extinguishing media: No data available

Special hazards arising from the substance or mixture
Hazardous combustion products: Under fire conditions some components of this product may decompose. The smoke may contain unidentified toxic and/or irritating compounds. Combustion products may include and are not limited to: Nitrogen oxides. Hydrogen chloride. Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: This material will not burn until the water has evaporated. Residue can burn. May produce flash fire. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. If exposed to fire from another source and water is evaporated, exposure to high temperatures may cause toxic fumes.

Advice for firefighters
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Eliminate ignition sources. To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Evacuate area. Keep unnecessary and unprotected personnel from entering the area. Keep personnel out of low areas. Keep upwind of spill. Ventilate area of leak or spill. No smoking in area. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Vapor explosion hazard. Keep out of sewers. Refer to section 7, Handling, for additional precautionary measures. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Ground and bond all containers and handling equipment. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Pump with explosion-proof equipment. If available, use foam to smother or suppress. Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling: Keep away from heat, sparks and flame. Keep out of reach of children. No smoking, open flames or sources of ignition in handling and storage area. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Do not get in eyes. Avoid contact with skin and clothing. Avoid breathing vapor or mist. Do not swallow. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. Electrically ground and bond all equipment. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. Use of non-sparking or explosion-proof equipment may be necessary,

depending upon the type of operation. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage: Store in a dry place. Store in original container. Keep container tightly closed when not in use. Do not store near food, foodstuffs, drugs or potable water supplies. Minimize sources of ignition, such as static build-up, heat, spark or flame.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Triclopyr Triethylamine Salt	Dow IHG	TWA	2 mg/m3
	Dow IHG	TWA	SKIN, DSEN, BEI
Ethanol	ACGIH	STEL	1,000 ppm
	OSHA Z-1	TWA	1,900 mg/m3 1,000 ppm
Alkylphenol alkoxylate	Dow IHG	TWA	2 mg/m3

RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.

Exposure controls

Engineering controls: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use chemical goggles.

Skin protection

Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Examples of preferred glove barrier materials include: Butyl rubber. Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl chloride ("PVC" or "vinyl"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Wear clean, body-covering clothing.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator.
The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	Liquid.
Color	Pink
Odor	Ammoniacal
Odor Threshold	No test data available
pH	9.5 10% *pH Electrode*
Melting point/range	Not applicable
Freezing point	No test data available
Boiling point (760 mmHg)	No test data available
Flash point	**closed cup** 43 °C (109 °F) *Setaflash Closed Cup ASTM D3828*
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammability (solid, gas)	No data available
Lower explosion limit	No test data available
Upper explosion limit	No test data available
Vapor Pressure	Not applicable
Relative Vapor Density (air = 1)	Not applicable
Relative Density (water = 1)	1.1385 at 20 °C (68 °F) *Digital Density Meter (Oscillating Coil)*
Water solubility	Soluble
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	No test data available
Decomposition temperature	No test data available
Dynamic Viscosity	12.5 mPa.s at 25 °C (77 °F)
Kinematic Viscosity	No test data available
Explosive properties	No *Thermal*
Oxidizing properties	No
Liquid Density	1.1385 g/cm3 at 20 °C (68 °F) *Digital density meter*
Molecular weight	No data available
Surface tension	38.5 mN/m at20 °C (68 °F) *EC Method A5*

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: No dangerous reaction known under conditions of normal use.

Chemical stability: Thermally stable at recommended temperatures and pressures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Active ingredient decomposes at elevated temperatures.

Incompatible materials: Avoid contact with: Oxidizers.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Hydrogen chloride. Nitrogen oxides.

11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Acute toxicity

Acute oral toxicity
Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

As product:
LD50, Rat, female, 4,100 mg/kg

Acute dermal toxicity
Prolonged skin contact is unlikely to result in absorption of harmful amounts.

As product:
LD50, Rabbit, male and female, > 5,000 mg/kg

Acute inhalation toxicity
No adverse effects are anticipated from single exposure to mist. Excessive exposure may cause irritation to upper respiratory tract (nose and throat).

As product:
LC50, Rat, male and female, 4 Hour, Mist, > 5.4 mg/l
Maximum attainable concentration.
No deaths occurred at this concentration.

Skin corrosion/irritation
Brief contact is essentially nonirritating to skin.

Serious eye damage/eye irritation
May cause moderate eye irritation.
May cause moderate corneal injury.

Sensitization
Did not demonstrate the potential for contact allergy in mice.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)
Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Specific Target Organ Systemic Toxicity (Repeated Exposure)
For the active ingredient(s):
In animals, effects have been reported on the following organs:
Kidney.

For the minor component(s):
In animals, effects have been reported on the following organs:
Kidney.
Liver.

Carcinogenicity
For similar active ingredient(s). Triclopyr. Did not cause cancer in laboratory animals.

Teratogenicity
For the active ingredient(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.

For the minor component(s): Has caused birth defects in lab animals at high doses.

Reproductive toxicity
For similar active ingredient(s). Triclopyr. In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

Mutagenicity
In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Aspiration Hazard
Based on physical properties, not likely to be an aspiration hazard.

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

Toxicity

Acute toxicity to fish
Based on information for a similar material:
Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested).

LC50, Oncorhynchus mykiss (rainbow trout), 96 Hour, 400 mg/l, OECD Test Guideline 203 or Equivalent

LC50, Lepomis macrochirus (Bluegill sunfish), semi-static test, 96 Hour, > 100 mg/l

Acute toxicity to aquatic invertebrates
EC50, eastern oyster (Crassostrea virginica), static test, 48 Hour, 56 - 87 mg/l, Method Not Specified.

LC50, Daphnia magna (Water flea), static test, 48 Hour, > 1,000 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
ErC50, Pseudokirchneriella subcapitata (green algae), 72 Hour, Growth rate inhibition, 107 mg/l, OECD Test Guideline 201 or Equivalent

ErC50, blue-green alga Anabaena flos-aquae, 72 Hour, Growth inhibition, > 100 mg/l

EC50, Lemna gibba, 7 d, Growth inhibition, > 100 mg/l

Based on information for a similar material:
ErC50, Myriophyllum spicaturn, 14 d, 0.241 mg/l

Based on information for a similar material:
NOEC, Myriophyllum spicaturn, 14 d, 0.0191 mg/l

Persistence and degradability

Triclopyr Triethylamine Salt

Biodegradability: For similar active ingredient(s). Triclopyr. Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%).
For similar active ingredient(s). Triclopyr. Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

Ethanol

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Pass
Biodegradation: > 70 %
Exposure time: 5 d
Method: OECD Test Guideline 301D or Equivalent

Theoretical Oxygen Demand: 2.08 mg/mg

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 2.99 d
Method: Estimated.

Alkylphenol alkoxylate

Biodegradability: Biodegradation under aerobic laboratory conditions is below detectable limits (BOD20 or BOD28/ThOD < 2.5%).

Theoretical Oxygen Demand: 2.35 mg/mg

Chemical Oxygen Demand: 1.78 mg/mg

Balance

Biodegradability: No relevant data found.

Bioaccumulative potential

Triclopyr Triethylamine Salt

Bioaccumulation: For similar active ingredient(s). Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Ethanol

Bioaccumulation: Bioaccumulation is unlikely. Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): -0.31 Measured

Alkylphenol alkoxylate

Bioaccumulation: No bioconcentration is expected because of the relatively high water solubility. May foam in water.

Balance

Bioaccumulation: No relevant data found.

Mobility in soil

Triclopyr Triethylamine Salt

For similar active ingredient(s).
Potential for mobility in soil is very high (Koc between 0 and 50).

Ethanol

Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient(Koc): 1.0 Estimated.

Alkylphenol alkoxylate

No data available.

Balance

No relevant data found.

13. DISPOSAL CONSIDERATIONS

Disposal methods: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

14. TRANSPORT INFORMATION

DOT

Proper shipping name	Combustible liquid, n.o.s.(Triethylamine, Ethanol)
UN number	NA 1993
Class	CBL
Packing group	III

Classification for SEA transport (IMO-IMDG):

Proper shipping name	FLAMMABLE LIQUID, N.O.S.(Triethylamine, Ethanol)
UN number	UN 1993
Class	3
Packing group	III
Marine pollutant	No
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Proper shipping name	Flammable liquid, n.o.s.(Triethylamine, Ethanol)
UN number	UN 1993
Class	3
Packing group	III

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312
Fire Hazard
Acute Health Hazard

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

Components	**CASRN**
Triclopyr Triethylamine Salt	57213-69-1

Pennsylvania Worker and Community Right-To-Know Act:
The following chemicals are listed because of the additional requirements of Pennsylvania law:

Components	**CASRN**
Ethanol	64-17-5

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)

This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

United States TSCA Inventory (TSCA)
This product contains chemical substance(s) exempt from U.S. EPA TSCA Inventory requirements. It is regulated as a pesticide subject to Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requirements.

Federal Insecticide, Fungicide and Rodenticide Act
EPA Registration Number: 62719-037
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

DANGER

Corrosive
Causes irreversible eye damage
Harmful if swallowed or absorbed through skin
Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

16. OTHER INFORMATION

Hazard Rating System
NFPA

Health	Fire	Reactivity
3	2	0

Revision
Identification Number: 101199615 / A211 / Issue Date: 11/30/2015 / Version: 8.0
DAS Code: XRM-3724
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

ACGIH	USA. ACGIH Threshold Limit Values (TLV)
Dow IHG	Dow Industrial Hygiene Guideline
OSHA Z-1	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
SKIN, DSEN, BEI	Absorbed via Skin, Skin Sensitizer, Biological Exposure Indice
STEL	Short-term exposure limit
TWA	8-hour time weighted average

Information Source and References
This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

DOW AGROSCIENCES LLC urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

SAFETY DATA SHEET
SHARK® EW HERBICIDE

SDS # : 6310-A
Revision date: 2015-04-20
Format: NA
Version 1.01

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier

Product Name SHARK® EW HERBICIDE

Other means of identification

Product Code(s) 6310-A

Synonyms CARFENTRAZONE-ETHYL (FMC 116426): ethyl α,2-dichloro-5-[4-(difluoromethyl)-4,5-dihydro-3-methyl-5-oxo-1H-1,2,4-triazol-1-yl] -4-fluorobenzenepropanoate (CAS name); ethyl (RS)-2-chloro-3-[2-chloro-5-(4-difluoromethyl-4,5-dihydro-3-methyl-5- oxo-1H-1,2,4-triazol-1-yl) -4-fluorophenyl] propionate (IUPAC name)

Active Ingredient(s) Carfentrazone-ethyl

Chemical Family Triazolinones

Recommended use of the chemical and restrictions on use

Recommended Use: Herbicide

Restrictions on Use: Use as recommended by the label

Manufacturer Address

FMC Corporation
1735 Market Street
Philadelphia, PA 19103
(215) 299-6000 (General Information)
msdsinfo@fmc.com (E-Mail General Information)

Emergency telephone number

Medical Emergencies:
1 800 / 331-3148 (PROSAR - U.S.A. & Canada)
1 651 / 632-6793 (PROSAR - All Other Countries - Collect)
For leak, fire, spill or accident emergencies, call:
1 800 / 424 9300 (CHEMTREC - U.S.A.)
1 703 / 527 3887 (CHEMTREC - Collect - All Other Countries)

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Carcinogenicity	Category 2
Aspiration toxicity	Category 1

GHS Label elements, including precautionary statements

EMERGENCY OVERVIEW

Danger

Hazard Statements
H304 - May be fatal if swallowed and enters airways
H351 - Suspected of causing cancer

Precautionary Statements - Prevention
P202 - Do not handle until all safety precautions have been read and understood
P281 - Use personal protective equipment as required
Precautionary Statements - Response
P308 + P313 - IF exposed or concerned: Get medical advice/ attention
P301 + P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor
P331 - Do NOT induce vomiting

Precautionary Statements - Storage
P405 - Store locked up

Precautionary Statements - Disposal
P501 - Dispose of contents/ container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)
No hazards not otherwise classified were identified.

Other Information
No information available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Family Triazolinones.

Chemical name	CAS-No	Weight %
Carfentrazone-ethyl	128639-02-1	21.3
Naphtha (petroleum), heavy aromatic	64742-94-5	20-30
2-Methylnaphthalene	91-57-6	1-5
Propylene glycol	57-55-6	1-5
1-Methylnaphthalene	90-12-0	1-5
Naphthalene	91-20-3	1-5

Synonyms are provided in Section 1.

4. FIRST AID MEASURES

Eye Contact Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing. Call a poison control center or doctor for further treatment advice.

Skin Contact Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for further treatment advice.

Inhalation	Move to fresh air. If person is not breathing, contact emergency medical services, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.
Ingestion	Immediately call a poison control center or doctor Do not induce vomiting unless told to do so by a poison control center or doctor Do not give any liquid to the person Do not give anything by mouth to an unconscious person.
Most important symptoms and effects, both acute and delayed	Central nervous system effects. Gastrointestinal effects.
Indication of immediate medical attention and special treatment needed, if necessary	Treatment is symptomatic and supportive. Contains petroleum distillate. Vomiting may cause aspiration pneumonia.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media	Carbon dioxide (CO_2), Foam, Dry powder, Water spray.
Specific Hazards Arising from the Chemical	Slightly combustible. May support combustion at elevated temperatures.
Explosion data	
Sensitivity to Mechanical Impact	Not sensitive.
Sensitivity to Static Discharge	Not sensitive.
Protective equipment and precautions for firefighters	Wear self-contained breathing apparatus and protective suit.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions	Isolate and post spill area. Remove all sources of ignition. Wear suitable protective clothing, gloves and eye/face protection. For personal protection see section 8.
Other	For further clean-up instructions, call FMC Emergency Hotline number listed in Section 1 "Product and Company Identification" above.
Environmental Precautions	Keep people and animals away from and upwind of spill/leak. Keep material out of lakes, streams, ponds, and sewer drains.
Methods for Containment	Dike to prevent runoff. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.
Methods for cleaning up	Clean and neutralize spill area, tools and equipment by washing with bleach water and soap. Absorb rinsate and add to the collected waste. Waste must be classified and labeled prior to recycling or disposal. Dispose of waste as indicated in Section 13.

7. HANDLING AND STORAGE

Handling	Do not contaminate other pesticides, fertilizers, water, food, or feed by storage or disposal.
Storage	Keep in a dry, cool and well-ventilated place. Keep away from open flames, hot surfaces and sources of ignition. Keep out of reach of children and animals. Keep/store only in original container.
Incompatible products	None known

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Chemical name	ACGIH TLV	OSHA PEL	NIOSH	Mexico
2-Methylnaphthalene 91-57-6	S* TWA: 0.5 ppm	-	-	-
1-Methylnaphthalene 90-12-0	S* TWA: 0.5 ppm	-	-	-
Naphthalene 91-20-3	S* TWA: 10 ppm	TWA: 10 ppm TWA: 50 mg/m³	IDLH: 250 ppm TWA: 10 ppm TWA: 50 mg/m³ STEL: 15 ppm STEL: 75 mg/m³	Mexico: TWA 10 ppm Mexico: TWA 50 mg/m³ Mexico: STEL 15 ppm Mexico: STEL 75 mg/m³
Chemical name	**British Columbia**	**Quebec**	**Ontario TWAEV**	**Alberta**
2-Methylnaphthalene 91-57-6	TWA: 0.5 ppm Skin	-	TWA: 0.5 ppm Skin	-
Propylene glycol 57-55-6	-	-	TWA: 10 mg/m³ (aerosol only) TWA: 50 ppm (aerosol and vapor) TWA: 155 mg/m³ (aerosol and vapor)	-
1-Methylnaphthalene 90-12-0	TWA: 0.5 ppm Skin	-	TWA: 0.5 ppm Skin	-
Naphthalene 91-20-3	TWA: 10 ppm STEL: 15 ppm Skin	TWA: 10 ppm TWA: 52 mg/m³ STEL: 15 ppm STEL: 79 mg/m³	TWA: 10 ppm STEL: 15 ppm Skin	TWA: 10 ppm TWA: 52 mg/m³ STEL: 15 ppm STEL: 79 mg/m³ Skin

Appropriate engineering controls

Engineering measures Apply technical measures to comply with the occupational exposure limits. When working in confined spaces (tanks, containers, etc.), ensure that there is a supply of air suitable for breathing and wear the recommended equipment.

Individual protection measures, such as personal protective equipment

Eye/Face Protection For dust, splash, mist or spray exposure, wear chemical protective goggles.

Skin and Body Protection Wear long-sleeved shirt, long pants, socks, and shoes.

Hand Protection Protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion and the contact time.

Respiratory Protection For dust, splash, mist or spray exposures wear a filtering mask.

Hygiene measures Clean water should be available for washing in case of eye or skin contamination. Wash skin prior to eating, drinking, chewing gum or using tobacco. Shower or bathe at the end of working. Remove and wash contaminated clothing before re-use. Launder work clothing separately from regular household laundry.

General information If the product is used in mixtures, it is recommended that you contact the appropriate protective equipment suppliers. These recommendations apply to the product as supplied.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance Liquid, Off-white
Physical State Liquid

Color	Off-white
Odor	Solvent
Odor threshold	No information available
pH	4.29
Melting point/freezing point	Not applicable
Boiling Point/Range	No information available
Flash point	104 °C / 219 °F Seta Closed Cup
Evaporation Rate	No information available
Flammability (solid, gas)	No information available
Flammability Limit in Air	
Upper flammability limit:	No information available
Lower flammability limit:	No information available
Vapor pressure	No information available
Vapor density	No information available
Density	8.80 lb/gal
Specific gravity	No information available
Water solubility	No information available
Solubility in other solvents	No information available
Partition coefficient	No information available
Autoignition temperature	No information available
Decomposition temperature	No information available
Viscosity, kinematic	No information available
Viscosity, dynamic	No information available
Explosive properties	No information available
Oxidizing properties	No information available
Molecular weight	No information available
Bulk density	No information available

10. STABILITY AND REACTIVITY

Reactivity	None under normal use conditions
Chemical Stability	Stable under recommended storage conditions.
Possibility of Hazardous Reactions	None under normal processing.
Hazardous polymerization	Hazardous polymerization does not occur.
Conditions to avoid	Heat, flames and sparks
Incompatible materials	None known.
Hazardous Decomposition Products	Carbon oxides (COx), Hydrogen chloride, Hydrogen fluoride, Nitrogen oxides (NOx).

11. TOXICOLOGICAL INFORMATION

Product Information

LD50 Oral	4077 mg/kg (rat)
LD50 Dermal	> 4000 mg/kg (rat)
LC50 Inhalation	> 6.31 mg/L 4 hr (rat) - Maximum attainable concentration (zero mortality)
Serious eye damage/eye irritation	Mildly irritating.
Skin corrosion/irritation	Mildly irritating (rabbit).
Sensitization	Based on a similar formulation, this product is not expected to produce skin sensitization.

Information on toxicological effects

Symptoms	Signs of toxicity in laboratory animals included mydriasis, cyanosis, ataxia, dyspnea, lacrimation, and diarrhea.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Chronic toxicity Carfentrazone-ethyl: Long-term exposure caused hematotoxicity and deposit of porphyrin in the liver in animal studies.

Mutagenicity Carfentrazone-ethyl : Not genotoxic in laboratory studies.

Carcinogenicity Carfentrazone-ethyl : No evidence of carcinogenicity from animal studies. There was no evidence of carcinogenic activity of naphthalene in male mice, but there was some evidence of carcinogenic activity in female mice and clear evidence of carcinogenic activity in male and female rats in 2-year inhalation studies conducted by the National Toxicology Program (NTP).

Neurological effects Carfentrazone-ethyl : Not neurotoxic.

Reproductive toxicity Carfentrazone-ethyl : No toxicity to reproduction in animal studies.

Developmental toxicity Carfentrazone-ethyl : Not teratogenic in animal studies.

STOT - single exposure Not classified.

STOT - repeated exposure Not classified.

Neurological effects Carfentrazone-ethyl : Not neurotoxic.

Aspiration hazard Potential for aspiration if swallowed. Vomiting after ingestion of this product may cause aspiration of aromatic hydrocarbons into the lungs, which may result in fatal pulmonary edema.

Chemical name	ACGIH	IARC	NTP	OSHA
Naphthalene 91-20-3	A3	Group 2B	Reasonably Anticipated	X

Legend:

ACGIH (American Conference of Governmental Industrial Hygienists)
A3 - Animal Carcinogen
IARC (International Agency for Research on Cancer)
Group 2B - Possibly Carcinogenic to Humans
NTP (National Toxicology Program)
Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen
OSHA (Occupational Safety and Health Administration of the US Department of Labor)
X - Present

12. ECOLOGICAL INFORMATION

Ecotoxicity

Carfentrazone-ethyl (128639-02-1)				
Active Ingredient(s)	Duration	Species	Value	Units
Carfentrazone-ethyl	72 h EC50	Algae	0.012	mg/L
	96 h LC50	Fish	1.6	mg/L
	48 h LC50	Daphnia	>9.8	mg/L
	96 h NOEC	Algae	1.0	µg/L
	21 d NOEC	Fish	0.0187	mg/L
	21 d NOEC	Crustacea	0.22	mg/L

Persistence and degradability Non-persistent. Readily hydrolyzed. Not readily biodegradable.

Bioaccumulation The substance does not have a potential for bioconcentration.

Mobility Mobility in soil: Not relevant.

13. DISPOSAL CONSIDERATIONS

Waste disposal methods Improper disposal of excess pesticide, spray mixture, or rinsate is prohibited. If these wastes cannot be disposed of by use according to label instructions, contact appropriate disposal authorities for guidance.

Contaminated Packaging Containers must be disposed of in accordance with local, state and federal regulations. Refer to the product label for container disposal instructions.

14. TRANSPORT INFORMATION

DOT

This material is not a hazardous material as defined by U.S. Department of Transportation at 49 CFR Parts 100 through 185.

TDG

Classification below is only applicable when shipped by vessel and is not applicable when shipped by road or rail only.

UN/ID no	UN3082
Proper Shipping Name	Environmentally hazardous substance, liquid, n.o.s.
Hazard class	9
Packing Group	III
Marine Pollutant	Carfentrazone-ethyl .
Description	UN3082, Environmentally hazardous substance, liquid, n.o.s. (Carfentrazone-ethyl, Naphthalene), 9, PG III, Marine Pollutant

ICAO/IATA

UN/ID no	UN3082
Proper Shipping Name	Environmentally hazardous substance, liquid, n.o.s.
Hazard class	9
Packing Group	III
Description	UN3082, Environmentally hazardous substance, liquid, n.o.s. (Carfentrazone-ethyl, Naphthalene), 9, PG III

IMDG/IMO

UN/ID no	UN3082
Proper Shipping Name	Environmentally hazardous substance, liquid, n.o.s.
Hazard class	9
Packing Group	III
EmS No.	F-A, S-F
Marine Pollutant	Carfentrazone-ethyl
Description	UN3082, Environmentally hazardous substance, liquid, n.o.s. (Carfentrazone-ethyl, Naphthalene), 9, PG III, Marine Pollutant

15. REGULATORY INFORMATION

U.S. Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372:

Chemical name	CAS-No	Weight %	SARA 313 - Threshold Values %
Naphthalene - 91-20-3	91-20-3	1-5	0.1

SARA 311/312 Hazard Categories

Acute health hazard	Yes
Chronic health hazard	Yes
Fire hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

Clean Water Act

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42):

Chemical name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Naphthalene 91-20-3	100 lb	X	X	X

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302):

Chemical name	Hazardous Substances RQs	Extremely Hazardous Substances RQs	RQ
Naphthalene 91-20-3	100 lb		RQ 100 lb final RQ RQ 45.4 kg final RQ

FIFRA Information

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

CAUTION
Harmful if swallowed, absorbed through the skin or inhaled. Causes moderate eye irritation.
Carfentrazone-ethyl is very toxic to algae and moderately toxic to fish.

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals:.

Chemical name	California Prop. 65
Naphthalene - 91-20-3	Carcinogen

U.S. State Right-to-Know Regulations

Chemical name	New Jersey	Massachusetts	Pennsylvania
2-Methylnaphthalene 91-57-6	X		
Propylene glycol 57-55-6	X		X
Naphthalene 91-20-3	X	X	X
1-Methylnaphthalene 90-12-0	X	X	X

International Inventories

Component	TSCA (United States)	DSL (Canada)	EINECS/ELINCS (Europe)	ENCS (Japan)	China (IECSC)	KECL (Korea)	PICCS (Philippines)	AICS (Australia)
Carfentrazone-ethyl 128639-02-1 (21.3)					X			
Naphtha (petroleum), heavy aromatic 64742-94-5 (20-30)	X	X	X	X	X	X	X	X
2-Methylnaphthalene 91-57-6 (1-5)	X	X	X	X	X		X	X
Propylene glycol 57-55-6 (1-5)	X	X	X	X	X	X	X	X
1-Methylnaphthalene 90-12-0 (1-5)	X	X	X	X	X		X	X
Naphthalene 91-20-3 (1-5)	X	X	X	X	X	X	X	X

Mexico - Grade Slight risk, Grade 1

CANADA

WHMIS Statement
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR

WHMIS Hazard Class D2A - Very toxic materials

16. OTHER INFORMATION

NFPA	**Health Hazards** 1	**Flammability** 1	**Instability** 0	**Special Hazards** -
HMIS	**Health Hazards** 1*	**Flammability** 1	**Physical hazard** 0	**Personal Protection** X

**Indicates a chronic health hazard.*

Revision date: 2015-04-20
Revision note (M)SDS sections updated

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Prepared By:

FMC Corporation

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End of Safety Data Sheet

Dow AgroSciences

SAFETY DATA SHEET
DOW AGROSCIENCES LLC

Product name: DELEGATE™ WG Insecticide

Issue Date: 05/04/2015
Print Date: 05/22/2015

DOW AGROSCIENCES LLC encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: DELEGATE™ WG Insecticide

Recommended use of the chemical and restrictions on use
Identified uses: End use insecticide product

COMPANY IDENTIFICATION
DOW AGROSCIENCES LLC
9330 ZIONSVILLE RD
INDIANAPOLIS IN 46268-1053
UNITED STATES

Customer Information Number: 800-992-5994
info@dow.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 800-992-5994
Local Emergency Contact: 352-323-3500

2. HAZARDS IDENTIFICATION

Hazard classification
This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.
Carcinogenicity - Category 2

Label elements
Hazard pictograms

Signal word: **WARNING!**

Hazards
Suspected of causing cancer.

Precautionary statements

Prevention
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Use personal protective equipment as required.

Response
IF exposed or concerned: Get medical advice/ attention.

Storage
Store locked up.

Disposal
Dispose of contents/ container to an approved waste disposal plant.

Other hazards
no data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a mixture.

Component	CASRN	Concentration
Spinetoram J & L (CAS# 187166-40-1 & 187166-15-0)	935545-74-7	25.0%
Kaolin	1332-58-7	>= 1.6 - <= 41.9 %
Titanium dioxide	13463-67-7	1.1%
Balance	Not available	>= 32.0 - <= 72.3 %

4. FIRST AID MEASURES

Description of first aid measures
General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice.

Skin contact: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Eye contact: Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice. Suitable emergency eye wash facility should be available in work area.

Ingestion: No emergency medical treatment necessary.

Most important symptoms and effects, both acute and delayed: Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed
Notes to physician: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: Water. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers.

Unsuitable extinguishing media: no data available

Special hazards arising from the substance or mixture
Hazardous combustion products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating.

Unusual Fire and Explosion Hazards: Do not permit dust to accumulate. When suspended in air dust can pose an explosion hazard. Minimize ignition sources. If dust layers are exposed to elevated temperatures, spontaneous combustion may occur. Dense smoke is produced when product burns.

Advice for firefighters
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Consider feasibility of a controlled burn to minimize environment damage. Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Soak thoroughly with water to cool and prevent re-ignition. Cool surroundings with water to localize fire zone. Hand held dry chemical or carbon dioxide extinguishers may be used for small fires. Dust explosion hazard may result from forceful application of fire extinguishing agents. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Keep upwind of spill. Spilled material may cause a slipping hazard. Ventilate area of leak or spill. Refer to section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. Spills or discharge to natural waterways is likely to kill aquatic organisms.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Small spills: Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling: Keep out of reach of children. Avoid contact with eyes, skin, and clothing. Avoid breathing dust or mist. Do not swallow. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage: Store in a dry place. Store in original container. Do not store near food, foodstuffs, drugs or potable water supplies.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Kaolin	ACGIH	TWA Respirable fraction	2 mg/m3
	OSHA Z-1	TWA total dust	15 mg/m3
	OSHA Z-1	TWA respirable fraction	5 mg/m3
Titanium dioxide	OSHA Z-1	TWA total dust	15 mg/m3
	ACGIH	TWA	10 mg/m3 , Titanium dioxide

RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.

Exposure controls

Engineering controls: Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Skin protection

Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Examples of preferred glove barrier materials include: Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Wear clean, body-covering clothing.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use an approved respirator. Selection of air-purifying or positive-pressure supplied-air will depend on the specific operation and the potential airborne concentration of the material. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus.

The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	Granules.
Color	White to off-white
Odor	Musty
Odor Threshold	No test data available
pH	8.7 1% *Measured* (1% aqueous suspension)
Melting point/range	No test data available
Freezing point	Not applicable
Boiling point (760 mmHg)	Not applicable
Flash point	**closed cup** Not applicable
Evaporation Rate (Butyl Acetate = 1)	Not applicable
Flammability (solid, gas)	no data available
Lower explosion limit	Not applicable
Upper explosion limit	Not applicable
Vapor Pressure	Not applicable
Relative Vapor Density (air = 1)	Not applicable
Relative Density (water = 1)	Not applicable
Water solubility	Disperses in water
Partition coefficient: n-octanol/water	no data available
Auto-ignition temperature	No test data available
Decomposition temperature	No test data available
Dynamic Viscosity	Not applicable
Kinematic Viscosity	Not applicable

Explosive properties	no data available
Oxidizing properties	no data available
Liquid Density	Not applicable
Bulk density	0.5 g/cm3 *Tapped Volumetric*
Molecular weight	no data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: No dangerous reaction known under conditions of normal use.

Chemical stability: Thermally stable at typical use temperatures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Exposure to elevated temperatures can cause product to decompose.

Incompatible materials: None known.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Toxic gases are released during decomposition.

11. TOXICOLOGICAL INFORMATION

Toxicological information on this product or its components appear in this section when such data is available.

Acute toxicity

Acute oral toxicity
Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

As product:
LD50, Rat, female, > 5,000 mg/kg

Acute dermal toxicity
Prolonged skin contact is unlikely to result in absorption of harmful amounts.

As product:
LD50, Rat, male and female, > 5,000 mg/kg

Acute inhalation toxicity
Prolonged excessive exposure to dust may cause adverse effects. Based on the available data, narcotic effects were not observed.

As product:
LC50, Rat, male and female, 4 Hour, Dust, > 5.06 mg/l

Skin corrosion/irritation
Brief contact is essentially nonirritating to skin.

Serious eye damage/eye irritation
May cause eye irritation.
Corneal injury is unlikely.
Solid or dust may cause irritation or corneal injury due to mechanical action.

Sensitization
As product:
Did not demonstrate the potential for contact allergy in mice.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)
Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Specific Target Organ Systemic Toxicity (Repeated Exposure)
For the active ingredient(s):
In animals, has been shown to cause vacuolization of cells in various tissues.
Dose levels producing these effects were many times higher than any dose levels expected from exposure due to use.

For the minor component(s):
Repeated excessive inhalation exposures to dusts may cause respiratory effects.
In animals, effects have been reported on the following organs:
Lung.

Carcinogenicity
Lung fibrosis and tumors have been observed in rats exposed to titanium dioxide in two lifetime inhalation studies. Effects are believed to be due to overloading of the normal respiratory clearance mechanisms caused by the extreme study conditions. Workers exposed to titanium dioxide in the workplace have not shown an unusual incidence of chronic respiratory disease or lung cancer. Titanium dioxide was not carcinogenic in laboratory animals in lifetime feeding studies.

Active ingredient did not cause cancer in laboratory animals.

Teratogenicity
For the active ingredient(s): Did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother.

Reproductive toxicity
In animal studies, active ingredient did not interfere with reproduction.

Mutagenicity
In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Aspiration Hazard
Based on physical properties, not likely to be an aspiration hazard.

Carcinogenicity

Component	List	Classification
Titanium dioxide	IARC	Group 2B: Possibly carcinogenic to humans

12. ECOLOGICAL INFORMATION

Ecotoxicological information on this product or its components appear in this section when such data is available.

Toxicity

Acute toxicity to fish
Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested).

EC50, Lepomis macrochirus (Bluegill sunfish), semi-static test, 96 Hour, 12.52 mg/l

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), semi-static test, 48 Hour, > 23.52 mg/l

Acute toxicity to algae/aquatic plants
ErC50, diatom Navicula sp., 72 Hour, 0.564 mg/l

Toxicity to Above Ground Organisms
Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).

oral LD50, Colinus virginianus (Bobwhite quail), > 2,250 mg/kg

contact LD50, Apis mellifera (bees), 96 Hour, 0.079µg/bee

oral LD50, Apis mellifera (bees), 96 Hour, 0.22µg/bee

Toxicity to soil-dwelling organisms
LC50, Eisenia fetida (earthworms), 14 d, > 4,000 mg/kg

Persistence and degradability

Spinetoram J & L (CAS# 187166-40-1 & 187166-15-0)
Biodegradability: Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.
10-day Window: Fail
Biodegradation: 0.1 - 9.1 %
Exposure time: 28 d
Method: OECD Test Guideline 301B or Equivalent

Kaolin
Biodegradability: Biodegradation is not applicable.

Titanium dioxide

Biodegradability: Biodegradation is not applicable.

Balance

Biodegradability: No relevant data found.

Bioaccumulative potential

Spinetoram J & L (CAS# 187166-40-1 & 187166-15-0)

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water(log Pow): 4.49 at 20 °C
Bioconcentration factor (BCF): 348 Oncorhynchus mykiss (rainbow trout) 28 d

Kaolin

Bioaccumulation: Partitioning from water to n-octanol is not applicable.

Titanium dioxide

Bioaccumulation: Partitioning from water to n-octanol is not applicable.

Balance

Bioaccumulation: No relevant data found.

Mobility in soil

Spinetoram J & L (CAS# 187166-40-1 & 187166-15-0)

Potential for mobility in soil is slight (Koc between 2000 and 5000).

Kaolin

No relevant data found.

Titanium dioxide

No data available.

Balance

No relevant data found.

13. DISPOSAL CONSIDERATIONS

Disposal methods: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

14. TRANSPORT INFORMATION

DOT

Not regulated for transport

Classification for SEA transport (IMO-IMDG):

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.(Spinetoram)
UN number	UN 3077
Class	9
Packing group	III
Marine pollutant	Spinetoram
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Proper shipping name	Environmentally hazardous substance, solid, n.o.s.(Spinetoram)
UN number	UN 3077
Class	9
Packing group	III

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312
Acute Health Hazard
Chronic Health Hazard

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

Pennsylvania (Worker and Community Right-To-KnowAct): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:
The following product components are cited in the Pennsylvania Hazardous Substance List and/or the Pennsylvania Environmental Substance List, and are present at levels which require reporting.

Components	CASRN
Kaolin	1332-58-7
Titanium dioxide	13463-67-7

Pennsylvania (Worker and Community Right-To-KnowAct): Pennsylvania Special Hazardous Substances List:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

United States TSCA Inventory (TSCA)
This product contains chemical substance(s) exempt from U.S. EPA TSCA Inventory requirements. It is regulated as a pesticide subject to Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requirements.

Federal Insecticide, Fungicide and Rodenticide Act
EPA Registration Number: 62719-541
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

CAUTION

Causes moderate eye irritation

16. OTHER INFORMATION

Hazard Rating System
NFPA

Health	Fire	Reactivity
1	1	0

Revision
Identification Number: 101197205 / A211 / Issue Date: 05/04/2015 / Version: 3.0
DAS Code: GF-1640
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

ACGIH	USA. ACGIH Threshold Limit Values (TLV)
OSHA Z-1	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
TWA	8-hour, time-weighted average

Information Source and References

This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

DOW AGROSCIENCES LLC urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

KANEMITE® 15 SC MITICIDE

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations
Canada Hazardous Product Regulation (HPR)
Date of issue: 11/18/2014 Revision date: 02/25/2016 Supersedes: 02/26/2015 Version: 2.1

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Mixture

Product name : KANEMITE® 15 SC MITICIDE

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Acaracide

1.3. Details of the supplier of the safety data sheet

Arysta LifeScience North America LLC
15401 Weston Parkway, Suite 150
Cary, NC 27513 – USA

Arysta LifeScience
400 Michener Road, Unit 2
Guelph, Ontario
N1K 1E4

1.4. Emergency telephone number

Emergency number : Exposure Calls (PROSAR): +1-866-303-6952 or +1-651-603-3432 (international)
Spill Calls (CHEMTREC) (Contract # CCN1779): +1-800-424-9300 or +1-703-527-3887 (international)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS classification

Acute Tox. 4 (Inhalation:dust,mist)	H332
STOT SE 1	H370
STOT RE 2	H373

Full text of H statements : see section 16

2.2. Label elements

GHS labelling

Hazard pictograms (GHS) :

GHS07 GHS08

Signal word (GHS) : Danger

Hazard statements (GHS) : H332 - Harmful if inhaled
H370 - Causes damage to organs
H373 - May cause damage to organs through prolonged or repeated exposure

Precautionary statements (GHS) : P260 - Do not breathe mist, spray, vapours
P264 - Wash hands thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P271 - Use only outdoors or in a well-ventilated area
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
P307+P311 - If exposed: Call a poison center/doctor
P314 - Get medical advice/attention if you feel unwell
P321 - Specific treatment (see First aid measures on this label)
P405 - Store locked up
P501 - Dispose of contents/container to an authorised waste collection point

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS)

5.1 percent of the mixture consists of ingredient(s) of unknown acute toxicity (Oral)
5.1 percent of the mixture consists of ingredient(s) of unknown acute toxicity (Dermal)
5.1 percent of the mixture consists of ingredient(s) of unknown acute toxicity (Inhalation (Dust/Mist))

SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable

3.2. Mixture

Name	Product identifier	% (w/w)	GHS classification
3-dodecyl-1,4-dioxo-1,4-dihydronaphthalen-2-yl acetate (Acequinocyl) (Main constituent)	(CAS No) 57960-19-7	15.8	Skin Sens. 1, H317 STOT SE 1, H370 STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410

Full text of H-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : Never give anything by mouth to an unconscious person. Call a POISON CENTER or doctor/physician.

First-aid measures after inhalation : If inhaled and if breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

First-aid measures after skin contact : Wash with plenty of soap and water.

First-aid measures after eye contact : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

First-aid measures after ingestion : Rinse mouth. Call a POISON CENTER or doctor/physician if you feel unwell.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries : Causes damage to organs (whole body, liver, blood). May cause damage to organs (whole body, liver, blood) through prolonged or repeated exposure.

Symptoms/injuries after inhalation : Danger of serious damage to health by prolonged exposure through inhalation. Harmful if inhaled.

4.3. Indication of any immediate medical attention and special treatment needed

All treatments should be based on observed signs and symptoms of distress in the patient.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Dry powder. Foam. Carbon dioxide. Water spray.

Unsuitable extinguishing media : Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

Fire hazard : No particular fire or explosion hazard.

Reactivity : No dangerous reactions known.

5.3. Advice for firefighters

Firefighting instructions : Cool adjacent structures and containers with water spray to protect and prevent ignition. Exercise caution when fighting any chemical fire. Do not allow run-off from fire fighting to enter drains or water courses.

Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection. Use self-contained breathing apparatus. Wear fire/flame resistant/retardant clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Avoid all eye and skin contact and do not breathe vapour and mist. Process enclosures, closed systems, and local exhaust ventilation should be used to control exposures.

6.1.1. For non-emergency personnel

Protective equipment : Wear suitable gloves. In case of inadequate ventilation wear respiratory protection.

Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment : Wear suitable gloves. In case of inadequate ventilation wear respiratory protection.

Emergency procedures : Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Prevent dispersion.

6.3. Methods and material for containment and cleaning up

For containment : Absorb and/or contain spill with inert material, then place in suitable container.

Methods for cleaning up : Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Take up in non-combustible absorbent material and shove into container for disposal.

6.4. Reference to other sections

Section 13: disposal information. Section 7: safe handling. Section 8: personal protective equipment.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Do not breathe mist, spray, vapours. Use only outdoors or in a well-ventilated area.

Hygiene measures : Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Do not store near food, foodstuffs, drugs, or potable water supplies. Keep only in original container. Keep container tightly closed.

Incompatible products : None known.

Storage area : Store in dry, cool, well-ventilated area.

7.3. Specific end use(s)

Acaracide.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

KANEMITE® 15 SC MITICIDE	
ACGIH	Not applicable
OSHA	Not applicable

3-dodecyl-1,4-dioxo-1,4-dihydronaphthalen-2-yl acetate (Acequinocyl) (57960-19-7)	
ACGIH	Not applicable
OSHA	Not applicable

8.2. Exposure controls

Appropriate engineering controls : Avoid creating mist or spray. Avoid splashing. Ensure good ventilation of the work station.

Personal protective equipment : Avoid all unnecessary exposure.

Hand protection : Wear suitable protective clothing and gloves. Impermeable protective nitrile gloves.

Eye protection : Chemical goggles or safety glasses.

Respiratory protection : Where exposure through inhalation may occur from use, respiratory protection equipment is recommended. Wear appropriate mask. Use an approved respirator equipped with oil/mist cartridges.

Other information : Do not eat, drink or smoke when using this product.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid

Colour : pale Yellow

Odour : Detergent-like.

Odour threshold : No data available

pH : 7.1

Melting point : No data available

Freezing point : No data available

Boiling point : 100 °C

Flash point : > 93 °C

Relative evaporation rate (butyl acetate=1) : No data available

Flammability (solid, gas) : No data available

Explosive limits : No data available

Explosive properties : No data available

Oxidising properties : No data available

Vapour pressure	: No data available
Relative density	: 1.02 - 1.05 @ 20 °C
Relative vapour density at 20 °C	: No data available
Solubility	: No data available
Log Pow	: No data available
Log Kow	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: 405.95 cP

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No dangerous reactions known.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Hazardous polymerization will not occur.

10.4. Conditions to avoid

None known.

10.5. Incompatible materials

None known.

10.6. Hazardous decomposition products

Burning produces irritating, toxic and noxious fumes.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Likely routes of exposure : Inhalation; Skin and eye contact

Acute toxicity : Inhalation:dust,mist: Harmful if inhaled.

KANEMITE® 15 SC MITICIDE	
LD50 oral rat	5000 mg/kg
LD50 dermal rat	> 2000 mg/kg
LC50 inhalation rat (mg/l)	4.49 mg/l/4h
ATE US (oral)	5000.000 mg/kg bodyweight
ATE US (vapours)	4.490 mg/l/4h
ATE US (dust,mist)	4.490 mg/l/4h

Skin corrosion/irritation	: Not classified (Not irritating to rabbits on cutaneous application)
Serious eye damage/irritation	: Not classified (Slightly irritating to eyes)
Respiratory or skin sensitisation	: Not classified. (No sensitizing reaction was observed for guinea pigs)
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
Specific target organ toxicity (single exposure)	: Causes damage to organs.
Specific target organ toxicity (repeated exposure)	: May cause damage to organs through prolonged or repeated exposure.
Aspiration hazard	: Not classified

Symptoms/injuries after inhalation : Danger of serious damage to health by prolonged exposure through inhalation. Harmful if inhaled.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : Very toxic to aquatic life with long lasting effects.

KANEMITE® 15 SC MITICIDE	
LC50 fish 1	65 mg/l 96 h Oncorhynchus mykiss
LC50 other aquatic organisms 1	0.93 mg/l 96 h Pseudokirchneriella subcapitata
EC50 Daphnia 1	0.0154 mg/l 48 h
EC50 Daphnia 2	0.00236 mg/l 48 h

12.2. Persistence and degradability

KANEMITE® 15 SC MITICIDE	
Persistence and degradability	Not rapidly degradable. May cause long-term adverse effects in the environment.

12.3. Bioaccumulative potential

3-dodecyl-1,4-dioxo-1,4-dihydronaphthalen-2-yl acetate (Acequinocyl) (57960-19-7)	
BCF fish 1	366
Log Pow	6.2

12.4. Mobility in soil

KANEMITE® 15 SC MITICIDE	
Ecology - soil	Immobile in soil.

3-dodecyl-1,4-dioxo-1,4-dihydronaphthalen-2-yl acetate (Acequinocyl) (57960-19-7)	
Mobility in soil	Immobile in soil

12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods : Dispose of in authorized waste collection plant.

Sewage disposal recommendations : Do not dispose of waste into sewer.

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Disposal via incineration is recommended.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Not considered a dangerous good for transport regulations

Additional information

Other information : No supplementary information available.

ADR

Transport document description : UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Acequinocyl), 9, III, (E)

Packing group (ADR) : III

Class (ADR) : 9 - Miscellaneous dangerous substances and articles

Hazard identification number (Kemler No.) : 90

Classification code (ADR) : M6

Danger labels (ADR) : 9 - Miscellaneous dangerous substances and articles

Orange plates	:
Tunnel restriction code (ADR)	: E
Limited quantities (ADR)	: 5l
Excepted quantities (ADR)	: E1

Transport by sea

IMDG

Transport hazard class(es) (IMDG)	: 9
Danger labels (IMDG)	: 9
	: Yes
UN-No. (IMDG)	: 3082
Proper Shipping Name (IMDG)	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Acequinocyl)
Class (IMDG)	: 9 - Miscellaneous dangerous substances and articles
Packing group (IMDG)	: III - substances presenting low danger
EmS-No. (Fire)	: F-A
EmS-No. (Spillage)	: S-F

Air transport

IATA

Transport hazard class(es) (IATA)	: 9
Hazard labels (IATA)	: 9
	: Yes
UN-No. (IATA)	: 3082
Proper Shipping Name (IATA)	: Environmentally hazardous substance, liquid, n.o.s. (Acequinocyl)
Class (IATA)	: 9 - Miscellaneous Dangerous Goods
Packing group (IATA)	: III - Minor Danger

SECTION 15: Regulatory information

15.1. US Federal regulations

3-dodecyl-1,4-dioxo-1,4-dihydronaphthalen-2-yl acetate (Acequinocyl) (57960-19-7)
Not listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

CANADA

3-dodecyl-1,4-dioxo-1,4-dihydronaphthalen-2-yl acetate (Acequinocyl) (57960-19-7)
Not listed on the Canadian DSL (Domestic Substances List) inventory

EU-Regulations

3-dodecyl-1,4-dioxo-1,4-dihydronaphthalen-2-yl acetate (Acequinocyl) (57960-19-7)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations

3-dodecyl-1,4-dioxo-1,4-dihydronaphthalen-2-yl acetate (Acequinocyl) (57960-19-7)
Not listed on the Canadian Non-Domestic Substances List (NDSL)

15.3. US State regulations

No additional information available

SECTION 16: Other information

Revision date : 02/25/2016

Data sources : European Chemicals Agency (ECHA) Registered Substances list. Accessed at http://echa.europa.eu/.

Krister Forsberg and S.Z. Mansdorf, "Quick Selection Guide to Chemical Protective Clothing", Fifth Edition.

National Fire Protection Association. Fire Protection Guide to Hazardous Materials; 10th edition.

OSHA 29CFR 1910.1200 Hazard Communication Standard.

REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

TSCA Chemical Substance Inventory. Accessed at http://www.epa.gov/oppt/existingchemicals/pubs/tscainventory/howto.html.

Abbreviations and acronyms : ACGIH (American Conference of Governement Industrial Hygienists).

ATE: Acute Toxicity Estimate.

CAS (Chemical Abstracts Service) number.

CLP: Classification, Labelling, Packaging.

EC50: Environmental Concentration associated with a response by 50% of the test population.

GHS: Globally Harmonized System (of Classification and Labeling of Chemicals).

LD50: Lethal Dose for 50% of the test population.

OSHA: Occupational Safety & Health Administration.

TSCA: Toxic Substances Control Act.

Other information : None.

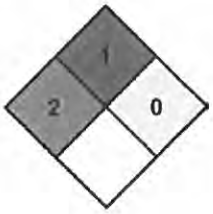
Full text of H-statements:

H317	May cause an allergic skin reaction
H332	Harmful if inhaled
H370	Causes damage to organs
H373	May cause damage to organs through prolonged or repeated exposure
H400	Very toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects

NFPA health hazard : 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.

NFPA fire hazard : 1 - Must be preheated before ignition can occur.

NFPA reactivity : 0 - Normally stable, even under fire exposure conditions, and not reactive with water.



Indication of changes:

Transport information.

Redstone SDS USCAN (GHS) for Arysta

SDS Prepared by: The Redstone Group, LLC.
6077 Frantz Rd
Suite 206

Dublin, Ohio, USA 43016
614.923.7472
www.redstonegrp.com

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product

Dow AgroSciences

SAFETY DATA SHEET
DOW AGROSCIENCES LLC

Product name: GARLON™ 4 Ultra Herbicide

Issue Date: 05/04/2015
Print Date: 05/17/2015

DOW AGROSCIENCES LLC encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: GARLON™ 4 Ultra Herbicide

Recommended use of the chemical and restrictions on use
Identified uses: End use herbicide product

COMPANY IDENTIFICATION
DOW AGROSCIENCES LLC
9330 ZIONSVILLE RD
INDIANAPOLIS IN 46268-1053
UNITED STATES

Customer Information Number: 800-992-5994
info@dow.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 800-992-5994
Local Emergency Contact: 352-323-3500

2. HAZARDS IDENTIFICATION

Hazard classification
This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.
Skin sensitisation - Sub-category 1B

Label elements
Hazard pictograms

Signal word: **WARNING!**

Hazards
May cause an allergic skin reaction.

Precautionary statements

Prevention
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves.

Response
IF ON SKIN: Wash with plenty of soap and water.
If skin irritation or rash occurs: Get medical advice/ attention.
Wash contaminated clothing before reuse.

Disposal
Dispose of contents/ container to an approved waste disposal plant.

Other hazards
no data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature: Mixture
This product is a mixture.

Component	CASRN	Concentration
Triclopyr-2-butoxyethyl ester	64700-56-7	60.5%
Ethylene glycol monobutyl ether	111-76-2	0.5%
Balance	Not available	39.0%

4. FIRST AID MEASURES

Description of first aid measures
General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice.

Skin contact: Take off contaminated clothing. Wash skin with soap and plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. Wash clothing before reuse. Shoes and other leather items which cannot be decontaminated should be disposed of properly.

Eye contact: Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice.

Ingestion: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed: Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed
Notes to physician: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective. Water fog, applied gently may be used as a blanket for fire extinguishment.

Unsuitable extinguishing media: Do not use direct water stream. May spread fire.

Special hazards arising from the substance or mixture
Hazardous combustion products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Nitrogen oxides. Hydrogen chloride. Carbon monoxide. Carbon dioxide. Phosgene.

Unusual Fire and Explosion Hazards: Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

Advice for firefighters
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Do not use direct water stream. May spread fire. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Water fog, applied gently may be used as a blanket for fire extinguishment. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is

not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling: Keep out of reach of children. Do not swallow. Avoid breathing vapor or mist. Avoid contact with eyes, skin, and clothing. Use with adequate ventilation. Wash thoroughly after handling. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage: Store in a dry place. Store in original container. Keep container tightly closed when not in use. Do not store near food, foodstuffs, drugs or potable water supplies.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Triclopyr-2-butoxyethyl ester	Dow IHG	TWA	2 mg/m3
	Dow IHG	TWA	SKIN, DSEN, BEI
Ethylene glycol monobutyl ether	ACGIH	TWA	20 ppm
	OSHA Z-1	TWA	240 mg/m3 50 ppm
	ACGIH	TWA	BEI
	OSHA Z-1	TWA	Absorbed via skin

RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.

Exposure controls

Engineering controls: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations.

Individual protection measures

Eye/face protection: Use safety glasses (with side shields).

Skin protection

Hand protection: Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Butyl rubber. Chlorinated polyethylene. Neoprene. Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Natural rubber ("latex"). Viton. Polyvinyl chloride ("PVC" or "vinyl"). Nitrile/butadiene rubber ("nitrile" or "NBR"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator.
The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	Liquid.
Color	Yellow
Odor	Mild
Odor Threshold	no data available
pH	3.36 1% *pH Electrode* (1% aqueous suspension)
Melting point/range	Not applicable
Freezing point	No test data available
Boiling point (760 mmHg)	No test data available
Flash point	**closed cup** > 100 °C (> 212 °F) *Pensky-Martens Closed Cup ASTM D 93*
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammability (solid, gas)	no data available
Lower explosion limit	No test data available
Upper explosion limit	No test data available
Vapor Pressure	No test data available
Relative Vapor Density (air = 1)	No test data available
Relative Density (water = 1)	1.11 at 20 °C (68 °F) *Digital Density Meter (Oscillating Coil)*
Water solubility	emulsifies

Partition coefficient: n-octanol/water	no data available
Auto-ignition temperature	> 325 °C (> 617 °F)
Decomposition temperature	No test data available
Dynamic Viscosity	23.4 mPa.s at 20 °C (68 °F) 10.8 mPa.s at 40 °C (104 °F)
Kinematic Viscosity	No test data available
Explosive properties	No
Oxidizing properties	No significant increase (>5C) in temperature.
Liquid Density	1.11 g/cm3 at 20 °C (68 °F) *Digital density meter*
Molecular weight	no data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: no data available

Chemical stability: Thermally stable at typical use temperatures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible materials: Avoid contact with: Strong acids. Strong bases. Strong oxidizers.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Hydrogen chloride. Nitrogen oxides. Phosgene.

11. TOXICOLOGICAL INFORMATION

Toxicological information on this product or its components appear in this section when such data is available.

Acute toxicity

Acute oral toxicity

Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

LD50, Rat, female, 3,200 mg/kg

Acute dermal toxicity

Prolonged skin contact is unlikely to result in absorption of harmful amounts.

LD50, Rat, male and female, > 5,000 mg/kg

Acute inhalation toxicity
Prolonged exposure is not expected to cause adverse effects. Based on the available data, respiratory irritation was not observed.

LC50, Rat, male and female, 4 Hour, dust/mist, > 5.05 mg/l No deaths occurred at this concentration.

Skin corrosion/irritation
Brief contact may cause moderate skin irritation with local redness.
May cause drying and flaking of the skin.

Serious eye damage/eye irritation
May cause slight eye irritation.
Corneal injury is unlikely.

Sensitization
Has demonstrated the potential for contact allergy in mice.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)
Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Specific Target Organ Systemic Toxicity (Repeated Exposure)
For the active ingredient(s):
In animals, effects have been reported on the following organs:
Kidney.
Liver.

Carcinogenicity
For the minor component(s): In long-term animal studies with ethylene glycol butyl ether, small but statistically significant increases in tumors were observed in mice but not rats. The effects are not believed to be relevant to humans. If the material is handled in accordance with proper industrial handling procedures, exposures should not pose a carcinogenic risk to man. For similar active ingredient(s). Triclopyr. Did not cause cancer in laboratory animals.

Teratogenicity
For the active ingredient(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.

Reproductive toxicity
For similar active ingredient(s). Triclopyr. In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

Mutagenicity
For the active ingredient(s): In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Aspiration Hazard
Based on available information, aspiration hazard could not be determined.

Carcinogenicity

Component	List	Classification
Ethylene glycol monobutyl ether	ACGIH	A3: Confirmed animal carcinogen with unknown relevance to humans.

12. ECOLOGICAL INFORMATION

Ecotoxicological information on this product or its components appear in this section when such data is available.

Toxicity

Acute toxicity to fish
For similar material(s):
Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested).

For similar material(s):
LC50, Lepomis macrochirus (Bluegill sunfish), 96 Hour, 0.44 mg/l, OECD Test Guideline 203 or Equivalent

LC50, Oncorhynchus mykiss (rainbow trout), 96 Hour, 0.984 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates
For similar material(s):
EC50, Daphnia magna (Water flea), 48 Hour, 0.35 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
For similar material(s):
EbC50, Pseudokirchneriella subcapitata (green algae), 72 Hour, Biomass, 11 mg/l, OECD Test Guideline 201 or Equivalent

Toxicity to Above Ground Organisms
Based on information for a similar material:
Material is slightly toxic to birds on an acute basis (LD50 between 501 and 2000 mg/kg).

Based on information for a similar material:

oral LD50, Colinus virginianus (Bobwhite quail), 1,350 mg/kg

Persistence and degradability

Triclopyr-2-butoxyethyl ester
Biodegradability: Chemical degradation (hydrolysis) is expected in the environment.
Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.
10-day Window: Fail
Biodegradation: 18 %
Exposure time: 28 d

Method: OECD Test Guideline 301B or Equivalent

Theoretical Oxygen Demand: 1.39 mg/mg

Biological oxygen demand (BOD)

Incubation Time	BOD
	0.004 mg/mg

Stability in Water (1/2-life)
Hydrolysis, half-life, 8.7 d, pH 7, Half-life Temperature 25 °C

Photodegradation
Atmospheric half-life: 5.6 Hour
Method: Estimated.

Ethylene glycol monobutyl ether

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Material is ultimately biodegradable (reaches > 70% mineralization in OECD test(s) for inherent biodegradability).
10-day Window: Pass
Biodegradation: 90.4 %
Exposure time: 28 d
Method: OECD Test Guideline 301B or Equivalent

Theoretical Oxygen Demand: 2.30 mg/mg

Chemical Oxygen Demand: 2.21 mg/g Dichromate

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	5.2 %
10 d	57 %
20 d	72.2 %

Balance

Biodegradability: No relevant data found.

Bioaccumulative potential

Triclopyr-2-butoxyethyl ester

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water(log Pow): 4.62
Bioconcentration factor (BCF): 110 Fish.

Ethylene glycol monobutyl ether

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): 0.81 Measured
Bioconcentration factor (BCF): 3.2

Balance

Bioaccumulation: No relevant data found.

Mobility in soil

Triclopyr-2-butoxyethyl ester

Calculation of meaningful sorption data was not possible due to very rapid degradation in the soil.
For the degradation product:
Triclopyr.
Potential for mobility in soil is very high (Koc between 0 and 50).

Ethylene glycol monobutyl ether

Potential for mobility in soil is high (Koc between 50 and 150).
Partition coefficient(Koc): 67 Estimated.

Balance

No relevant data found.

13. DISPOSAL CONSIDERATIONS

Disposal methods: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

14. TRANSPORT INFORMATION

DOT

Not regulated for transport

Classification for SEA transport (IMO-IMDG):

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(Triclopyr-2-butoxyethyl ester)
UN number	UN 3082
Class	9
Packing group	III
Marine pollutant	Triclopyr-2-butoxyethyl ester
Transport in bulk according to Annex I or II of MARPOL 73/78 and the	Consult IMO regulations before transporting ocean bulk

IBC or IGC Code

Classification for AIR transport (IATA/ICAO):

Proper shipping name	Environmentally hazardous substance, liquid, n.o.s.(Triclopyr-2-butoxyethyl ester)
UN number	UN 3082
Class	9
Packing group	III

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312
Acute Health Hazard
Chronic Health Hazard

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

Pennsylvania (Worker and Community Right-To-KnowAct): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

Pennsylvania (Worker and Community Right-To-KnowAct): Pennsylvania Special Hazardous Substances List:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

United States TSCA Inventory (TSCA)

This product contains chemical substance(s) exempt from U.S. EPA TSCA Inventory requirements. It is regulated as a pesticide subject to Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requirements.

Federal Insecticide, Fungicide and Rodenticide Act
EPA Registration Number: 62719-527
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

CAUTION

Causes moderate eye irritation
Harmful if swallowed
Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

16. OTHER INFORMATION

Hazard Rating System
NFPA

Health	Fire	Reactivity
2	1	0

Revision
Identification Number: 101188950 / A211 / Issue Date: 05/04/2015 / Version: 7.0
DAS Code: GF-1529
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

Absorbed via skin	Absorbed via skin
ACGIH	USA. ACGIH Threshold Limit Values (TLV)
BEI	Biological Exposure Indices
Dow IHG	Dow Industrial Hygiene Guideline
OSHA Z-1	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
SKIN, DSEN, BEI	Absorbed via Skin, Skin Sensitizer, Biological Exposure Indice
TWA	8-hour, time-weighted average

Information Source and References
This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

DOW AGROSCIENCES LLC urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ

between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

Safety Data Sheet

United Phosphorus, Inc.

Preparation Date 05-May-2015 **Revision date** 30-Nov-2015 **Revision Number:** 4

1. Identification of the Substance/Preparation and of the Company/Undertaking

Product identifier

Product Description: Satellite Hydrocap

Other means of identification

Item#: 12-230AA
UN-No UN3082
Synonyms Not Available
Registration number(s) 70506-230

Recommended use of the chemical and restrictions on use

Recommended use Pre-emergence weed control.
Uses advised against Activties contrary to label recomendation

Details of the Supplier of the Safety Data Sheet

Supplier Address
United Phosphorus Inc.
630 Freedom Business Center
Suite 402
King of Prussia, PA 19406

Emergency telephone number

Company Phone Number 1-800-438-6071
Emergency telephone number Chemtrec: (800) 424-9300 (24hrs) or (703) 527-3887
Medical: Rocky Mountain Poison Control Center
(866) 673-6671 (24hrs)

2. Hazards Identification

Classification

OSHA Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute toxicity - Inhalation (Vapors)	Category 3
Skin sensitization	Category 1

Label elements

EMERGENCY OVERVIEW

DANGER

hazard statements
Toxic if inhaled
May cause an allergic skin reaction

appearance yellow-orange	**Physical state** liquid	**Odor** faint

Precautionary Statements - Prevention
Do not get in eyes, on skin, or on clothing
Use only outdoors or in a well-ventilated area
Contaminated work clothing should not be allowed out of the workplace
Wear protective gloves

IF ON SKIN: Wash with plenty of soap and water
If skin irritation or rash occurs: Get medical advice/attention
Wash contaminated clothing before reuse
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor/physician

Precautionary Statements - Storage
Store in a well-ventilated place. Keep container tightly closed
Store locked up

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Hazards Not Otherwise Classified (HNOC)
OTHER INFORMATION
- Very toxic to aquatic life with long lasting effects
- Very toxic to aquatic life
- May be harmful in contact with skin

3. Composition/information on Ingredients

Chemical name	CAS-No	Weight %	Trade secret
Pendimethalin [N-(1-ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzenea mine]	40487-42-1	38.7	

If CAS number is "proprietary", the specific chemical identity and percentage of composition has been withheld as a trade secret.

4. First aid measures

FIRST AID MEASURES

Eye contact Hold eye open and rinse slowly and gently with water for 15 - 20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

Skin contact Rinse skin immediately with plenty of water for 15-20 minutes. Call poison control center or doctor for treatment advice. Remove and wash contaminated clothing before re-use.

Inhalation Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a physician or poison control center immediately.

Ingestion Call a physician or poison control center immediately. Never give anything by mouth to an unconscious person. Do not induce vomiting without medical advice.

Most Important Symptoms and Effects, Both Acute and Delayed

Most Important Symptoms and Effects No information available.

Indication of Any Immediate Medical Attention and Special Treatment Needed

Notes to physician Treat symptomatically.

5. Fire-fighting measures

Suitable extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media No information available.

Specific hazards arising from the chemical
No information available.

Hazardous combustion products Carbon monoxide. Carbon dioxide (CO2). Oxides of nitrogen. Hydrocarbons.

Explosion data
Protective equipment and precautions for firefighters
Use personal protective equipment. As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal Precautions Avoid contact with the skin and the eyes. Wear protective gloves/clothing and eye/face protection. Wash thoroughly after handling.

Environmental Precautions

Environmental precautions Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinenet environmental permits.

Methods and material for containment and cleaning up

Methods for Clean-Up Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Sweep up and shovel into suitable containers for disposal.

7. Handling and Storage

Precautions for safe handling

Handling Pesticide applicator and workers must follow the label and Direction for Use in accordance with the EPA Worker's Protection Standard. For manufacturing, blending or packaging the following recommendations are provided:. Avoid contact with skin and eyes. Keep away from open flames, hot surfaces and sources of ignition. Do not eat, drink or smoke when using this product. Provide adequate ventilation. Remove all sources of ignition. Wash thoroughly after handling. Keep out of reach of children.

Conditions for safe storage, including any incompatibilities

Storage Keep containers tightly closed in a cool, well-ventilated place. Keep at temperature above 15 F.

incompatible materials No information available.

8. Exposure Controls/Personal Protection

Exposure guidelines This product does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Engineering controls Investigate engineering techniques to reduce exposures. Local mechanical exhaust

ventilation is preferred. Consult ACGIH ventilation manual or NFPA Standard 91 for design of exhaust systems.

Personal protective equipment

Eye/Face Protection	Where there is potential for eye contact have eye flushing equipment available. Use eye protection to avoid eye contact.
Skin protection	Long sleeved clothing. Chemical resistant gloves.
Respiratory protection	Where airborne exposure is likely, use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. Full facepiece equipment is recommended and, if used, replaces need for face shield and/or chemical goggles. If exposures cannot be kept at a minimum with engineering controls, consult respirator manufacturer to determine appropriate type equipment for given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where there may be a potential for significant exposure, use an approved full face positive-pressure, self-contained breathing apparatus. Respiratory protection programs must comply with 29 CFR 1910.134.

General hygiene considerations

Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing before re-use. Avoid contact with skin, eyes and clothing. Wear suitable gloves and eye/face protection. Wash hands and face before breaks and immediately after handling the product.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Physical state	liquid		
appearance	yellow-orange	**Odor**	faint
color	No information available		

Property	**VALUES**	**Remarks/ • Method**
pH	7.72	
Melting point/freezing point	No information available	
Boiling Point/Range	No information available	
Flash Point	No information available	
Evaporation Rate	No information available	
flammability (solid, gas)	No information available	
Flammability limit in air		
Upper Flammability Limit	No information available	
Lower Flammability Limit	No information available	
vapor pressure	No information available	
Vapor Density	No information available	
Specific gravity	1.1705@ 20 C	
Water solubility	No information available	
Solubility in Other Solvents	No information available	
Partition coefficient: n-octanol/water	No information available	
Autoignition temperature	No information available	
decomposition temperature	No information available	
Viscosity, kinematic	No information available	
Dynamic viscosity	No information available	
Explosive properties	No information available	
Oxidizing properties	No information available	

OTHER INFORMATION

Softening point	No information available
molecular weight	No information available
VOC Content	No information available
density	No information available
Bulk density	No information available

10. Stability and Reactivity

Reactivity
no data available

Chemical stability
Stable under recommended storage conditions.
Possibility of hazardous reactions
None under normal processing.
Conditions to avoid
Extremes of temperature and direct sunlight.
incompatible materials
No information available.
Hazardous decomposition products
None under normal use.

11. Toxicological Information

Information on Likely Routes of Exposure

Product information	Pendimethalin 38.7% = Oral LD50 (rat) = >5,000 mg/kg Dermal LD50 (rat/rabbit) = >5,000 mg/kg Inhalation LC50 (rat) = >5.39 mg/L (Max achievable breathing zone) Primary eye irritation (rabbit) = Not an eye irritant Primary dermal irritation (rabbit) = Not a skin irritant Dermal Sensitization = Not a sensitzer
Inhalation	May cause irritation of respiratory tract. Toxic if inhaled.
Eye contact	Moderately irritating to the eyes.
Skin contact	May be harmful if absorbed through the skin.
Ingestion	MAY BE HARMFUL IF SWALLOWED.

Information on Toxicological Effects

Symptoms	No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

sensitization	No information available.
Mutagenic effects	No information available.
Carcinogenicity	The information below indicates whether any agency has listed any ingredient as a carcinogen.
Reproductive effects	Not Available.
STOT - Single Exposure	No information available.
STOT - repeated exposure	No information available.
Aspiration hazard	No information available.

Numerical Measures of Toxicity - Product information

LD50 Oral	> 5000 mg/kg (rat)
LD50 Dermal	> 5000 mg/kg (rat)
LC50 Inhalation:	Inhalation LC50 > 5.39 mg/l

12. Ecological Information

Marine Pollutant.

ecotoxicity

Pendimethalin:
Rainbow trout 86 hr LC50 = 0.89 mg/L
Daphnia Magna 48 hr EC50 = 0.979 mg/L
Green algae 72 hr EC50 = 0.0081 mg/L
Mallard duck LD50 = 1421 mg/kg
Honey Bee LD50 = 49.8 ug/bee

Persistence/Degradability
No information available.

Bioaccumulation/ Accumulation
No information available.

Other Adverse Effects
No information available

13. Disposal Considerations

Waste Treatment Methods

Waste Disposal Method	Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide or rinsate is a violation of Federal law. If the wastes cannot be disposed of by use or according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.
Contaminated packaging	Refer to product label.

14. Transport Information

DOT	When shipped domestically by highway in non-bulk containers this product can be shipped as not regulated.
UN-No	UN3082
Proper shipping name	Environmentally hazardous substance, liquid, n.o.s (Pendimethalin)
Hazard class	9
Packing group	PG III
Marine Pollutant	Marine Pollutant.
TDG	When shipped in Canada domestic highway non-bulk this product can be shipped as Not regulated as per TDG 1.45.1
UN-No	UN3082
Proper shipping name	Environmentally hazardous substance, liquid, n.o.s. (Pendimethalin)
Hazard class	9
Packing group	PG III
Marine Pollutant: Y or N [List Ingredient(s) with %]	Marine pollutant.
ICAO	
UN-No	UN3082
Proper shipping name	Environmentally hazardous substance, liquid, n.o.s (Pendimethalin)
Hazard class	9
Packing group	PG III
Description	Marine Pollutant
IATA	

UN-No	UN3082
Proper shipping name	Environmentally hazardous substances, liquid, n.o.s (Pendimethalin)
Hazard class	9
Packing group	PG III
Description	Marine Pollutant

IMDG/IMO

UN-No	UN3082
Proper shipping name	Environmentally hazardous substances, liquid, n.o.s (Pendimethalin)
Hazard class	9
Packing group	PG III
Marine Pollutant	Marine Pollutant

15. Regulatory Information

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

signal word	CAUTION
Ventilation Control	PESTICIDE APPLICATORS & WORKERS THESE WORKERS MUST REFER TO PRODUCT LABELING AND DIRECTIONS FOR USE IN ACCORDANCE WITH EPA WORKER PROTECTION STANDARD 40 CFR PART 170.

Causes moderate eye irritation. Harmful if swallowed or absorbed through the skin. Toxic to fish.

International Inventories

USINV	Not determined
DSL/NDSL	Not determined
EINECS/ ELINCS	Does not comply
ENCS	Does not comply
China	Does not comply
KECL	Does not comply
PICCS	Does not comply
AICS	Does not comply
TSCA	Does not comply

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and and Title 40n of the Code of Federal Regulations, Part 372:

Chemical name	SARA 313 - Threshold Values
Pendimethalin [N-(1-ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzeneamine] - 40487-42-1	1.0

SARA 311/312 Hazardous

Categorization

Acute health hazard	yes
Chronic health hazard	NO
Fire hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

CERCLA

SARA Product RQ 0

RCRA

Pesticide Information

State Regulations

State Right-to-Know

Chemical name	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Pendimethalin [N-(1-ethylpropyl)-3,4-dimethyl -2,6-dinitrobenzeneamine]		X			

International regulations

U.S. EPA Label information

EPA Pesticide registration number 70506-230

16. Other Information

NFPA **HEALTH** 1 **flammability** 1 **Instability** 0 **Physical hazard** -

Preparation Date 05-May-2015

Revision date 30-Nov-2015

Revision Summary

Update section 7 Update Section 9

Disclaimer

United Phosphorus, Inc. believes that the information and recommendations container herein (including data and statements) are accurate as of the date hereof. NO WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WARRANTY OF MERCHANTABILITY, OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, IS MADE CONCERNING THE INFORMATION PROVIDED HEREIN. The information provided herein relates only to the specific product designated and may not be valid where such product is used in combination with other materials or in any process. Further, since the conditions and methods of use are beyond the control of United Phosphorus , Inc. and United Phosphorus Inc. expressly disclaims any and all liability as to any results obtained or arising from any use of the product or reliance on such information.

End of MSDS

Safety Data Sheet

Issue Date: 24-May-2013 **Revision Date:** 16-Oct-2015 **Version** 2

1. IDENTIFICATION

Product Identifier

Product Name **Parazone 3SL**

Other means of identification

SDS # MANA-006

Registration Number(s) EPA Reg. No. 66222-130

UN/ID No UN2922

Recommended use of the chemical and restrictions on use

Recommended Use EPA registered pesticide.

Details of the supplier of the safety data sheet

Manufacturer Address

Makhteshim Agan of North America, Inc.
3120 Highwoods Blvd., Suite 100
Raleigh, NC 27604
1-919-256-9300

Emergency Telephone Number

Emergency Telephone (24 hr) For fire, spill and/or leak contact INFOTRAC:
1-800-535-5053 (North America) 1-352-323-3500 (International)
For medical emergencies and health/safety inquiries, contact PROSAR:
1-877-250-9291

2. HAZARDS IDENTIFICATION

This chemical is a product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-EPA registered chemicals. Please see Section 15 for additional EPA information.

Appearance Dark green liquid **Physical State** Liquid **Odor** Strong Pungent

Classification

Acute toxicity - Oral	Category 3
Acute toxicity - Inhalation (Dusts/Mists)	Category 1
Skin corrosion/irritation	Category 1 Sub-category C
Serious eye damage/eye irritation	Category 1
Specific target organ toxicity (single exposure)	Category 3
Specific target organ toxicity (repeated exposure)	Category 1

Signal Word

Danger

Hazard Statements
Toxic if swallowed
Fatal if inhaled
Causes severe skin burns and eye damage
May cause respiratory irritation. May cause drowsiness or dizziness
Causes damage to organs through prolonged or repeated exposure

Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Wear protective gloves/protective clothing/eye protection/face protection
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wear respiratory protection

Precautionary Statements - Response
Immediately call a poison center or doctor/physician
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Immediately call a poison center or doctor/physician
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
Call a poison center or doctor/physician if you feel unwell
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Immediately call a poison center or doctor/physician
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
Rinse mouth
Do not induce vomiting

Precautionary Statements - Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Other Hazards
Very toxic to aquatic life with long lasting effects

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No	Weight-%
Paraquat	1910-42-5	42.49 - 45.11

If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. FIRST-AID MEASURES

First Aid Measures

General Advice When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor/physician.

Skin Contact IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. Call a poison center or doctor/physician if you feel unwell.

Inhalation If inhaled remove to fresh air. Give oxygen if breathing is difficult. If breathing has stopped, call 911, give artificial respiration. Immediately call a physician.

Ingestion Immediately call a poison center or doctor/physician. DO NOT induce vomiting. If conscious, drink 8-10 oz. of water promptly. Never give anything by mouth to an unconscious person. Obtain medical attention. Do not induce vomiting unless directed by medical personnel.

Most important symptoms and effects

Symptoms Causes severe skin burns and eye damage. Will irritate mucous membranes. May cause drowsiness or dizziness. May cause skin redness, irritation or swelling. Ingestion may cause severe burns to mouth, throat or stomach.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically. Consider: gastric lavage with protected airway, administration of activated charcoal.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Water spray (fog). Dry chemical. Foam. Carbon dioxide (CO_2). Foam or dry chemical systems are preferred to prevent environmental damage from excessive water runoff.

Unsuitable Extinguishing Media Not determined.

Specific Hazards Arising from the Chemical
Toxic fumes may be given off when material is exposed to fire.

Hazardous Combustion Products Carbon monoxide. Carbon dioxide (CO_2). Chlorine gas. Hydrogen chloride. Traces of phosgene upon pyrolysis. Nitrogen oxides (NO_x). Ammonia. Combustion may release noxious or toxic vapors.

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Evacuate area of unprotected personnel. Remain upwind of fire to avoid hazardous vapors and decomposition products. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Wear protective clothing as described in Section 8 of this safety data sheet. Isolate hazard area. Keep unnecessary and unprotected personnel from entering.

Environmental Precautions Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. See Section 13: DISPOSAL CONSIDERATIONS.

Methods and material for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for Clean-Up For small spills, absorb with sand, clay, or other inert absorbent. Place in appropriate containers for disposal. For large spills: recover free product. Dike for later disposal. Absorb with inert material, and then place in suitable container for chemical waste.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Use personal protection recommended in Section 8. Do not breathe dust/fume/gas/mist/vapors/spray. Wash face, hands, and any exposed skin thoroughly after handling. Do not contaminate water, food or feed by storage, disposal or by cleaning equipment. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep container tightly closed and store in a cool, dry and well-ventilated place. Keep out of the reach of children. Store away from incompatible materials. Protect from excessive heat. Store locked up. Keep/store only in original container. Do not transport or store below 0 C/ 32 F.

Incompatible Materials 10% permanganate solutions and iron powder.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Paraquat 1910-42-5	-	TWA: 0.5 mg/m^3 respirable dust (vacated) TWA: 0.1 mg/m^3 respirable dust Paraquat (vacated) S* Paraquat S*	IDLH: 1 mg/m^3 TWA: 0.1 mg/m^3 respirable dust

Appropriate engineering controls

Engineering Controls Please refer to the product label. Use only with adequate ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures, such as personal protective equipment

Eye/Face Protection	Use splash goggles or face shield when contact may occur.
Skin and Body Protection	Wear chemical-resistant gloves, footwear, and protective clothing appropriate for the risk of exposure. Viton or other impervious gloves are required. Long sleeve shirt, trousers, and safety shoes.
Respiratory Protection	Ensure adequate ventilation, especially in confined areas. Wear an appropriate NIOSH/MSHA approved respirator if ventilation is inadequate.
General Hygiene Considerations	Wash hands before eating, drinking, smoking and using the toilet. Remove contaminated clothing promptly and wash thoroughly before reused. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning and maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Liquid		
Appearance	Dark green liquid	**Odor**	Strong Pungent
Color	Dark green	**Odor Threshold**	Not determined

Property	Values	Remarks • Method
pH	3.0 - 4.0	
Melting Point/Freezing Point	Not determined	
Boiling Point/Boiling Range	Not determined	
Flash Point	> 100 °C / > 212 °F	
Evaporation Rate	Not determined	
Flammability (Solid, Gas)	Liquid-not applicable	
Upper Flammability Limits	Not applicable	
Lower Flammability Limit	Not applicable	
Vapor Pressure	Not determined	
Vapor Density	Not determined	
Specific Gravity	Not determined	
Water Solubility	Miscible in water	
Solubility in other solvents	Not determined	
Partition Coefficient	Not determined	
Auto-ignition Temperature	>625 °C / 1157 °F	
Decomposition Temperature	Not determined	
Kinematic Viscosity	Not determined	
Dynamic Viscosity	3.65 @ 20°C; 2.44 @ 40°C centistokes	
Explosive Properties	Not determined	
Oxidizing Properties	Not determined	
Bulk Density	1.135 lb/gal	

10. STABILITY AND REACTIVITY

Reactivity
Not reactive under normal conditions.

Chemical Stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous Polymerization Not known to occur.

Conditions to Avoid

Elevated temperatures. Avoid temperatures below 0°C/ 32°F.

Incompatible Materials

10% permanganate solutions and iron powder.

Hazardous Decomposition Products

Carbon monoxide. Carbon dioxide (CO2). Chlorine gas. Hydrogen chloride. Traces of phosgene upon pyrolysis. Nitrogen oxides (NOx). Ammonia. Thermal decomposition can lead to release of irritating and toxic gases and vapors.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Eye Contact	Causes severe eye damage.
Skin Contact	Causes severe skin burns.
Inhalation	Fatal if inhaled.
Ingestion	Toxic if swallowed.

Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Paraquat 1910-42-5	= 57 mg/kg (Rat)	= 80 mg/kg (Rat) = 325 mg/kg (Rabbit)	-

Information on physical, chemical and toxicological effects

Symptoms	Please see section 4 of this SDS for symptoms.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Carcinogenicity	Not classifiable as a human carcinogen.
STOT - single exposure	May cause respiratory irritation. May cause drowsiness or dizziness.
STOT - repeated exposure	Causes damage to organs through prolonged or repeated exposure.

Product Information (Numerical measures of toxicity)

Acute Oral LD50 (Rat): 238 mg/kg
Acute Dermal LD50 (Rabbit): >2,000 mg/kg
Acute Inhalation LC50 (Rat): >0.0006 mg/L (4-hr)
Eye Irritation: Moderately irritating.
Dermal Irritation: Slightly irritating.
Dermal Sensitization: Not a contact sensitizer.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Very toxic to aquatic life with long lasting effects. This product is toxic to wildlife. Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash waters. Parazone 3SL is a contact herbicide that desiccates all green plant tissue. Paraquat dichloride, the active ingredient in this product, is toxic to non-target crops and plants if off-target movement occurs because it desiccates all green plant tissue. Extreme care must be taken to ensure that off-target drift is minimized to the greatest extent possible. Refer to the local and state laws, regulations, guidelines, and spray drift information contained in the "Directions for Use" section of the product labeling for proper application to avoid off-target movement. Do not apply under conditions involving possible drift to food, forage, or other plantings that might be damaged or the crops thereof rendered unfit for sale, use, or consumption. Do not apply when weather conditions favor drift from treated areas. To avoid drift, do not make aerial applications during periods of thermal inversion.

Component Information

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Paraquat 1910-42-5		15: 96 h Cyprinus carpio mg/L LC50 static 8.5 - 19: 96 h Lepomis macrochirus mg/L LC50 static 11.0 - 19.0: 96 h Oncorhynchus mykiss mg/L LC50 static	EC50 = 967 mg/L 5 min	9.1 - 12.2: 48 h Daphnia magna mg/L EC50 Static

Persistence/Degradability

Not determined.

Bioaccumulation

Not determined.

Mobility

Not determined

Other Adverse Effects

Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes END USERS MUST DISPOSE OF ANY UNUSED PRODUCT AS PER THE LABEL RECOMMENDATIONS. Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinse is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency or Hazardous Waste representative at the nearest EPA regional office. Never place any unused product down an indoor or outdoor drain. Do not contaminate water, food or feed by disposal.

Contaminated Packaging Disposal should be in accordance with applicable regional, national and local laws and regulations.

14. TRANSPORT INFORMATION

DOT

UN/ID No	UN2922
Proper Shipping Name	Corrosive liquid, toxic, n.o.s. (Paraquat dichloride)
Hazard Class	8
Subsidiary Hazard Class	6.1
Packing Group	III

IATA

UN/ID No	UN2922
Proper Shipping Name	Corrosive liquid, toxic, n.o.s. (Paraquat dichloride)
Hazard Class	8
Subsidiary Hazard Class	6.1
Packing Group	III

IMDG

UN/ID No	UN2922
Proper Shipping Name	Corrosive liquid, toxic, n.o.s. (Paraquat dichloride)
Hazard Class	8
Subsidiary Hazard Class	6.1
Packing Group	III

15. REGULATORY INFORMATION

International Inventories

TSCA All ingredients are listed or exempt from listing on Chemical Substance Inventory

Legend:

TSCA *- United States Toxic Substances Control Act Section 8(b) Inventory*

US Federal Regulations

CERCLA

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Paraquat 1910-42-5		10 lb.	

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

SARA 313

Chemical Name	CAS No	Weight-%	SARA 313 - Threshold Values %
Paraquat - 1910-42-5	1910-42-5	42.49 - 45.11	1.0

US State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Paraquat 1910-42-5	X	X	X

EPA Pesticide Registration Number 66222-130
EPA Statement
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

EPA Pesticide Label
Signal Word: Danger

May be fatal if swallowed Fatal if inhaled Do not breathe spray mist Wear a dust/mist respirator as specified in the PPE section of this label Causes irreversible eye damage Wear protective eyewear Harmful if absorbed through skin Do not get in eyes or on clothing Avoid contact with skin IMPORTANT Inhalation is an unlikely route of exposure due to low vapor pressure and large spray droplet size but mucosal irritation or nose bleeds may occur Prolonged contact with this concentrated product can irritate your skin

Difference between SDS and EPA pesticide label

	EPA	OSHA
Signal Word	Danger	Danger
Acute toxicity - Oral	May be fatal if swallowed	Toxic if swallowed
Acute toxicity - Dermal	Harmful if absorbed through skin	N/A
Acute toxicity - Inhalation (Dusts/Mists)	Fatal if inhaled	Fatal if inhaled
Skin corrosion/irritation	Prolonged contact can irritate skin	Causes severe skin burns
Serious eye damage/eye irritation	Causes irreversible eye damage	Causes severe eye damage
STOT - single exposure	Mucosal irritation or nose bleeds may occur	May cause respiratory irritation. May cause drowsiness or dizziness
STOT - repeated exposure	N/A	Causes damage to organs through prolonged or repeated exposure

16. OTHER INFORMATION

NFPA	**Health Hazards**	**Flammability**	**Instability**	**Special Hazards**
	4	0	0	None
HMIS	**Health Hazards**	**Flammability**	**Physical Hazards**	**Personal Protection**
	3	0	0	See section 8

Issue Date: 24-May-2013
Revision Date: 16-Oct-2015
Revision Note: Updated format from 02-Jun-2014

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

MONSANTO COMPANY

Safety Data Sheet
Commercial Product

1. PRODUCT AND COMPANY IDENTIFICATION

1.1. Product identifier

Roundup PowerMAX® Herbicide

1.1.1. Chemical name
Not applicable.

1.1.2. Synonyms
None.

1.1.3. EPA Reg. No.
524-549

1.2. Product use
Herbicide

1.3. Company
MONSANTO COMPANY, 800 N. Lindbergh Blvd., St. Louis, MO, 63167
Telephone: 800-332-3111, **Fax:** 314-694-5557
E-mail: safety.datasheet@monsanto.com

1.4. Emergency numbers
FOR CHEMICAL EMERGENCY, SPILL LEAK, FIRE, EXPOSURE, OR ACCIDENT Call CHEMTREC - Day or Night: 1-800-424-9300 toll free in the continental U.S., Puerto Rico, Canada, or Virgin Islands. For calls originating elsewhere: 703-527-3887 (collect calls accepted).
FOR MEDICAL EMERGENCY - Day or Night: +1 (314) 694-4000 (collect calls accepted).

2. HAZARDS IDENTIFICATION

2.1. Classification
OSHA Hazard Communication Standard, 29 CFR 1910.1200 (2012)
Acute toxicity, inhalation - Category 4

2.2. Label elements

2.2.1. Signal word
WARNING!

2.2.2. Hazard pictogram/pictograms

2.2.3. Hazard statement/statements
Harmful if inhaled.

2.2.4. Precautionary statement/statements
Do not breathe mist/vapours/spray.
Use only outdoors or in a well-ventilated area.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Call a POISON CENTER or doctor/physician if you feel unwell.

2.3. Appearance and odour (colour/form/odour)
Pale amber-Pale brown /Liquid / Odourless

2.4. OSHA Status
This product is hazardous according to the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Refer to section 11 for toxicological and section 12 for environmental information.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Active ingredient
Potassium salt of N-(phosphonomethyl)glycine; {Potassium salt of glyphosate}

Composition

COMPONENT	CAS No.	% by weight (approximate)
Potassium salt of glyphosate	70901-12-1	48.7
Other ingredients		51.3

The specific chemical identity is being withheld because it is trade secret information of Monsanto Company.

4. FIRST AID MEASURES

Use personal protection recommended in section 8.

4.1. Description of first aid measures

4.1.1. Eye contact: If in eyes, hold eye open and rinse slowly and gently for 15-20 minutes. Remove contact lenses, if present, after first 5 minutes, then continue rinsing. Call a poison control center or doctor for treatment advice.

4.1.2. Skin contact: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

4.1.3. Inhalation: If inhaled, move person to fresh air. If person is not breathing, call emergency number or ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a poison control center or doctor for treatment advice.

4.1.4. Ingestion: Call poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison center or doctor. Do not give anything by mouth to an unconscious person.

4.2. Most important symptoms and effects, both acute and delayed

4.2.1. Eye contact, short term: May cause temporary eye irritation.

4.2.2. Skin contact, short term: Not expected to produce significant adverse effects when recommended use instructions are followed.

4.2.3. Inhalation, short term: Not expected to produce significant adverse effects when recommended use instructions are followed.

4.3. Indication of any immediate medical attention and special treatment needed

4.3.1. Advice to doctors: This product is not an inhibitor of cholinesterase.

4.3.2. Antidote: Treatment with atropine and oximes is not indicated.

5. FIRE-FIGHTING MEASURES

5.1. Extinguishing media

5.1.1. Recommended: Water, foam, dry chemical, carbon dioxide (CO2)

5.2. Special hazards

5.2.1. Unusual fire and explosion hazards

Minimise use of water to prevent environmental contamination.
Environmental precautions: see section 6.

5.2.2. Hazardous products of combustion

Carbon monoxide (CO), phosphorus oxides (PxOy), nitrogen oxides (NOx)

5.3. Fire fighting equipment: Self-contained breathing apparatus. Equipment should be thoroughly decontaminated after use.

5.4. Flash point

Does not flash.

6. ACCIDENTAL RELEASE MEASURES

6.1. Environmental precautions

Minimise spread.
Contain spillage with sand bags or other means.
Keep out of drains, sewers, ditches and water ways.

6.2. Methods for cleaning up

SMALL QUANTITIES:
Flush spill area with water.
LARGE QUANTITIES:
Absorb in earth, sand or absorbent material.
Dig up heavily contaminated soil.
Collect in containers for disposal.
Refer to section 7 for types of containers.
Flush residues with small quantities of water.
Minimise use of water to prevent environmental contamination.

Refer to section 13 for disposal of spilled material.
Use handling recommendations in Section 7 and personal protection recommendations in Section 8.

7. HANDLING AND STORAGE

Good industrial practice in housekeeping and personal hygiene should be followed.

7.1. Precautions for safe handling

Avoid contact with eyes, skin and clothing. When using do not eat, drink or smoke. Wash hands thoroughly after handling or contact. Do not contaminate drains, sewers and water ways when disposing of equipment rinse water. Thoroughly clean equipment after use. Refer to section 13 of the safety data sheet for disposal of rinse water. Wash contaminated clothing before re-use.

7.2. Conditions for safe storage

Minimum storage temperature: -15 °C
Maximum storage temperature: 50 °C
Compatible materials for storage: stainless steel, fibreglass, plastic, glass lining
Incompatible materials for storage: galvanised steel, unlined mild steel, see section 10.
Keep out of reach of children.
Keep away from food, drink and animal feed.
Keep only in the original container.
Partial crystallization may occur on prolonged storage below the minimum storage temperature.
If frozen, place in warm room and shake frequently to put back into solution.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Airborne exposure limits

Components	Exposure Guidelines
Potassium salt of glyphosate	No specific occupational exposure limit has been established.
Other ingredients	No specific occupational exposure limit has been established.

8.2. Engineering controls: No special requirement when used as recommended.

8.3. Recommendations for personal protective equipment

8.3.1. Eye protection: If there is significant potential for contact: Wear chemical goggles.

8.3.2. Skin protection: Wear chemical resistant gloves. If there is significant potential for contact: Wear face shield. Wear chemical resistant clothing/footwear. Applicators and other handlers must wear: Wear long sleeved shirt, long pants and shoes with socks. Follow manufacturer's instructions for cleaning/maintaining Personal Protective Equipment. If no such instructions for washables, use detergent and hot water.

8.3.3. Respiratory protection: No special requirement when used as recommended.

When recommended, consult manufacturer of personal protective equipment for the appropriate type of equipment for a given application.

9. PHYSICAL AND CHEMICAL PROPERTIES

These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.

Colour/colour range:	Pale amber - Pale brown
Odour:	Odourless
Form:	Liquid
Physical form changes (melting, boiling, etc.):	
Melting point:	No data.
Boiling point:	No data.
Flash point:	Does not flash.
Explosive properties:	No data.
Auto ignition temperature:	No data.
Self-accelerating decomposition temperature (SADT):	No data.
Oxidizing properties:	No data.
Specific gravity:	1.3565 @ 20 °C / 15.6 °C
Vapour pressure:	No significant volatility; aqueous solution.
Vapour density:	Not applicable.
Evaporation rate:	No data.
Dynamic viscosity:	Not applicable.
Kinematic viscosity:	No data.
Density:	1.3565 g/cm3 @ 20 °C
Solubility:	Water: Completely miscible.
pH:	4.3 - 4.8
Partition coefficient:	log Pow: -3.2 @ 25 °C (glyphosate)

10. STABILITY AND REACTIVITY

10.1. Reactivity
Reacts with galvanised steel or unlined mild steel to produce hydrogen, a highly flammable gas that could explode.

10.2. Stability
Stable under normal conditions of handling and storage.

10.3. Possibility of hazardous reactions
Reacts with galvanised steel or unlined mild steel to produce hydrogen, a highly flammable gas that could explode.

10.4. Incompatible materials
galvanised steel;unlined mild steel;see section 10.;
Compatible materials for storage: see section 7.2.

10.5. Hazardous decomposition
Thermal decomposition: Hazardous products of combustion: see section 5.

11. TOXICOLOGICAL INFORMATION

This section is intended for use by toxicologists and other health professionals.

Likely routes of exposure: Skin contact, eye contact, inhalation

Potential health effects
Eye contact, short term: May cause temporary eye irritation.
Skin contact, short term: Not expected to produce significant adverse effects when recommended use instructions are followed.
Inhalation, short term: Not expected to produce significant adverse effects when recommended use instructions are followed.

Data obtained on similar products and on components are summarized below.

Similar formulation

Acute oral toxicity
Rat, LD50: > 5,000 mg/kg body weight
Practically non-toxic.
Acute dermal toxicity
Rat, LD50: > 5,000 mg/kg body weight
Practically non-toxic.
Acute inhalation toxicity
Rat, LC50, 4 hours, aerosol:
Practically non-toxic. No 4-hr LC50 at the maximum tested concentration. For purposes of the inhalation test, product was artificially aerosolized. Since this material will not become aerosolized to a hazardous concentration during transport, it is classified as non-hazardous under the transportation regulations in accordance with 2.6.2.2.4.7(b) and (c) of the UN Recommendations on the Transport of Dangerous Goods.
Skin sensitization
Guinea pig, 3-induction Buehler test:
Positive incidence: 0 %

Similar formulation

Skin irritation
Rabbit, 3 animals, OECD 404 test:
Days to heal: 7
Primary Irritation Index (PII): 1.9/8.0
Slight irritation.
Eye irritation
Rabbit, 3 animals, OECD 405 test:
Days to heal: 10
Moderate irritation.

N-(phosphonomethyl)glycine; { glyphosate acid}

Genotoxicity
Not genotoxic.

Carcinogenicity
Not carcinogenic in rats or mice.

Reproductive/Developmental Toxicity
Developmental effects in rats and rabbits only in the presence of significant maternal toxicity.
Reproductive effects in rats only in the presence of significant maternal toxicity.

12. ECOLOGICAL INFORMATION

This section is intended for use by ecotoxicologists and other environmental specialists.

Data obtained on similar products and on components are summarized below.

Similar formulation

Aquatic toxicity, fish
Bluegill sunfish (Lepomis macrochirus):
Acute toxicity, 96 hours, static, LC50: 5.2 mg/L
Moderately toxic.
Common carp (Cyprinus carpio):
Acute toxicity, 96 hours, static, LC50: 4.0 mg/L
Moderately toxic.
Aquatic toxicity, invertebrates
Water flea (Daphnia magna):
Acute toxicity, 48 hours, static, EC50: 8.0 mg/L
Moderately toxic.

Similar formulation

Aquatic toxicity, algae/aquatic plants
Green algae (Selenastrum capricornutum):
Acute toxicity, 72 hours, static, EC50: 0.46 mg/L
Highly toxic.
Arthropod toxicity
Honey bee (Apis mellifera):
Oral, 48 hours, LD50: > 281 µg/bee
Practically non-toxic.
Honey bee (Apis mellifera):
Contact, 48 hours, LD50: > 273 µg/bee

Practically non-toxic.

Soil organism toxicity, invertebrates

Earthworm (Eisenia foetida):

Acute toxicity, 14 days, LC50: > 10,000 mg/kg dry soil

Practically non-toxic.

Soil organism toxicity, microorganisms

Nitrogen and carbon transformation test:

29.5 kg/ha, 28 days: Less than 25% effect on nitrogen or carbon transformation processes in soil.

N-(phosphonomethyl)glycine; { glyphosate acid}

Avian toxicity

Bobwhite quail (Colinus virginianus):

Dietary toxicity, 5 days, LC50: > 4,640 mg/kg diet

No more than slightly toxic.

Mallard duck (Anas platyrhynchos):

Dietary toxicity, 5 days, LC50: > 4,640 mg/kg diet

No more than slightly toxic.

Bobwhite quail (Colinus virginianus):

Acute oral toxicity, single dose, LD50: > 3,851 mg/kg body weight

Practically non-toxic.

Bioaccumulation

Bluegill sunfish (Lepomis macrochirus):

Whole fish: BCF: < 1

No significant bioaccumulation is expected.

Dissipation

Soil, field:

Half life: 2 - 174 days

Koc: 884 - 60,000 L/kg

Adsorbs strongly to soil.

Water, aerobic:

Half life: < 7 days

13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

13.1.1. Product

Keep out of drains, sewers, ditches and water ways. Recycle if appropriate facilities/equipment available. Burn in proper incinerator. Follow all local/regional/national/international regulations.

13.1.2. Container

See the individual container label for disposal information. Emptied containers retain vapour and product residue. Observe all labeled safeguards until container is cleaned, reconditioned or destroyed. Empty packaging completely. Triple or pressure rinse empty containers. Do NOT contaminate water when disposing of rinse waters. Ensure packaging cannot be reused. Do NOT re-use containers. Store for collection by approved waste disposal service. Recycle if appropriate facilities/equipment available. Follow all local/regional/national/international regulations.

Use handling recommendations in Section 7 and personal protection recommendations in Section 8.

14. TRANSPORT INFORMATION

The data provided in this section is for information only. Please apply the appropriate regulations to properly classify your shipment for transportation.

14.1. US Dept. of Transportation (DOT) Hazardous Materials Regulations (49 CFR Parts 105-180)

Proper Shipping Name (Technical Name if required):	Not regulated for domestic ground transportation. ()

14.2. IMDG Code

Proper Shipping Name (Technical Name if required):	Not regulated for transport under IMO Regulations ()

14.3. IATA/ICAO

Proper Shipping Name (Technical Name if required):	Not regulated for transport under IATA/ICAO Regulations ()

15. REGULATORY INFORMATION

15.1. Environmental Protection Agency

15.1.1. TSCA Inventory

Exempt

15.1.2. SARA Title III Rules

Section 311/312 Hazard Categories: Immediate
Section 302 Extremely Hazardous Substances: Not applicable.
Section 313 Toxic Chemical(s): Not applicable.

15.1.3. CERCLA Reportable quantity

Not applicable.

15.1.4. Federal Insecticide, Fungicide, Rodenticide Act (FIFRA)

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including directions for use.

CAUTION!
CAUSES MODERATE EYE IRRITATION

Acute oral toxicity: FIFRA category IV.
Acute dermal toxicity: FIFRA category IV.
Acute inhalation toxicity: FIFRA category IV.

Skin irritation: FIFRA category IV.
Eye irritation: FIFRA category III.

16. OTHER INFORMATION

The information given here is not necessarily exhaustive but is representative of relevant, reliable data.
Follow all local/regional/national/international regulations.
Please consult supplier if further information is needed.
In this document the British spelling was applied.
|| Significant changes versus previous edition.

	Health	Flammability	Instability	Additional Markings
NFPA	1	1	1	

0 = Minimal hazard, 1 = Slight hazard, 2 = Moderate hazard, 3 = Severe hazard, 4 = Extreme hazard

Full denomination of most frequently used acronyms. BCF (Bioconcentration Factor), BOD (Biochemical Oxygen Demand), COD (Chemical Oxygen Demand), EC50 (50% effect concentration), ED50 (50% effect dose), I.M. (intramuscular), I.P. (intraperitoneal), I.V. (intravenous), Koc (Soil adsorption coefficient), LC50 (50% lethality concentration), LD50 (50% lethality dose), LDLo (Lower limit of lethal dosage), LEL (Lower Explosion Limit), LOAEC (Lowest Observed Adverse Effect Concentration), LOAEL (Lowest Observed Adverse Effect Level), LOEC (Lowest Observed Effect Concentration), LOEL (Lowest Observed Effect Level), MEL (Maximum Exposure limit), MTD (Maximum Tolerated Dose), NOAEC (No Observed Adverse Effect Concentration), NOAEL (No Observed Adverse Effect Level), NOEC (No Observed Effect Concentration), NOEL (No Observed Effect Level), OEL (Occupational Exposure Limit), PEL (Permissible Exposure Limit), PII (Primary Irritation Index), Pow (Partition coefficient n-octanol/water), S.C. (subcutaneous), STEL (Short-Term Exposure Limit), TLV-C (Threshold Limit Value-Ceiling), TLV-TWA (Threshold Limit Value - Time Weighted Average), UEL (Upper Explosion Limit)

This Material Safety Data Sheet (MSDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-APPROVED PRODUCT LABELING (attached to and accompanying the product container). This MSDS provides important health, safety, and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course. Use, storage and disposal of pesticide products are regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling, and all necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling. It is a violation of federal law to use a pesticide product in any manner not prescribed on the EPA-approved label.

Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, MONSANTO Company or any of its subsidiaries makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for the purposes prior to use. In no event will MONSANTO Company or any of its subsidiaries be responsible for damages of any nature whatsoever resulting from the use of or reliance upon information. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR TO THE PRODUCT TO WHICH INFORMATION REFERS.

End of document

MONSANTO COMPANY

Safety Data Sheet
Commercial Product

1. PRODUCT AND COMPANY IDENTIFICATION

1.1. Product identifier

Roundup PowerMAX® II Herbicide

1.1.1. Chemical name
Not applicable.

1.1.2. Synonyms
None.

1.1.3. EPA Reg. No.
524-537

1.2. Product use
Herbicide

1.3. Company
MONSANTO COMPANY, 800 N. Lindbergh Blvd., St. Louis, MO, 63167
Telephone: 800-332-3111, **Fax:** 314-694-5557
E-mail: safety.datasheet@monsanto.com

1.4. Emergency numbers
FOR CHEMICAL EMERGENCY, SPILL LEAK, FIRE, EXPOSURE, OR ACCIDENT Call CHEMTREC - Day or Night: 1-800-424-9300 toll free in the continental U.S., Puerto Rico, Canada, or Virgin Islands. For calls originating elsewhere: 703-527-3887 (collect calls accepted).
FOR MEDICAL EMERGENCY - Day or Night: +1 (314) 694-4000 (collect calls accepted).

2. HAZARDS IDENTIFICATION

2.1. Classification
OSHA Hazard Communication Standard, 29 CFR 1910.1200 (2012)
Acute toxicity, inhalation - Category 4

2.2. Label elements

2.2.1. Signal word
WARNING!

2.2.2. Hazard pictogram/pictograms

2.2.3. Hazard statement/statements
Harmful if inhaled.

2.2.4. Precautionary statement/statements
Avoid breathing mist, vapours or spray.
Use only outdoors or in a well-ventilated area.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Call a POISON CENTER or doctor/physician if you feel unwell.

2.3. Appearance and odour (colour/form/odour)
Pale amber-Pale brown /Liquid, free from foreign materials / Slight

2.4. OSHA Status
This product is hazardous according to the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Refer to section 11 for toxicological and section 12 for environmental information.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Active ingredient
Potassium salt of N-(phosphonomethyl)glycine; {Potassium salt of glyphosate}

Composition

COMPONENT	CAS No.	% by weight (approximate)
Potassium salt of glyphosate	70901-12-1	48.8
Surfactant(s), water and minor formulating ingredients		51.2

The specific chemical identity is being withheld because it is trade secret information of Monsanto Company.

4. FIRST AID MEASURES

Use personal protection recommended in section 8.

4.1. Description of first aid measures

4.1.1. Eye contact: If in eyes, hold eye open and rinse slowly and gently for 15-20 minutes. Remove contact lenses, if present, after first 5 minutes, then continue rinsing. Call a poison control center or doctor for treatment advice.

4.1.2. Skin contact: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

4.1.3. Inhalation: If inhaled, move person to fresh air. If person is not breathing, call emergency number or ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a poison control center or doctor for treatment advice.

4.1.4. Ingestion: Call poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison center or doctor. Do not give anything by mouth to an unconscious person.

4.2. Most important symptoms and effects, both acute and delayed

4.2.1. Eye contact, short term: May cause temporary eye irritation.

4.2.2. Skin contact, short term: Not expected to produce significant adverse effects when recommended use instructions are followed.

4.2.3. Inhalation, short term: Harmful by inhalation.

4.3. Indication of any immediate medical attention and special treatment needed

4.3.1. Advice to doctors: This product is not an inhibitor of cholinesterase.

4.3.2. Antidote: Treatment with atropine and oximes is not indicated.

5. FIRE-FIGHTING MEASURES

5.1. Extinguishing media

5.1.1. Recommended: Water, foam, dry chemical, carbon dioxide (CO2)

5.2. Special hazards

5.2.1. Unusual fire and explosion hazards

Minimise use of water to prevent environmental contamination.
Environmental precautions: see section 6.

5.2.2. Hazardous products of combustion

Carbon monoxide (CO), phosphorus oxides (PxOy), nitrogen oxides (NOx)

5.3. Fire fighting equipment: Self-contained breathing apparatus. Equipment should be thoroughly decontaminated after use.

5.4. Flash point

Does not flash.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions

Use personal protection recommended in section 8.

6.2. Environmental precautions

SMALL QUANTITIES:
Low environmental hazard.
LARGE QUANTITIES:
Minimise spread.
Keep out of drains, sewers, ditches and water ways.

6.3. Methods for cleaning up

SMALL QUANTITIES:
Flush spill area with water.
LARGE QUANTITIES:
Absorb in earth, sand or absorbent material.
Dig up heavily contaminated soil.
Collect in containers for disposal.
Refer to section 7 for types of containers.
Flush residues with small quantities of water.
Minimise use of water to prevent environmental contamination.

Refer to section 13 for disposal of spilled material.
Use handling recommendations in Section 7 and personal protection recommendations in Section 8.

7. HANDLING AND STORAGE

Good industrial practice in housekeeping and personal hygiene should be followed.

7.1. Precautions for safe handling

Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. When using do not eat, drink or smoke. Wash hands thoroughly after handling or contact. Wash contaminated clothing before re-use. Thoroughly clean equipment after use. Do not contaminate drains, sewers and water ways when disposing of equipment rinse water.

7.2. Conditions for safe storage

Compatible materials for storage: stainless steel, aluminium, fibreglass, plastic, glass lining
Incompatible materials for storage: galvanised steel, unlined mild steel, see section 10.
Keep out of reach of children.
Keep away from food, drink and animal feed.
Keep only in the original container.

Partial crystallization may occur on prolonged storage below the minimum storage temperature.
If frozen, place in warm room and shake frequently to put back into solution.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Airborne exposure limits

Components	Exposure Guidelines
Potassium salt of glyphosate	No specific occupational exposure limit has been established.
Surfactant(s), water and minor formulating ingredients	No specific occupational exposure limit has been established.

8.2. Engineering controls: Provide local exhaust ventilation.

8.3. Recommendations for personal protective equipment

8.3.1. Eye protection: If there is significant potential for contact: Wear chemical goggles. Applicators and other handlers must wear eye protection.

8.3.2. Skin protection: Wear chemical resistant gloves. Chemical resistant gloves include those made of waterproof materials such as nitrile, butyl, neoprene, polyvinyl chloride (PVC), natural rubber and/or barrier laminate. If there is significant potential for contact: Wear face shield. Wear chemical resistant clothing/footwear. Applicators and other handlers must wear: Wear long sleeved shirt, long pants and shoes with socks. Follow manufacturer's instructions for cleaning/maintaining Personal Protective Equipment. If no such instructions for washables, use detergent and hot water. Keep and wash personal protective equipment separately from other laundry.

8.3.3. Respiratory protection: If airborne exposure is excessive:
Wear full facepiece/hood/helmet respirator.
Respiratory protection programs must comply with all local/regional/national regulations.

When recommended, consult manufacturer of personal protective equipment for the appropriate type of equipment for a given application.

9. PHYSICAL AND CHEMICAL PROPERTIES

These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.

Colour/colour range:	Pale amber - Pale brown
Odour:	Slight
Form:	Liquid, free from foreign materials
Physical form changes (melting, boiling, etc.):	
Melting point:	No data.
Boiling point:	No data.
Flash point:	Does not flash.
Explosive properties:	No data.
Auto ignition temperature:	No data.
Self-accelerating decomposition temperature (SADT):	No data.
Oxidizing properties:	No data.
Specific gravity:	1.36 20 °C / 15.6 °C
Vapour pressure:	No significant volatility; aqueous solution.
Vapour density:	Not applicable.
Evaporation rate:	No data.

Dynamic viscosity:	No data.
Kinematic viscosity:	No data.
Density:	1.3573 g/cm3
Solubility:	Water: Soluble
pH:	4.5 - 4.9 67.7 g/l
Partition coefficient:	log Pow: -3.2 @ 25 °C (glyphosate)

10. STABILITY AND REACTIVITY

10.1. Reactivity
Reacts with galvanised steel or unlined mild steel to produce hydrogen, a highly flammable gas that could explode.

10.2. Stability
Stable under normal conditions of handling and storage.

10.3. Possibility of hazardous reactions
Reacts with galvanised steel or unlined mild steel to produce hydrogen, a highly flammable gas that could explode.

10.4. Incompatible materials
galvanised steel;unlined mild steel;see section 10.;
Compatible materials for storage: see section 7.2.

10.5. Hazardous decomposition
Thermal decomposition: Hazardous products of combustion: see section 5.

11. TOXICOLOGICAL INFORMATION

This section is intended for use by toxicologists and other health professionals.

Likely routes of exposure: Skin contact, eye contact

Potential health effects
Eye contact, short term: May cause temporary eye irritation.
Skin contact, short term: Not expected to produce significant adverse effects when recommended use instructions are followed.
Inhalation, short term: Harmful by inhalation.

Data obtained on similar products and on components are summarized below.

Similar formulation

Acute oral toxicity
Rat, LD50: > 5,000 mg/kg body weight
Practically non-toxic.
Acute dermal toxicity
Rat, LD50: > 5,000 mg/kg body weight
Practically non-toxic.
Skin irritation
Rabbit, 3 animals, OECD 404 test:
Days to heal: 14

Primary Irritation Index (PII): 2.2/8.0
Moderate irritation.

Eye irritation

Rabbit, 3 animals, OECD 405 test:
Days to heal: 10
Moderate irritation.

Acute inhalation toxicity

Rat, LC50, 4 hours, aerosol: > 1.20 mg/L
Slightly toxic. No mortality. For purposes of the inhalation test, product was artificially aerosolized. Since this material will not become aerosolized to a hazardous concentration during transport, it is classified as non-hazardous under the transportation regulations in accordance with 2.6.2.2.4.7(b) and (c) of the UN Recommendations on the Transport of Dangerous Goods.

Skin sensitization

Guinea pig, 3-induction Buehler test:
Positive incidence: 0 %

N-(phosphonomethyl)glycine; { glyphosate acid}

Genotoxicity

Not genotoxic.

Carcinogenicity

Not carcinogenic in rats or mice.

Reproductive/Developmental Toxicity

Developmental effects in rats and rabbits only in the presence of significant maternal toxicity.
Reproductive effects in rats only in the presence of significant maternal toxicity.

12. ECOLOGICAL INFORMATION

This section is intended for use by ecotoxicologists and other environmental specialists.

Data obtained on a similar glyphosate formulation and components are summarized below.

Similar formulation

Aquatic toxicity, fish

Rainbow trout (Oncorhynchus mykiss):
Acute toxicity, 96 hours, semi-static, LC50: 3.13 mg/L
Moderately toxic.

Aquatic toxicity, algae/aquatic plants

Green algae (Selenastrum capricornutum):
Acute toxicity, 72 hours, static, EbC50 (biomass): 0.124 mg/L
Highly toxic.

Arthropod toxicity

Honey bee (Apis mellifera):
Contact, 48 hours, LD50: > 250 µg/bee
Practically non-toxic.

Honey bee (Apis mellifera):
Oral, 48 hours, LD50: > 238.8 µg/bee
Practically non-toxic.

Soil organism toxicity, invertebrates

Earthworm (Eisenia foetida):
Acute toxicity, 14 days, LC50: > 10,000 mg/kg dry soil
Practically non-toxic.

Soil organism toxicity, microorganisms

Nitrogen and carbon transformation test:
40 L/ha, 28 days: Less than 25% effect on nitrogen or carbon transformation processes in soil.

Similar formulation

Aquatic toxicity, invertebrates
Water flea (Daphnia magna):
Acute toxicity, 48 hours, static, EC50: 8.0 mg/L
Moderately toxic.

N-(phosphonomethyl)glycine; { glyphosate acid}

Avian toxicity
Bobwhite quail (Colinus virginianus):
Dietary toxicity, 5 days, LC50: > 4,640 mg/kg diet
No more than slightly toxic.
Mallard duck (Anas platyrhynchos):
Dietary toxicity, 5 days, LC50: > 4,640 mg/kg diet
No more than slightly toxic.
Bobwhite quail (Colinus virginianus):
Acute oral toxicity, single dose, LD50: > 3,851 mg/kg body weight
Practically non-toxic.
Bioaccumulation
Bluegill sunfish (Lepomis macrochirus):
Whole fish: BCF: < 1
No significant bioaccumulation is expected.
Dissipation
Soil, field:
Half life: 2 - 174 days
Koc: 884 - 60,000 L/kg
Adsorbs strongly to soil.
Water, aerobic:
Half life: < 7 days

13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

13.1.1. Product

Keep out of drains, sewers, ditches and water ways. Recycle if appropriate facilities/equipment available. Burn in proper incinerator. Follow all local/regional/national/international regulations.

13.1.2. Container

See the individual container label for disposal information. Emptied containers retain vapour and product residue. Observe all labeled safeguards until container is cleaned, reconditioned or destroyed. Empty packaging completely. Triple or pressure rinse empty containers. Do NOT contaminate water when disposing of rinse waters. Ensure packaging cannot be reused. Do NOT re-use containers. Store for collection by approved waste disposal service. Recycle if appropriate facilities/equipment available. Follow all local/regional/national/international regulations.

Use handling recommendations in Section 7 and personal protection recommendations in Section 8.

14. TRANSPORT INFORMATION

The data provided in this section is for information only. Please apply the appropriate regulations to properly classify your shipment for transportation.

14.1. US Dept. of Transportation (DOT) Hazardous Materials Regulations (49 CFR Parts 105-180)

Proper Shipping Name (Technical Name if required):	Not regulated for domestic ground transportation. ()

14.2. IMDG Code

Proper Shipping Name (Technical Name if required):	Not regulated for transport under IMO Regulations ()

14.3. IATA/ICAO

Proper Shipping Name (Technical Name if required):	Not regulated for transport under IATA/ICAO Regulations ()

15. REGULATORY INFORMATION

15.1. Environmental Protection Agency

15.1.1. TSCA Inventory

Exempt

15.1.2. SARA Title III Rules

Section 311/312 Hazard Categories: Immediate
Section 302 Extremely Hazardous Substances: Not applicable.
Section 313 Toxic Chemical(s): Not applicable.

15.1.3. CERCLA Reportable quantity

Not applicable.

15.1.4. Federal Insecticide, Fungicide, Rodenticide Act (FIFRA)

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including directions for use.

CAUTION!
CAUSES MODERATE EYE IRRITATION, HARMFUL IF INHALED

Acute oral toxicity: FIFRA category IV.
Acute dermal toxicity: FIFRA category IV.
Acute inhalation toxicity: FIFRA category III.
Skin irritation: FIFRA category III.
Eye irritation: FIFRA category III.

16. OTHER INFORMATION

The information given here is not necessarily exhaustive but is representative of relevant, reliable data.
Follow all local/regional/national/international regulations.
Please consult supplier if further information is needed.
In this document the British spelling was applied.
|| Significant changes versus previous edition.

	Health	Flammability	Instability	Additional Markings
NFPA	2	1	1	

0 = Minimal hazard, 1 = Slight hazard, 2 = Moderate hazard, 3 = Severe hazard, 4 = Extreme hazard

Full denomination of most frequently used acronyms. BCF (Bioconcentration Factor), BOD (Biochemical Oxygen Demand), COD (Chemical Oxygen Demand), EC50 (50% effect concentration), ED50 (50% effect dose), I.M. (intramuscular), I.P. (intraperitoneal), I.V. (intravenous), Koc (Soil adsorption coefficient), LC50 (50% lethality concentration), LD50 (50% lethality dose), LDLo (Lower limit of lethal dosage), LEL (Lower Explosion Limit), LOAEC (Lowest Observed Adverse Effect Concentration), LOAEL (Lowest Observed Adverse Effect Level), LOEC (Lowest Observed Effect Concentration), LOEL (Lowest Observed Effect Level), MEL (Maximum Exposure limit), MTD (Maximum Tolerated Dose), NOAEC (No Observed Adverse Effect Concentration), NOAEL (No Observed Adverse Effect Level), NOEC (No Observed Effect Concentration), NOEL (No Observed Effect Level), OEL (Occupational Exposure Limit), PEL (Permissible Exposure Limit), PII (Primary Irritation Index), Pow (Partition coefficient n-octanol/water), S.C. (subcutaneous), STEL (Short-Term Exposure Limit), TLV-C (Threshold Limit Value-Ceiling), TLV-TWA (Threshold Limit Value - Time Weighted Average), UEL (Upper Explosion Limit)

This Material Safety Data Sheet (MSDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-APPROVED PRODUCT LABELING (attached to and accompanying the product container). This MSDS provides important health, safety, and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course. Use, storage and disposal of pesticide products are regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling, and all necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling. It is a violation of federal law to use a pesticide product in any manner not prescribed on the EPA-approved label.

Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, MONSANTO Company or any of its subsidiaries makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for the purposes prior to use. In no event will MONSANTO Company or any of its subsidiaries be responsible for damages of any nature whatsoever resulting from the use of or reliance upon information. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR TO THE PRODUCT TO WHICH INFORMATION REFERS.

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 PRODUCT IDENTIFIER:
TRADE NAME: **SNIPER®**
1.2 RECOMMENDED USE: GROUP 3A INSECTICIDE
1.3 SUPPLIER DETAILS:
LOVELAND PRODUCTS, INC.
P.O. Box 1286 • Greeley, CO 80632-1286
1.4 24 Hour Emergency Phone: 1-800-424-9300 - **Medical Emergencies:** 1-866-944-8565 – **Product Information:** 1-888-574-2878 (LPI-CUST)
U.S. Coast Guard National Response Center: 1-800-424-8802

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to 29 CFR 1910.1200

Aspiration Hazard	Category 1	H304
Acute Toxicity – Dermal	Category 4	H312
Eye Damage/Irritation	Category 2A	H319
Acute Toxicity – Inhalation (Dusts/Mists)	Category 4	H332
Carcinogenicity	Category 2	H351

2.2 Label elements

Signal word: DANGER

Hazard Statement:
H304 – May be fatal if swallowed and enters airways.
H312 – Harmful in contact with skin.
H319 – Causes serious eye irritation.
H332 – Harmful if inhaled.
H351 – Suspected of causing cancer.
H410 – Very toxic to aquatic life with long lasting effects.

Precautionary Statement: (Prevention):
P201 – Obtain special instructions before use.
P202 – Do not handle until all safety precautions have been read and understood.
P280 – Wear protective gloves/protective clothing/eye protection/face protection.
P261 – Avoid breathing dust/fume/gas/mist/vapors/spray.
P271 – Use only outdoors or in a well-ventilated area.
P264 – Wash face, hands and any exposed skin thoroughly after handling.

Precautionary Statement: (Response):
P301+P310: IF SWALLOWED: IMMEDIATELY CALL A POISON CENTER or doctor/physician.
P331 – Do NOT induce vomiting.
P302+P352: IF ON SKIN: Wash with soap and water.
P312 – Call a POISON CENTER or doctor/physician if you feel unwell.
P304+P340: IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing..
P312 – Call a POISON CENTER or doctor/physician if you feel unwell.

Precautionary Statement: (Storage):
P405 – Store locked up.

Precautionary Statement: (Disposal)
P501 – Dispose of contents/container to an approved waste disposal to an approved waste disposal facility.

2.3 Other hazards
Pyrethroid pesticide.

Potential Health effects

Routes of exposure	Ingestion. Inhalation.
Eyes	Causes severe eye irritation.
Skin	Harmful in contact with skin.
Inhalation	Harmful if inhaled.
Ingestion	May be fatal if swallowed.
Target organs	Ingestion.
Signs and symptoms	May be fatal if swallowed and enters airways.

Potential environmental effects This product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have harmful or damaging effect on the environment.

3. COMPOSITION, INFORMATION ON INGREDIENTS

3.1 Substances

3.2 Mixtures

Classification according to 29 CFR 1910.1200

Chemical Name:	CAS No.	Classification	Concentration [%]
Bifenthrin	82657-04-3	Asp. haz. 1; H304 Dermal tox. 4; H312	25
Other ingredients*	n/a	Inh. tox. 4; H332	75
Aromatic Hydrocarbons, contains	64742-94-5	Carcinogenicity; 2; H351	
Naphthalene	91-20-3	Eye Dam/Irrit. 2A; H319 Aquatic tox. 1; H410	<5

*Ingredients not specifically listed are non-hazardous or are to be considered proprietary or confidential business information per 29 CFR 1910.1200(i)

4. FIRST AID MEASURES

4.1 Description of First Aid Measures

General Advice: Get medical attention if symptoms occur.

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

If swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

If on skin or clothing: Take of contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

4.2 Most Important Symptoms and Effects, Acute and Delayed

Symptoms: Central nervous system effects.

4.3 Immediate Medical Attention and Special Treatment

Treatment: This product is a Pyrethroid. If large amounts have been ingested, the stomach and intestines should be evacuated. Treat symptomatic and supportive. Digestible fats, oils, or alcohol may increase absorption and should be avoided.
FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: **1-866-944-8565**
Take container, label or product name with you when seeking medical attention.

NOTES TO PHYSICIAN: This product is a Pyrethroid. If large amounts have been ingested, the stomach and intestines should be evacuated. Treat symptomatic and supportive. Digestible fats, oils, or alcohol may increase absorption and should be avoided.

5. FIRE FIGHTING MEASURES

5.1 EXTINGUISHING MEDIA:
Suitable Extinguishing Media: Use medium appropriate to surrounding fire. Foam, carbon dioxide (CO_2), dry chemical, soft stream or water fog only if necessary.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE:
Specific Hazards During Firefighting: None known.

5.3 SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS
Special Protective Equipment for Firefighters: Self-contained breathing apparatus and full protective gear should be worn in fighting large fires involving chemicals. Use water spray to keep fire exposed containers cool. Keep people away. Isolate fire and deny unnecessary entry.

6. ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES
Personal Precautions: Avoid inhalation of vapors and spray mist and contact with skin and eyes. Ensure adequate ventilation. Wear suitable protective clothing.

6.2 ENVIRONMENTAL PRECAUTIONS
Environmental Precautions: This pesticide is extremely toxic to fish and aquatic invertebrates. Use with care when applying in areas adjacent to any body of water. Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not make applications when weather conditions favor drift from treated areas. Drift and runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when disposing of equipment washwaters.
This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds while bees are actively visiting the treatment area.
The use of Bifenthrin is prohibited in areas that may result in exposure of endangered species to Bifenthrin. Prior to use in a particular county, contact the local extension service for procedures and precautions to use to protect endangered species.

6.3 METHODS AND MATERIALS FOR CONTAINMENT AND CLEAN-UP
Methods for Clean-Up: Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. After removal flush contaminated area thoroughly with water.
Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to Remove residual contamination.
Never return spills to original containers for re-use.

7. HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING:
Advice on Safe Handling: Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

7.2 CONDITIONS FOR SAFE STORAGE:
Requirements for Storage Areas and Containers: Store in a cool place, DO NOT store in direct sunlight. Protect from freezing temperatures. Do not contaminate water, food or feed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 CONTROL PARAMETERS:
OCCUPATIONAL EXPOSURE LIMITS

U.S. Workplace Exposure Level (ACGIH) TLVs

Components	Type	Value
No listings	TLV	
	TLV	

U.S. Workplace Exposure Level (OSHA) PELs

Components	Type	Value
No listings	TLV	15 mg/m^3 (Total dust), Skin

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Specimen
No listings		

8.2 EXPOSURE CONTROLS:

Engineering Measures

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application.

Individual Protection Measures:

Eye / Face Protection: Goggles or shielded safety glasses are recommended.
Skin Protection: Long-sleeved shirt and long pants. Chemical-resistant gloves. Shoes plus socks.
Respiratory Protection: Not normally required. If respirators are used, a program should be in place to assure compliance with 29 CFR 1910.134, the OSHA Respiratory Protection standard.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 APPEARANCE : Liquid
ODOR: Aromatic hydrocarbon.
ODOR THRESHOLD: No data available.
COLOR: Amber.
pH: 5.36
MELTING POINT / FREEZING POINT: No data available
BOILING POINT: No data available
FLASH POINT: 164°F / 73.3°C.
FLAMMABILILITY (solid, gas): No data available.
UPPER / LOWER FLAMMABILITY OR EXPLOSIVE LIMITS: No data available.
VAPOR PRESSURE: No data available.
SOLUBILITY: Emulsifies.
PARTITION CO-EFFICIENT, n-OCTANOL / WATER: No data available.
AUTO-IGNITION TEMPERATURE: No data available.
DECOMPOSITION TEMPERATURE: No data available.
VISCOSITY: No data available.
SPECIFIC GRAVITY (Water = 1): 0.96 g/ml
DENSITY: 8.00 lbs./gal / 0.96 kg/L

Note: These physical data are typical values based on material tested but may vary from sample to sample.
Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.

10. STABILITY AND REACTIVITY

10.1 REACTIVITY
Stable
10.2 CHEMICAL STABILITY
Stable under normal temperature conditions
10.3 POSSIBILITY OF HAZARDOUS REACTIONS
No data available. Will not polymerize.
10.4 CONDITIONS TO AVOID
Heat, flames and sparks.
10.5 INCOMPATIBILE MATERIALS
None known.
10.6 HAZARDOUS DECOMPOSITION PRODUCTS
Oxides of carbon, hydrogen chloride, hydrogen fluoride, and oxides of sulfur.

11 TOXICOLOGICAL INFORMATION

11.3 LIKELY ROUTES OF EXPOSURE
Eye contact. Skin absorption. Skin contact.
LC_{50} (rat): 1.86 mg/L (4 HR)
LD_{50} Oral (rat): 262 mg/kg
LD_{50} Dermal (rat): > 2,000 mg/kg
Acute Toxicity Estimates: No data available
Skin Irritation (rabbit): Slight irritant.
Eye Irritation (rabbit): Moderate eye irritation.
Specific Target Organ Toxicity: No data available
Aspiration: Fatal if swallowed and enters airways.
Skin Sensitization (guinea pig): Sensitizer
Carcinogenicity: ACGIH TLV-A4 (Not Classifiable as a Human Carcinogen); IARC-3 (Unclassifiable as to Carcinogenicity in Humans).
Germ Cell Mutagenicity: No data available
Interactive Effects: None known

12 ECOLOGICAL INFORMATION

12.3 ECOTOXICITY
The product is toxic to fish and aquatic invertebrates. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. Information below is based on the active ingredient Bifenthrin.
Ecotoxicological Data

	Species	Test Results
Bifenthrin	Fish	0.1 µg/L – 96-hour LC_{50}
	Daphnia magna	0.11 µg/L – 96-hour EC_{50}

Drift or runoff may adversely affect non-target plants.
Do not apply directly to water.
Do not contaminate water when disposing of equipment wash water.
Do not apply when weather conditions favor drift from target area.

12.2 PERSISTENCE AND DEGRADABILITY
Biodegradability: Moderately persistent. Does not readily hydrolyze. Not readily biodegradable.
12.3 BIOACCUMULATIVE POTENTIAL
Bioaccumulation: Has some potential to bioaccumulate in the environment.
12.4 MOBILITY IN SOIL
Immobile. Not expected to reach groundwater.
12.5 OTHER ADVERSE EFFECTS
Assessment: No data available.

13 DISPOSAL CONSIDERATIONS

13.1 WASTE TREATMENT METHODS

Wastes may be disposed of on site or at an approved waste disposal facility. Triple rinse (or equivalent), adding rinse water to spray tank. Offer container for recycling or dispose of in a sanitary landfill or by other procedures approved by appropriate authorities. Recycling decontaminated containers is the best option of container disposal. The Agricultural Container Recycling Council (ACRC) operates the national recycling program. To contact your state and local ACRC recycler visit the ACRC web page at http://www.acrecycle.org/. Do not contaminate water, food or feed by storage or disposal.

14 TRANSPORT INFORMATION

14.3 LAND TRANSPORT

DOT Shipping Description: UN3352, PYRETHROID PESTICIDE, LIQUID, TOXIC (BIFENTHRIN), 6.1, III ERG GUIDE 151
U.S. Surface Freight Classification: INSECTICIDES OR FUNGICIDES, INSECT OR ANIMAL REPELLENTS, NOI, OR VERMIN EXTERMINATORS, ANIMAL OR POULTRY, NOI; POISON (NMFC 102100; CLASS: 77.5)

15 REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS

NFPA & HMIS Hazard Ratings:

NFPA		HMIS
3 Health	0 Least	3 Health
1 Flammability	1 Slight	0 Flammability
0 Instability	2 Moderate	0 Reactivity
	3 High	B PPE
	4 Severe	

SARA Hazard Notification/Reporting
SARA Title III Hazard Category:

Immediate	Y	Fire	Y	Sudden Release of Pressure	N
Delayed	Y	Reactive	N		

Reportable Quantity (RQ) under U.S. CERCLA: Naphthalene (CAS: 91-20-3) 100 pounds.
SARA, Title III, Section 313: Bifenthrin (CAS: 82657-04-3) 25%; Naphthalene (CAS: 91-20-3) <5%.
RCRA Waste Code: Not listed.
CA Proposition 65: WARNING: This product contains chemicals known to the State of California to cause cancer or birth defects or other reproductive harm.

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

WARNING
May be fatal if swallowed.
Causes substantial but temporary eye injury.
Do not get in eyes or on clothing.
Wear protective eyewear (goggle, face shield, or safety glasses).
Harmful if inhaled or absorbed through skin.
Avoid breathing vapor or spray mist
Avoid contact with skin, eyes, or clothing.
Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet.
Remove and wash contaminated clothing before reuse.

16 OTHER INFORMATION

SDS STATUS: Format revised.

PREPARED BY: Registrations and Regulatory Affairs

REVIEWED BY: Environmental Health and Safety

EPA REG. NO.: 34704-858

®Sniper is a registered trademark of Loveland Products, Inc.

This product is a Restricted Use Pesticide (Toxic to fish and aquatic organisms)

Disclaimer and Limitation of Liability: This data sheet was developed from information on the constituent materials identified herein and does not relate to the use of such materials in combination with any other material or process. No warranty is expressed or implied with respect to the completeness or ongoing accuracy of the information contained in this data sheet, and LOVELAND PRODUCTS, INC. disclaims all liability for reliance on such information. This data sheet is not a guarantee of safety. Users are responsible for ensuring that they have all current information necessary to safely use the product described by this data sheet for their specific purpose.

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 PRODUCT IDENTIFIER:
TRADE NAME: **SNIPER® LFR®**
1.2 RECOMMENDED USE: GROUP 3 INSECTICIDE – FOR MIXING WITH LIQUID FERTILIZER TO CONTROL SOIL INSECT PESTS
1.3 SUPPLIER DETAILS:
LOVELAND PRODUCTS, INC.
P.O. Box 1286 • Greeley, CO 80632-1286
1.4 24 Hour Emergency Phone: 1-800-424-9300 - **Medical Emergencies:** 1-866-944-8565 – **Product Information:** 1-888-574-2878 (LPI-CUST)
U.S. Coast Guard National Response Center: 1-800-424-8802

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to 29 CFR 1910.1200

Acute Toxicity - Oral	Category 3	H301
Acute Toxicity – Inhalation (Dusts/Mists)	Category 4	H332
Carcinogenicity	Category 2	H351
Specific Organ Toxicity (Single Exposure)	Category 1	H370
Specific Organ Toxicity (Repeated Exposure)	Category 1	H372

2.2 Label elements

Signal word: DANGER

Hazard Statement:
H301 – Toxic if swallowed.
H332 – Harmful if inhaled.
H351 – Suspected of causing cancer.
H370 – Causes damage to organs.
H372 – Causes damage to organs through prolonged or repeated exposure.
H410 – Very toxic to aquatic life with long lasting effects.

Precautionary Statement:
P201 – Obtain special instructions before use.
P202 – Do not handle until all safety precautions have been read and understood.
P260 – Do not breathe dust/fume/gas/mist/vapors/spray.
P262 – Do not get in eyes, on skin, or on clothing.
P264 – Wash face, hands and any exposed skin thoroughly after handling.

(Prevention):
P270 – Do not eat, drink or smoke when using this product.
P271 – Use only outdoors or in a well-ventilated area.
P281 – Use personal protective equipment as required.

Precautionary Statement: (Response):
P308+P311: IF exposed or concerned: Call a POISON CENTER or doctor/physician.
P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312: Call a POISON CENTER or doctor/physician if you feel unwell.
P301+P310: IF SWALLOWED: IMMEDIATELY CALL A POISON CENTER or doctor/physician.
P330: Rinse mouth.

Precautionary Statement: (Storage):
P405 – Store locked up.

Precautionary Statement: (Disposal)
P501 – Dispose of contents/container to an approved waste disposal to an approved waste disposal facility.

2.3 Other hazards
Pyrethroid pesticide.

Potential Health effects

Routes of exposure	Ingestion. Inhalation.
Eyes	May cause eye irritation.
Skin	May be harmful in contact with skin.
Inhalation	Harmful if inhaled.
Ingestion	Toxic if swallowed.
Target organs	Ingestion.
Signs and symptoms	May cause eye irritation.

Potential environmental effects This product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have harmful or damaging effect on the environment.

3. COMPOSITION, INFORMATION ON INGREDIENTS

3.1 Substances

3.2 Mixtures

Classification according to 29 CFR 1910.1200

Chemical Name:	CAS No.	Classification	Concentration [%]
Bifenthrin	82657-04-3	Oral tox. 3; H301 Inh tox. 4; H332	17.15
Propylene Glycol	57-55-6	Carcinogenicity; 2; H351 STOT-SE 1; H370 STOT-RE; 1; H372 Aquatic tox. 1; H410	5 - 10

*Ingredients not specifically listed are non-hazardous or are to be considered proprietary or confidential business information per 29 CFR 1910.1200(i)

4. FIRST AID MEASURES

4.1 Description of First Aid Measures

General Advice: Get medical attention if symptoms occur.

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

If swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

If on skin or clothing: Take of contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

4.2 Most Important Symptoms and Effects, Acute and Delayed

Symptoms: Central nervous system effects.

4.3 Immediate Medical Attention and Special Treatment

Treatment: This product is a Pyrethroid. If large amounts have been ingested, the stomach and intestines should be evacuated. Treat symptomatic and supportive. Digestible fats, oils, or alcohol may increase absorption and should be avoided.

FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: **1-866-944-8565**

Take container, label or product name with you when seeking medical attention.

NOTES TO PHYSICIAN: This product is a Pyrethroid. If large amounts have been ingested, the stomach and intestines should be evacuated. Treat symptomatic and supportive. Digestible fats, oils, or alcohol may increase absorption and should be avoided.

5. FIRE FIGHTING MEASURES

5.1 EXTINGUISHING MEDIA:

Suitable Extinguishing Media: Use medium appropriate to surrounding fire. Foam, carbon dioxide (CO_2), dry chemical, soft stream or water fog only if necessary.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE:

Specific Hazards During Firefighting: None known.

5.3 SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS

Special Protective Equipment for Firefighters: Self-contained breathing apparatus and full protective gear should be worn in fighting large fires involving chemicals. Use water spray to keep fire exposed containers cool. Keep people away. Isolate fire and deny unnecessary entry.

6. ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Personal Precautions: Avoid inhalation of vapors and spray mist and contact with skin and eyes. Ensure adequate ventilation. Wear suitable protective clothing.

6.2 ENVIRONMENTAL PRECAUTIONS

Environmental Precautions: This pesticide is extremely toxic to fish and aquatic invertebrates. Use with care when applying in areas adjacent to any body of water. Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not make applications when weather conditions favor drift from treated areas. Drift and runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when disposing of equipment washwaters.

This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds while bees are actively visiting the treatment area.

The use of Bifenthrin is prohibited in areas that may result in exposure of endangered species to Bifenthrin. Prior to use in a particular county, contact the local extension service for procedures and precautions to use to protect endangered species.

6.3 METHODS AND MATERIALS FOR CONTAINMENT AND CLEAN-UP

Methods for Clean-Up: Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. After removal flush contaminated area thoroughly with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to Remove residual contamination.

Never return spills to original containers for re-use.

7. HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING:

Advice on Safe Handling: Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

7.2 CONDITIONS FOR SAFE STORAGE:

Requirements for Storage Areas and Containers: Store in a cool place, DO NOT store in direct sunlight. Protect from freezing temperatures. Do not contaminate water, food or feed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 CONTROL PARAMETERS:

OCCUPATIONAL EXPOSURE LIMITS

U.S. Workplace Exposure Level (ACGIH) TLVs

Components	Type	Value
No listings	TLV	
	TLV	

U.S. Workplace Exposure Level (OSHA) PELs

Components	Type	Value
No listings	TLV	15 mg/m^3 (Total dust), Skin

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Specimen
No listings		

8.2 EXPOSURE CONTROLS:

Engineering Measures

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application.

Individual Protection Measures:

Eye / Face Protection:	Goggles or shielded safety glasses are recommended.
Skin Protection:	Long-sleeved shirt and long pants. Chemical-resistant gloves. Shoes plus socks.
Respiratory Protection:	Not normally required. If respirators are used, a program should be in place to assure compliance with 29 CFR 1910.134, the OSHA Respiratory Protection standard.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 APPEARANCE : Liquid
ODOR: Latex.
ODOR THRESHOLD: No data available.
COLOR: White to off-white.
pH: 6.1
MELTING POINT / FREEZING POINT: No data available
BOILING POINT: No data available
FLASH POINT: No data available.
FLAMMABILILITY (solid, gas): No data available.
UPPER / LOWER FLAMMABILITY OR EXPLOSIVE LIMITS: No data available.
VAPOR PRESSURE: No data available.
SOLUBILITY: Emulsifies.
PARTITION CO-EFFICIENT, n-OCTANOL / WATER: No data available.
AUTO-IGNITION TEMPERATURE: No data available.
DECOMPOSITION TEMPERATURE: No data available.
VISCOSITY: No data available.
SPECIFIC GRAVITY (Water = 1): 1.05 g/ml
BULK DENSITY: 8.76 lbs./gal / 1.05 kg/L

Note: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.

10. STABILITY AND REACTIVITY

10.1 REACTIVITY
Stable

10.2 CHEMICAL STABILITY
Stable under normal temperature conditions

10.3 POSSIBILITY OF HAZARDOUS REACTIONS
No data available. Will not polymerize.

10.4 CONDITIONS TO AVOID
Heat, flames and sparks.

10.5 INCOMPATIBILE MATERIALS
None known.

10.6 HAZARDOUS DECOMPOSITION PRODUCTS
Oxides of carbon, hydrogen chloride, hydrogen fluoride, and oxides of sulfur.

11 TOXICOLOGICAL INFORMATION

11.3 LIKELY ROUTES OF EXPOSURE
Eye contact. Skin absorption. Skin contact.
LC_{50} (rat): > 2.28 mg/L (4 HR)
LD_{50} Oral (rat): 175 mg/kg
LD_{50} Dermal (rat): > 5,000 mg/kg
Acute Toxicity Estimates: No data available
Skin Irritation (rabbit): Slight irritant.
Eye Irritation (rabbit): Minimal eye irritation.
Specific Target Organ Toxicity: Central Nervous System; Bifenthrin caused clinical signs of neurotoxicity following acute or subchronic exposure.
Aspiration: No data available
Skin Sensitization (guinea pig): Not a sensitizer
Carcinogenicity: ACGIH TLV-A4 (Not Classifiable as a Human Carcinogen); IARC-3 (Unclassifiable as to Carcinogenicity in Humans).
Germ Cell Mutagenicity: No data available
Interactive Effects: None known

12 ECOLOGICAL INFORMATION

12.3 ECOTOXICITY

The product is toxic to fish and aquatic invertebrates. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. Information below is based on the active ingredient Bifenthrin.

Ecotoxicological Data

	Species	Test Results
Bifenthrin	Fish	0.1 µg/L – 96-hour LC_{50}
	Daphnia magna	0.11 µg/L – 96-hour EC_{50}

Drift or runoff may adversely affect non-target plants.
Do not apply directly to water.
Do not contaminate water when disposing of equipment wash water.
Do not apply when weather conditions favor drift from target area.

12.2 PERSISTENCE AND DEGRADABILITY

Biodegradability: Moderately persistent. Does not readily hydrolyze. Not readily biodegradable.

12.3 BIOACCUMULATIVE POTENTIAL

Bioaccumulation: Has some potential to bioaccumulate in the environment.

12.4 MOBILITY IN SOIL

Immobile. Not expected to reach groundwater.

12.5 OTHER ADVERSE EFFECTS

Assessment: No data available.

13 DISPOSAL CONSIDERATIONS

13.1 WASTE TREATMENT METHODS

Wastes may be disposed of on site or at an approved waste disposal facility. Triple rinse (or equivalent), adding rinse water to spray tank. Offer container for recycling or dispose of in a sanitary landfill or by other procedures approved by appropriate authorities. Recycling decontaminated containers is the best option of container disposal. The Agricultural Container Recycling Council (ACRC) operates the national recycling program. To contact your state and local ACRC recycler visit the ACRC web page at http://www.acrecycle.org/. Do not contaminate water, food or feed by storage or disposal.

14 TRANSPORT INFORMATION

14.3 LAND TRANSPORT

DOT Shipping Description: UN3352, PYRETHROID PESTICIDE, LIQUID, TOXIC (BIFENTHRIN), 6.1, III ERG GUIDE 151
U.S. Surface Freight Classification: INSECTICIDES OR FUNGICIDES, INSECT OR ANIMAL REPELLENTS, NOI, OR VERMIN EXTERMINATORS, ANIMAL OR POULTRY, NOI; POISON (NMFC 102100; CLASS: 77.5)

15 REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS

NFPA & HMIS Hazard Ratings:

NFPA		HMIS
2 Health	0 Least	2 Health
1 Flammability	1 Slight	0 Flammability
0 Instability	2 Moderate	0 Reactivity
	3 High	X PPE
	4 Severe	

SARA Hazard Notification/Reporting
SARA Title III Hazard Category:

Immediate	Y	Fire	N	Sudden Release of Pressure	N
Delayed	Y	Reactive	N		

Reportable Quantity (RQ) under U.S. CERCLA: Not listed.
SARA, Title III, Section 313: Bifenthrin (CAS: 82657-04-3) 17.15%.
RCRA Waste Code: Not listed.
CA Proposition 65: WARNING: This product contains chemicals known to the State of California to cause cancer or birth defects or other reproductive harm.

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

WARNING
May be fatal if swallowed.
Causes moderate eye irritation.
Avoid contact with eyes or clothing.
Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum or using tobacco.

16 OTHER INFORMATION

SDS STATUS: Format revised.

PREPARED BY: Registrations and Regulatory Affairs

REVIEWED BY: Environmental Health and Safety

EPA REG. NO.: 34704-1089

®Sniper is a registered trademark of Loveland Products, Inc.
®LFR is a registered trademark of FMC Corporation.

This product is a Restricted Use Pesticide (Toxic to fish and aquatic organisms)

Disclaimer and Limitation of Liability: This data sheet was developed from information on the constituent materials identified herein and does not relate to the use of such materials in combination with any other material or process. No warranty is expressed or implied with respect to the completeness or ongoing accuracy of the information contained in this data sheet, and LOVELAND PRODUCTS, INC. disclaims all liability for reliance on such information. This data sheet is not a guarantee of safety. Users are responsible for ensuring that they have all current information necessary to safely use the product described by this data sheet for their specific purpose.

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Mixture

Product name : ETHEPHON 2

Other means of identification : EPA Reg. No. 66330-262

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Herbicide

1.3. Details of the supplier of the safety data sheet

Arysta LifeScience North America LLC
15401 Weston Parkway, Suite 150
Cary, NC 27513 – USA

1.4. Emergency telephone number

Emergency number : Exposure Calls (PROSAR): +1-866-303-6952 or +1-651-603-3432 (international)
Spill Calls (CHEMTREC) (Contract # CCN1779): +1-800-424-9300 or +1-703-527-3887 (international)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS-US classification

Met. Corr. 1	H290
Acute Tox. 4 (Dermal)	H312
Skin Corr. 1C	H314
Eye Dam. 1	H318
Skin Sens. 1B	H317
STOT SE 3	H335

Full text of H statements : see section 16

2.2. Label elements

GHS-US labelling

Hazard pictograms (GHS-US) :

GHS05

GHS07

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) : H290 - May be corrosive to metals
H312 - Harmful in contact with skin
H314 - Causes severe skin burns and eye damage
H317 - May cause an allergic skin reaction
H335 - May cause respiratory irritation

Precautionary statements (GHS-US) : P234 - Keep only in original container
P260 - Do not breathe mist, vapours
P261 - Avoid breathing dust/fume/gas/mist/vapours/spray
P264 - Wash hands, forearms and face thoroughly after handling
P271 - Use only outdoors or in a well-ventilated area
P272 - Contaminated work clothing must not be allowed out of the workplace
P280 - Wear eye protection, face protection, protective clothing, protective gloves
P301+P330+P331 - If swallowed: rinse mouth. Do NOT induce vomiting
P302+P352 - If on skin: Wash with plenty of water
P303+P361+P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a doctor
P312 - Call a poison center/doctor/... if you feel unwell
P321 - Specific treatment (see First aid measures on this label)
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention

P362+P364 - Take off contaminated clothing and wash it before reuse
P363 - Wash contaminated clothing before reuse
P390 - Absorb spillage to prevent material damage
P403+P233 - Store in a well-ventilated place. Keep container tightly closed
P405 - Store locked up
P406 - Store in corrosive resistant container with a resistant inner liner
P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable.

SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable

3.2. Mixture

Name	Product identifier	% (w/w)	GHS-US classification
ethephon	(CAS No) 16672-87-0	15 – 25	Acute Tox. 4 (Dermal), H312 Acute Tox. 4 (Inhalation:dust,mist), H332 Skin Corr. 1C, H314 Aquatic Chronic 3, H412

***Chemical name, CAS number and/or exact concentration have been withheld as a trade secret**

Full text of H-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : Never give anything by mouth to an unconscious person. IF exposed or concerned: Get medical advice/attention.

First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/physician.

First-aid measures after skin contact : For even minor contact, immediately remove contaminated clothing. Wash skin thoroughly with mild soap and water. Wash contaminated clothing before reuse. Get immediate medical advice/attention.

First-aid measures after eye contact : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.

First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/physician.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation : May cause respiratory irritation.

Symptoms/injuries after skin contact : Repeated exposure to this material can result in absorption through skin causing significant health hazard. Harmful in contact with skin. Causes severe skin burns and eye damage. May cause an allergic skin reaction.

Symptoms/injuries after eye contact : Causes serious eye damage.

4.3. Indication of any immediate medical attention and special treatment needed

All treatments should be based on observed signs and symptoms of distress in the patient.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Use extinguishing media appropriate for surrounding fire.

Unsuitable extinguishing media : None known.

5.2. Special hazards arising from the substance or mixture

Fire hazard : Not flammable. Burning produces irritating, toxic and noxious fumes.

Reactivity : Thermal decomposition generates : Corrosive vapours.

5.3. Advice for firefighters

Firefighting instructions : Cool adjacent structures and containers with water spray to protect and prevent ignition. Do not allow run-off from fire fighting to enter drains or water courses. Exercise caution when fighting any chemical fire.

Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection. Use self-contained breathing apparatus.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Avoid all eye and skin contact and do not breathe vapour and mist.

6.1.1. For non-emergency personnel

Protective equipment : Chemical goggles or safety glasses. Wear suitable protective clothing and gloves.

Emergency procedures : Keep upwind. Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment : Chemical goggles or safety glasses. Wear suitable protective clothing and gloves.

Emergency procedures : Stop leak if safe to do so. Ventilate area. Keep upwind.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

For containment : Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.

Methods for cleaning up : Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Sweep or shovel spills into appropriate container for disposal.

6.4. Reference to other sections

Section 13: disposal information. Section 7: safe handling. Section 8: personal protective equipment.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Do not breathe mist, vapours. Do not get in eyes, on skin, or on clothing. Use only outdoors or in a well-ventilated area.

Hygiene measures : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Comply with applicable regulations.

Storage conditions : Keep container tightly closed. Do not store near food, foodstuffs, drugs, or potable water supplies. Protect against frost.

Incompatible products : Strong oxidizers. Strong bases.

Incompatible materials : Metals.

Prohibitions on mixed storage : Keep away from incompatible materials.

Storage area : Store in dry, cool, well-ventilated area. Store out of frost (-10 °C). Store away from heat.

Special rules on packaging : Do not use metal containers.

7.3. Specific end use(s)

Herbicide.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

ETHEPHON 2	
ACGIH	Not applicable
OSHA	Not applicable

ethephon (16672-87-0)	
ACGIH	Not applicable
OSHA	Not applicable

8.2. Exposure controls

Appropriate engineering controls : Avoid splashing. Use only outdoors or in a well-ventilated area.

Personal protective equipment : Avoid all unnecessary exposure.

Hand protection : Wear suitable gloves resistant to chemical penetration. PVC. nitrile rubber gloves.

Eye protection : Chemical goggles or safety glasses. Face shield.

Skin and body protection : Wear suitable protective clothing. Long sleeved protective clothing. Rubber Apron. Foot protection.

Respiratory protection	: In case of inadequate ventilation wear respiratory protection. If needed, use an air-purifying respirator with organic vapor cartridges and a dust/mist prefilter.
Environmental exposure controls	: Prevent leakage or spillage.
Consumer exposure controls	: Keep out of reach of children.
Other information	: Do not eat, drink or smoke when using this product.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Appearance	: Clear liquid.
Colour	: Colourless
Odour	: odourless
Odour threshold	: No data available
pH	: 1.7
Melting point	: No data available
Freezing point	: <= -20 °C
Boiling point	: No data available
Flash point	: No data available
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: No data available
Explosive limits	: No data available
Explosive properties	: No data available
Oxidising properties	: No data available
Vapour pressure	: 0.00006 mm Hg @ 20 °C
Relative density	: 1.1 g/ml
Relative vapour density at 20 °C	: No data available
Solubility	: Totally soluble in water in all proportions. Water: 100 %
Log Pow	: No data available
Log Kow	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Thermal decomposition generates : Corrosive vapours.

10.2. Chemical stability

Unstable at extreme pH's and upon exposure to UV light.

10.3. Possibility of hazardous reactions

Hazardous polymerization will not occur. Risk of ethylene emission with increasing pH.

10.4. Conditions to avoid

Avoid excessive heat or cold.

10.5. Incompatible materials

Strong bases. zinc. Strong oxidizers. Iron or steel. copper. Aluminum. Sodium chlorate.

10.6. Hazardous decomposition products

Thermal decomposition generates : Corrosive vapours. Carbon oxides (CO, CO2). Phosphorus oxides. hydrogen chloride.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Likely routes of exposure : Skin and eye contact; Inhalation

Acute toxicity : Dermal: Harmful in contact with skin.

ETHEPHON 2	
LD50 oral rat	3200 mg/kg
LD50 dermal rat	1700 mg/kg
LC50 inhalation rat (mg/l)	> 4.9 mg/l/4h
ATE US (oral)	3200.000 mg/kg bodyweight
ATE US (dermal)	1700.000 mg/kg bodyweight

ethephon (16672-87-0)	
LD50 oral rat	3030 mg/kg
LD50 dermal rabbit	1560 mg/kg
LC50 inhalation rat (mg/l)	4.52 mg/l/4h
ATE US (oral)	3030.000 mg/kg bodyweight
ATE US (dermal)	1560.000 mg/kg bodyweight
ATE US (vapours)	4.520 mg/l/4h
ATE US (dust,mist)	4.520 mg/l/4h

Skin corrosion/irritation : Causes severe skin burns and eye damage.

Serious eye damage/irritation : Causes serious eye damage.

Respiratory or skin sensitisation : May cause an allergic skin reaction.
(Positive)

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

Specific target organ toxicity (single exposure) : May cause respiratory irritation.

Specific target organ toxicity (repeated exposure) : Not classified

Aspiration hazard : Not classified

Symptoms/injuries after inhalation : May cause respiratory irritation.

Symptoms/injuries after skin contact : Repeated exposure to this material can result in absorption through skin causing significant health hazard. Harmful in contact with skin. Causes severe skin burns and eye damage. May cause an allergic skin reaction.

Symptoms/injuries after eye contact : Causes serious eye damage.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - water : Harmful to aquatic life with long lasting effects.

ethephon (16672-87-0)	
LC50 fish 1	254 mg/l O. ykiss
EC50 Daphnia 1	1000 mg/l 24-48 h
EC50 other aquatic organisms 1	32 mg/l 48 h
LC50 fish 2	222 mg/l Bluegill

12.2. Persistence and degradability

ETHEPHON 2	
Persistence and degradability	May cause long-term adverse effects in the environment.

ethephon (16672-87-0)	
Persistence and degradability	Not expected to persist. Readily biodegradable.

12.3. Bioaccumulative potential

No additional information available

12.4. Mobility in soil

ethephon (16672-87-0)	
Ecology - soil	Slightly mobile in soil.

12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods	: Do not dispose in household garbage.
Sewage disposal recommendations	: Do not dispose of waste into sewer.
Waste disposal recommendations	: Dispose in a safe manner in accordance with local/national regulations.
Additional information	: Do not attempt disposal by burning.
Ecology - waste materials	: Empty containers should be taken for recycle, recovery or waste in accordance with local regulation.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Transport document description	: UN3265 Corrosive liquid, acidic, organic, n.o.s. (ethephon), 8, III
UN-No.(DOT)	: UN3265
Proper Shipping Name (DOT)	: Corrosive liquid, acidic, organic, n.o.s. (ethephon)
Transport hazard class(es) (DOT)	: 8 - Class 8 - Corrosive material 49 CFR 173.136
Hazard labels (DOT)	: 8 - Corrosive

Packing group (DOT)	: III - Minor Danger

Additional information

Other information	: No supplementary information available.

ADR

Transport document description	: UN 3265 CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (ethephon), 8, III, (E)
Packing group (ADR)	: III
Class (ADR)	: 8 - Corrosive substances
Hazard identification number (Kemler No.)	: 80
Classification code (ADR)	: C3
Danger labels (ADR)	: 8 - Corrosive substances

Orange plates :

Tunnel restriction code (ADR)	: E
Limited quantities (ADR)	: 5l
Excepted quantities (ADR)	: E1

Transport by sea

IMDG

Transport hazard class(es) (IMDG)	: 8
Danger labels (IMDG)	: 8
UN-No. (IMDG)	: 3265

Proper Shipping Name (IMDG)	: CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (ethephon)
Class (IMDG)	: 8 - Corrosive substances
Packing group (IMDG)	: III - substances presenting low danger
EmS-No. (Fire)	: F-A
EmS-No. (Spillage)	: S-B

Air transport

IATA

Transport hazard class(es) (IATA)	: 8
Hazard labels (IATA)	: 8
UN-No. (IATA)	: 3265
Proper Shipping Name (IATA)	: Corrosive liquid, acidic, organic, n.o.s. (ethephon)
Class (IATA)	: 8 - Corrosives
Packing group (IATA)	: III - Minor Danger

SECTION 15: Regulatory information

15.1. US Federal regulations

ethephon (16672-87-0)
Not listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

CANADA

ethephon (16672-87-0)
Not listed on the Canadian DSL (Domestic Substances List) inventory

EU-Regulations

ethephon (16672-87-0)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations

ethephon (16672-87-0)
Not listed on the Canadian Non-Domestic Substances List (NDSL)

15.3. US State regulations

No additional information available

15.4. US EPA – FIFRA Regulations

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including directions for use.

Signal word (FIFRA)	: DANGER.
Hazard statements (FIFRA)	: Causes irreversible eye damage and skin burns. Harmful if swallowed or absorbed through skin. Do not get in eyes on skin or on clothing. Avoid breathing spray mist. Avoid contamination of food.
Environmental hazards	: Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters.

SECTION 16: Other information

Revision date	: 02/25/2016
Data sources	: ACGIH (American Conference of Governement Industrial Hygienists). National Fire Protection Association. Fire Protection Guide to Hazardous Materials; 10th edition. Krister Forsberg and S.Z. Mansdorf, "Quick Selection Guide to Chemical Protective Clothing", Fifth Edition. NIOSH Occupational Health Guide for chemical Substances - Vol. II, September, 1978. OSHA 29CFR 1910.1200 Hazard Communication Standard. TSCA Chemical Substance Inventory. Accessed at http://www.epa.gov/oppt/existingchemicals/pubs/tscainventory/howto.html.

Abbreviations and acronyms : ATE: Acute Toxicity Estimate.
CAS (Chemical Abstracts Service) number.
CLP: Classification, Labelling, Packaging.
EC50: Environmental Concentration associated with a response by 50% of the test population.
LD50: Lethal Dose for 50% of the test population.
GHS: Globally Harmonized System (of Classification and Labeling of Chemicals).
NOEC: No Observable Effect Concentration.
OSHA: Occupational Safety & Health Administration.
TSCA: Toxic Substances Control Act.

Other information : None.

Full text of H-statements:

H290	May be corrosive to metals
H312	Harmful in contact with skin
H314	Causes severe skin burns and eye damage
H317	May cause an allergic skin reaction
H318	Causes serious eye damage
H332	Harmful if inhaled
H335	May cause respiratory irritation
H412	Harmful to aquatic life with long lasting effects

NFPA health hazard : 3 - Short exposure could cause serious temporary or residual injury even though prompt medical attention was given.

NFPA fire hazard : 0 - Materials that will not burn.

NFPA reactivity : 1 - Normally stable, but can become unstable at elevated temperatures and pressures or may react with water with some release of energy, but not violently.

Indication of changes:
Transport information.

Redstone SDS US GHS for Arysta

SDS Prepared by: The Redstone Group, LLC.
6077 Frantz Rd
Suite 206
Dublin, Ohio, USA 43016
614.923.7472
www.redstonegrp.com

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product

SAFETY DATA SHEET

Willowood Propanil 80CHS

Section 1. Identification

GHS product identifier	: Willowood Propanil 80CHS
Chemical name	: Propanil (N-[3,4-dichlorophenyl]-propanamide)
Other means of identification	: Acetanilide Herbicide
EPA Product Registration Number	: 87290-17
EPA Signal Word	: CAUTION
Product type	: Solid.

Identified uses

Herbicide.

Supplier's details	: Willowood, LLC 1600 NW Garden Valley Blvd., Suite 120 Roseburg, Oregon 97471 Tel: 877-679-9963
Emergency telephone number (with hours of operation)	: CHEMTREC (24/7): U.S. :800-424-9300 International: +1-703-527-3887 24/7 Health Emergencies: Call 800-858-7378 (National Pesticide Information Center)

Section 2. Hazards identification

OSHA/HCS status	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture	: ACUTE TOXICITY (oral) - Category 4 RESPIRATORY SENSITIZATION - Category 1 AQUATIC HAZARD (ACUTE) - Category 1 AQUATIC HAZARD (LONG-TERM) - Category 1

GHS label elements

Hazard pictograms :

Signal word	: Danger
Hazard statements	: Harmful if swallowed. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Very toxic to aquatic life with long lasting effects.

Precautionary statements

General	: Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Section 2. Hazards identification

Prevention	: In case of inadequate ventilation wear respiratory protection. Avoid release to the environment. Avoid breathing dust. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling.
Response	: Collect spillage. IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. If experiencing respiratory symptoms: Call a POISON CENTER or physician. IF SWALLOWED: Call a POISON CENTER or physician if you feel unwell. Rinse mouth.
Storage	: Not applicable.
Disposal	: Dispose of contents and container in accordance with all local, regional, national and international regulations.
Hazards not otherwise classified	: None known.

Section 3. Composition/information on ingredients

Substance/mixture	: Mixture
Chemical name	: Propanil (N-[3,4-dichlorophenyl]-propanamide)
Other means of identification	: Acetanilide Herbicide

CAS number/other identifiers

CAS number	: Not applicable.
Product code	: Not available.

Ingredient name	%	CAS number
Propanil (ISO) (N-[3,4-diclorophenyl] propanamide)	60 - 100	709-98-8
STEPSPERSE DF-500 (Anionic/Lignosulfonate Blend)	5 - 10	-
Kaolin	1 - 5	1332-58-7

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact	: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 20 minutes. Get medical attention if irritation occurs.
Inhalation	: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. In the event of any complaints or symptoms, avoid further exposure.
Skin contact	: Flush contaminated skin with plenty of water. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Section 4. First aid measures

Ingestion	: Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact	: No known significant effects or critical hazards.
Inhalation	: May cause allergy or asthma symptoms or breathing difficulties if inhaled. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
Skin contact	: No known significant effects or critical hazards.
Ingestion	: Harmful if swallowed.

Over-exposure signs/symptoms

Eye contact	: No known significant effects or critical hazards.
Inhalation	: Adverse symptoms may include the following: wheezing and breathing difficulties asthma
Skin contact	: No known significant effects or critical hazards.
Ingestion	: No known significant effects or critical hazards.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician	: In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
Specific treatments	: No specific treatment.
Protection of first-aiders	: No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media	: In case of fire, use water spray (fog), foam, dry chemical or CO_2.
Unsuitable extinguishing media	: None known.

Specific hazards arising from the chemical	: This material is very toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Section 5. Fire-fighting measures

Hazardous thermal decomposition products	:	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides halogenated compounds metal oxide/oxides
Special protective actions for fire-fighters	:	No special measures are required.
Special protective equipment for fire-fighters	:	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	:	No action shall be taken involving any personal risk or without suitable training. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
For emergency responders	:	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
Environmental precautions	:	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

Small spill	:	Move containers from spill area. Avoid dust generation. Using a vacuum with HEPA filter will reduce dust dispersal. Place spilled material in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.
Large spill	:	Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures	:	Put on appropriate personal protective equipment (see Section 8). Persons with a history of asthma, allergies or chronic or recurrent respiratory disease should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not ingest. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
Advice on general occupational hygiene	:	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. See also Section 8 for additional information on hygiene measures. Remove contaminated clothing and protective equipment before entering eating areas.

Section 7. Handling and storage

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Kaolin	**ACGIH TLV (United States, 3/2015).** TWA: 2 mg/m³ 8 hours. Form: Respirable fraction **NIOSH REL (United States, 10/2013).** TWA: 5 mg/m³ 10 hours. Form: Respirable fraction TWA: 10 mg/m³ 10 hours. Form: Total **OSHA PEL (United States, 2/2013).** TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust

Appropriate engineering controls : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Section 8. Exposure controls/personal protection

Respiratory protection	:	Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state	:	Solid. [Dry flowable powder.]
Color	:	Tan.
Odor	:	Slight.
Odor threshold	:	Not available.
pH	:	9.22
Melting point	:	Not available.
Boiling point	:	Not available.
Flash point	:	Not flammable.
Evaporation rate	:	Not available.
Flammability (solid, gas)	:	Not flammable.
Lower and upper explosive (flammable) limits	:	Not flammable.
Vapor pressure	:	Not available.
Vapor density	:	Not available.
Relative density	:	0.575
Solubility	:	Dispersible in water.
Partition coefficient: n-octanol/water	:	Not available.
Auto-ignition temperature	:	Not flammable.
Decomposition temperature	:	Not available.
Viscosity	:	Not available.

Section 10. Stability and reactivity

Reactivity	:	No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	:	The product is stable.
Possibility of hazardous reactions	:	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	:	No specific data.
Incompatible materials	:	Reactive or incompatible with the following materials: oxidizing materials, acids and alkalis.
Hazardous decomposition products	:	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

formation on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Propanil (ISO) (N-[3,4-diclorophenyl] propanamide)	LD50 Dermal	Rabbit	4830 mg/kg	-
	LD50 Dermal	Rat	>5 g/kg	-
	LD50 Oral	Rat	367 mg/kg	-

Irritation/Corrosion

There is no data available.

Sensitization

There is no data available.

Carcinogenicity

There is no data available.

Specific target organ toxicity (single exposure)

There is no data available.

Specific target organ toxicity (repeated exposure)

There is no data available.

Aspiration hazard

There is no data available.

Information on the likely routes of exposure : Dermal contact. Eye contact. Inhalation. Ingestion.

otential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : May cause allergy or asthma symptoms or breathing difficulties if inhaled. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : No known significant effects or critical hazards.

Ingestion : Harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No known significant effects or critical hazards.

Inhalation : Adverse symptoms may include the following:
wheezing and breathing difficulties
asthma

Skin contact : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : No known significant effects or critical hazards.

Potential delayed effects : No known significant effects or critical hazards.

Long term exposure

Potential immediate effects : No known significant effects or critical hazards.

Section 11. Toxicological information

Potential delayed effects : No known significant effects or critical hazards.

Potential chronic health effects

General : Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	446.5 mg/kg
Dermal	5875.9 mg/kg

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Propanil (ISO) (N-[3,4-diclorophenyl] propanamide)	Acute EC50 0.09 ug/ml Fresh water	Algae - Chlorella pyrenoidosa - Exponential growth phase	4 days
	Acute EC50 0.29 mg/L Fresh water	Algae - Scenedesmus acutus	72 hours
	Acute EC50 1.2 ppm Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 1520 µg/L Fresh water	Crustaceans - Ceriodaphnia dubia	48 hours
	Acute LC50 0.43 ppm Fresh water	Fish - Ictalurus punctatus	96 hours
	Chronic EC10 0.12 mg/L Fresh water	Algae - Scenedesmus acutus	72 hours
	Chronic NOEC 0.016 mg/L Fresh water	Daphnia - Daphnia magna - Neonate	21 days
	Chronic NOEC 0.4 ppb	Fish - Pimephales promelas	60 days

Persistence and degradability

There is no data available.

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Propanil (ISO) (N-[3,4-diclorophenyl] propanamide)	3.07	69.18	low

Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

isposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling empty containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	IMDG	IATA
UN number	UN3077	UN3077	UN3077
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Propanil (ISO) (N-[3,4-diclorophenyl] propanamide))	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Propanil (ISO) (N-[3,4-diclorophenyl] propanamide))	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Propanil (ISO) (N-[3,4-diclorophenyl] propanamide))
Transport hazard class(es)	9	9	9
Packing group	III	III	III
Environmental hazards	Yes.	Yes.	Yes.
Additional information	Non-bulk packages of this product are not regulated as hazardous materials unless transported by inland waterway. The marine pollutant mark is not required when transported on inland waterways in sizes of ≤5 L or ≤5 kg.	The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.	The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg.

AERG : 171

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined
United States inventory (TSCA 8b): All components are listed or exempted.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

Name	%	EHS	SARA 302 TPQ		SARA 304 RQ	
			(lbs)	(gallons)	(lbs)	(gallons)
Ethylene oxide	0 - 0.01	Yes.	-	-	-	-

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Immediate (acute) health hazard

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Propanil (ISO) (N-[3,4-diclorophenyl] propanamide)	60 - 100	No.	No.	No.	Yes.	No.
STEPSPERSE DF-500 (Anionic/Lignosulfonate Blend)	5 - 10	No.	No.	No.	Yes.	No.
Kaolin	1 - 5	No.	No.	No.	Yes.	No.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	Propanil (ISO) (N-[3,4-diclorophenyl] propanamide)	709-98-8	60 - 100
Supplier notification	Propanil (ISO) (N-[3,4-diclorophenyl] propanamide)	709-98-8	60 - 100

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts : None of the components are listed.

New York : None of the components are listed.

New Jersey : The following components are listed: Propanil (ISO) (N-[3,4-diclorophenyl] propanamide); Kaolin

Pennsylvania : The following components are listed: Kaolin

Section 15. Regulatory information

California Prop. 65

WARNING: This product contains less than 0.1% of a chemical known to the State of California to cause cancer.
WARNING: This product contains less than 1% of a chemical known to the State of California to cause birth defects or other reproductive harm.

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
Titanium dioxide	Yes.	No.	No.	No.
Ethylene oxide	Yes.	Yes.	Yes.	Yes.

International regulations

International lists : **Australia inventory (AICS)**: Not determined.
China inventory (IECSC): Not determined.
Japan inventory: Not determined.
Korea inventory: Not determined.
Malaysia Inventory (EHS Register): Not determined.
New Zealand Inventory of Chemicals (NZIoC): Not determined.
Philippines inventory (PICCS): Not determined.
Taiwan inventory (CSNN): Not determined.

Chemical Weapons Convention List Schedule I Chemicals : Not listed

Chemical Weapons Convention List Schedule II Chemicals : Not listed

Chemical Weapons Convention List Schedule III Chemicals : Not listed

Section 16. Other information

History

Date of issue mm/dd/yyyy : 11/15/2015

Date of previous issue : 05/15/2015

Version : 1.1

Revised Section(s) : 1, 8, 16.

Prepared by : KMK Regulatory Services Inc.

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Safety Data Sheet

syngenta®

VANGARD® WG

Date: 8/20/2015
Replaces: 7/10/2015

1. PRODUCT IDENTIFICATION

Product identifier on label: **VANGARD® WG**

Product No.: A8779A

Use: Fungicide

Manufacturer: Syngenta Crop Protection, LLC
Post Office Box 18300
Greensboro NC 27419

Manufacturer Phone: 1-800-334-9481

Emergency Phone: 1-800-888-8372

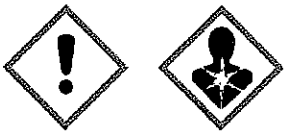
2. HAZARDS IDENTIFICATION

Classifications:
Specific Target Organ Toxicity: Repeated Category 2
Specific Target Organ Toxicity: Respiratory Irritation Category 3
Carcinogenicity: Category 1A

Signal Word (OSHA): Danger

Hazard Statements:
May cause respiratory irritation
May cause cancer
May cause damage to organs through prolonged or repeated exposure

Hazard Symbols:



Precautionary Statements:
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe dust
Wear protective gloves, protective clothing, eye protection.
If exposed or concerned: Get medical advice/attention.
Get medical advice if you feel unwell.
Store locked up.
Dispose of contents and container in accordance with local regulations.
Use only outdoors or in a well-ventilated area.
If inhaled: Remove person to fresh air and keep comfortable for breathing.
Call a poison center, doctor or Syngenta if you feel unwell.

Other Hazard Statements: May form combustible dust concentrations in air.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Common Name	CAS Number	Concentration
Crystalline Silica, Quartz and Cristobalite	Crystalline Silica, Quartz and Cristobalite	14808-60-7	Trade Secret
Kaolin Clay	Kaolin Clay	1332-58-7	Trade Secret
Other ingredients	Other ingredients	Trade Secret	25.0%
4-Cyclopropyl-6-methyl-N-phenylpyrimidiamine	Cyprodinil	121552-61-2	75.0%

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.

4. FIRST AID MEASURES

Have the product container, label or Safety Data Sheet with you when calling Syngenta (800-888-8372), a poison contol center or doctor, or going for treatment.

Ingestion: If swallowed: Call Syngenta (800-888-8372), a poison control center or doctor immediately for treatment advice. Do not give any liquid to the person. Do not induce vomiting unless told to do so after calling 800-888-8372 or by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

Eye Contact: If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.

Skin Contact: If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.

Inhalation: If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call Syngenta (800-888-8372), a poison control center or doctor for further treatment advice.

Most important symptoms/effects:

Not Applicable

Indication of immediate medical attention and special treatment needed:

There is no specific antidote if this product is ingested.

Treat symptomatically.

5. FIRE FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media:

Use dry chemical, foam or CO2 extinguishing media. If water is used to fight fire, dike and collect runoff.

Specific Hazards:

Fire will spread by burning with flame.

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

See also Sec. 7.

Special protective equipment and precautions for firefighters:

Wear full protective clothing and self-contained breathing apparatus. Evacuate nonessential personnel from the area to prevent human exposure to fire, smoke, fumes or products of combustion.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures:

Follow exposure controls/personal protection outlined in Section 8.

Methods and materials for containment and cleaning up:

Control the spill at its source. Contain the spill to prevent from spreading or contaminating soil or from entering sewage and drainage systems or any body of water. Clean up spills immediately, observing precautions in Protective Equipment Section. Sweep up material and place in a compatible disposal container. Scrub area with hard water detergent (e.g. commercial products such as Tide, Joy, Spic and Span). Pick up wash liquid with additional absorbent and place into compatible disposal container. Once all material is cleaned up and placed in a disposal container, seal container and arrange for disposition.

7. HANDLING AND STORAGE

Precautions for safe handling:

This material is capable of forming flammable dust clouds in air, which, if ignited, can produce a dust cloud explosion. Flames, hot surfaces, mechanical sparks and electrostatic discharges can serve as ignition sources for this material. Electrical equipment should be compatible with the flammability characteristics of this material. The flammability characteristics will be made worse if the material contains traces of flammable solvents or is handled in the presence of flammable solvents.

In general personnel handling this material and all conducting equipment should be electrically earthed or grounded. Bulk bags (FIBC) used to contain this material should be Type B, Type C or Type D. Type C bags must be electrically grounded or earthed before powder is charged to or discharged from the bag. If metal or fiber drums are used to contain this material, make certain the metal parts are bonded to the filling equipment and grounded.

This material could become charged under certain conditions such as pneumatic conveying.

Store the material in a well-ventilated, secure area out of reach of children and domestic animals. Do not store food, beverages or tobacco products in the storage area. Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

Conditions for safe storage, including any incompatibilities:

Store locked up.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION AND PACKAGING OF THIS PRODUCT.

FOR COMMERCIAL APPLICATIONS AND/OR ON-FARM APPLICATIONS CONSULT THE PRODUCT LABEL.

Occupational Exposure Limits:

Chemical Name	OSHA PEL	ACGIH TLV	Other	Source
Crystalline Silica, Quartz and Cristobalite	10 mg/m³/(%SiO2+2) (respirable dust)	0.025 mg/m³ (respirable silica)	0.05 mg/m³ (respirable dust)	NIOSH
Kaolin Clay	15 mg/m³ TWA (total); 5 mg/m³ TWA (respirable)	2 mg/m³ TWA (respirable)	10 mg/m³ TWA (total); 5 mg/m³ TWA (respirable)	NIOSH
Other ingredients	Not Established	Not Established	Not Established	Not Applicable
Cyprodinil	Not Established	Not Established	5 mg/m³ TWA	Manufacturer

Appropriate engineering controls:
Use effective engineering controls to comply with occupational exposure limits (if applicable).

Individual protection measures:

Ingestion:
Prevent eating, drinking, tobacco usage and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

Eye Contact:
Where eye contact is likely, use dust-proof chemical goggles.

Skin Contact:
Where contact is likely, wear chemical-resistant gloves (such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinyl chloride [PVC] or Viton), coveralls, socks and chemical-resistant footwear.

Inhalation:
A particulate filter respirator may be necessary until effective engineering controls are installed to comply with occupational exposure limits. Use NIOSH certified respirator with any N, R, P or HE filter. Use a self-contained breathing apparatus in cases of emergency spills, when exposure levels are unknown, or under any circumstances where air-purifying respirators may not provide adequate protection.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Beige granules

Odor: Weak, uncharacteristic

Odor Threshold: Not Available

pH: 8 - 10 (1% solution in H2O @ 77°F (25°C))

Melting point/freezing point: 160 - 168 °F

Initial boiling point and boiling range: Not Applicable

Flash Point (Test Method): Not Applicable

Flammable Limits (% in Air): Not Available

Flammability: Combustible powder

Vapor Pressure: Cyprodinil 3.8 x 10(-6) mmHg @ 77°F (25°C)

Vapor Density: Not Available

Relative Density: 0.47 g/cm³

Solubility (ies): Cyprodinil 12 mg/l @ 68°F (20°C)

Partition coefficient: n-octanol/water: Not Available

Autoignition Temperature: Not Applicable

Decomposition Temperature: Not Available

Viscosity: Not Available

Other: None

10. STABILITY AND REACTIVITY

Reactivity: Not reactive.

Chemical stability: Stable under normal use and storage conditions.

Possibility of hazardous reactions: Will not occur.

Conditions to Avoid: None known.

Incompatible materials: None known.

Hazardous Decomposition Products: None known.

11. TOXICOLOGICAL INFORMATION

Health effects information

Likely routes of exposure: Dermal, Inhalation

Symptoms of exposure: Not Applicable

Delayed, immediate and chronic effects of exposure: Possible carcinogenicity

Numerical measures of toxicity (acute toxicity/irritation studies (finished product))

Ingestion:	Oral (LD50 Rat) :	> 2000 mg/kg body weight
Dermal:	Dermal (LD50 Rat) :	> 2000 mg/kg body weight
Inhalation:	Inhalation (LC50 Rat) :	> 2.3 mg/l air - 4 hours
Eye Contact:	Slightly Irritating (Rabbit)	
Skin Contact:	Slightly Irritating (Rabbit)	
Skin Sensitization:	Not a Sensitizer (Guinea Pig)	

Reproductive/Developmental Effects

Cyprodinil: No teratogenic potential was detected in tests with rats and rabbits. No effects on the reproductive performance of rats were detected.

Chronic/Subchronic Toxicity Studies

Cyprodinil: Liver, kidneys and thryoid effects at high doses.

Carcinogenicity

Cyprodinil: Found to be not carcinogenic in studies with rats and mice. Designated as class E "not likely" for human carcinogenicity (1998 USEPA "Pesticide Fact Sheet").

Chemical Name	NTP/IARC/OSHA Carcinogen
Crystalline Silica, Quartz and Cristobalite	IARC 1; ACGIH A2
Kaolin Clay	No
Other ingredients	No
4-Cyclopropyl-6-methyl-N-phenylpyrimidiamine	No

Other Toxicity Information

None

Toxicity of Other Components

Crystalline Silica, Quartz and Cristobalite

Chronic inhalation exposure to crystalline silica is known to cause silicosis and pulmonary fibrosis in humans. Experimental animals exposed to crystalline silica developed respiratory tract cancers.

Kaolin Clay

May cause eye and respiratory tract irritation.
Long-term exposure to high concentrations of this dust may produce x-ray evidence of dust in the lungs.
Continued long-term exposure may affect respiratory function in some individuals.

Other ingredients

Not Established

Target Organs

Active Ingredients

Cyprodinil:	Liver, kidney, thyroid

Inert Ingredients

Crystalline Silica, Quartz and Cristobalite:	Respiratory tract
Kaolin Clay:	Eye, respiratory tract, lung
Other ingredients:	Not Established

12. ECOLOGICAL INFORMATION

Eco-Acute Toxicity

Cyprodinil:

Fish (Bluegill Sunfish) 96-hour LC50 2.18 ppm

Invertebrate (Water Flea) Daphnia Magna 48-hour EC50 32 ppb

Bird (Mallard Duck) 14-day LD50 > 500 mg/kg

Environmental Fate

Cyprodinil:

The information presented here is for the active ingredient, cyprodinil.
Low bioaccumulation potential. Not persistent in soil or water. Low mobility in soil. Sinks in water (after 24 h).

13. DISPOSAL CONSIDERATIONS

Disposal:

Do not reuse product containers. Dispose of product containers, waste containers, and residues according to local, state, and federal health and environmental regulations.

Characteristic Waste: Not Applicable

Listed Waste: Not Applicable

14. TRANSPORT INFORMATION

DOT Classification

Ground Transport - NAFTA
Not regulated

Comments

Water Transportation - International
Proper Shipping Name: Environmentally Hazardous Substance, Solid, N.O.S. (Cyprodinil), Marine Pollutant
Hazard Class: Class 9
Identification Number: UN 3077
Packing Group: PG III

Air Transport
Proper Shipping Name: Environmentally Hazardous Substance, Solid, N.O.S. (Cyprodinil)
Hazard Class: Class 9
Identification Number: UN 3077
Packing Group: PG III

15. REGULATORY INFORMATION

Pesticide Registration:

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

Caution: Causes moderate eye irritation. Harmful if absorbed through skin. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum or using tobacco or the toilet. Remove and wash contaminated clothing before reuse.

EPA Registration Number(s):
100-828

EPCRA/SARA Title III Classification:

Section 311/312 Hazard Classes:	Acute Health Hazard Fire Hazard
Section 313 Toxic Chemicals:	None

California Proposition 65:
This product contains a chemical known to the State of California to cause cancer.

CERCLA/SARA 304 Reportable Quantity (RQ):
None

RCRA Hazardous Waste Classification (40 CFR 261):
Not Applicable

TSCA Status:
Exempt from TSCA, subject to FIFRA

16. OTHER INFORMATION

NFPA Hazard Ratings		HMIS Hazard Ratings	
Health:	1	Health:	2*
Flammability:	3	Flammability:	3
Instability:	0	Reactivity:	0

Syngenta Hazard Category: D

0	Minimal
1	Slight
2	Moderate
3	Serious
4	Extreme
*	Chronic

For non-emergency questions about this product call:

1-800-334-9481

Original Issued Date: 1/23/1996
Revision Date: 8/20/2015 Replaces: 7/10/2015
Section(s) Revised: 11

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.

Safety Data Sheet

Issue Date: 28-Aug-2013 **Revision Date:** 18-Aug-2015 **Version** 2

1. IDENTIFICATION

Product Identifier

Product Name **Diazinon AG 500**

Other means of identification

SDS # ADAMA-014

Registration Number(s) EPA Reg. No. 66222-9

UN/ID No NA1993

Recommended use of the chemical and restrictions on use

Recommended Use EPA registered pesticide.

Details of the supplier of the safety data sheet

Manufacturer Address

Makhteshim Agan of North America, Inc. (d/b/a ADAMA)
3120 Highwoods Blvd., Suite 100
Raleigh, NC 27604
1-919-256-9300

Emergency Telephone Number

Emergency Telephone (24 hr) For fire, spill and/or leak contact INFOTRAC:
1-800-535-5053 (North America) 1-352-323-3500 (International)
For medical emergencies and health/safety inquiries, contact PROSAR:
1-877-250-9291

2. HAZARDS IDENTIFICATION

This chemical is a product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-EPA registered chemicals. Please see Section 15 for additional EPA information.

Appearance Amber liquid **Physical State** Liquid **Odor** Slight sulfur

Classification

Acute toxicity - Oral	Category 4
Acute toxicity - Inhalation (Vapors)	Category 3
Acute toxicity - Inhalation (Dusts/Mists)	Category 4
Carcinogenicity	Category 1B
Flammable Liquids	Category 3

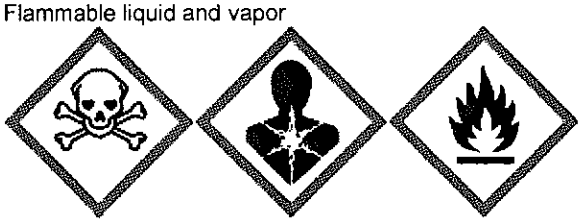
Hazards Not Otherwise Classified (HNOC)

May be harmful in contact with skin

Signal Word

Danger

Hazard Statements
Harmful if swallowed
Toxic if inhaled
May cause cancer
Flammable liquid and vapor



Precautionary Statements - Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Avoid breathing dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Keep away from heat/sparks/open flames/hot surfaces. — No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof equipment
Use only non-sparking tools
Take precautionary measures against static discharge
Wear protective gloves/protective clothing/eye protection/face protection

Precautionary Statements - Response
If exposed or concerned: Get medical advice/attention
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
Call a POISON CENTER or doctor/physician
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
Rinse mouth
IN CASE OF FIRE: Use CO2, dry chemical, or foam for extinction

Precautionary Statements - Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Keep cool

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Other Hazards
Very toxic to aquatic life with long lasting effects

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No	Weight-%
Diazinon	333-41-5	55.2
Hydrocarbon blend	proprietary	44.8

If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. FIRST-AID MEASURES

First Aid Measures

General Advice When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.

Eye Contact Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Seek medical advice.

Skin Contact IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a poison control center or doctor for treatment advice.

Inhalation IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Give oxygen if breathing is difficult. If breathing has stopped, call 911, give artificial respiration. Call a POISON CENTER or doctor/physician.

Ingestion Do not induce vomiting, unless directed by medical personnel. Get immediate medical attention. Do NOT give liquids. Never give anything by mouth to an unconscious person.

Most important symptoms and effects

Symptoms Causes moderate eye irritation. Prolonged contact may cause skin irritation or allergic reaction. May exhibit symptoms of cholinesterase inhibition which may include: headache, dizziness, blurred vision, weakness, nausea, cramps, diarrhea, discomfort in the chest, nervousness, sweating, miosis (pinpoint pupils), tearing, salivation, pulmonary edema, uncontrollable muscle twitches, convulsions, cyanosis, coma, and loss of reflexes and sphincter control. If swallowed and aspirated into the lungs, chemical pneumonia can occur. Exposure may result in eye and skin irritation.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically. This product contains an organophosphate that inhibits cholinesterase. If exposed, plasma and red blood cell cholinesterase test may indicate significance of exposure (baseline data are useful). Atropine, only by injection, is the preferable antidote. Oximes, such as 2-PAM/protopam, may be therapeutic if used early; however, use only in conjunction with atropine. In case of severe acute poisoning, use antidote immediately after establishing an open airway and respiration. Contains petroleum distillate. Vomiting may induce aspiration pneumonia.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Carbon dioxide (CO_2). Dry chemical. Foam.

Unsuitable Extinguishing Media Not determined.

Specific Hazards Arising from the Chemical

Flammable liquid and vapor.

Hazardous Combustion Products An impurity of toxicological concern, thiono-tetraethyl-pyrophosphate (O, S-TEPP) can be form when diazinon-containing products are exposed to trace amounts of water.

Sensitivity to Static Discharge Take precautionary measures against static discharge.

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Evacuate area of unprotected personnel. Remain upwind of fire to avoid hazardous vapors and decomposition products. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Wear protective clothing as described in Section 8 of this safety data sheet. Isolate hazard area. Keep unnecessary and unprotected personnel from entering.

Environmental Precautions See Section 12 for additional Ecological Information. See Section 13: DISPOSAL CONSIDERATIONS.

Methods and material for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for Clean-Up Cover and contain spill with an absorbent material such as pet litter, sand or vermiculite. Sweep up and shovel into suitable containers for disposal. Wash the area with water containing a strong detergent, cover with absorbent, sweep up and place in a chemical container. Seal the container and dispose of in an approve manner. Flush spill area with water, collect rinse water in containers for proper disposal.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Use personal protection recommended in Section 8. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wash face, hands, and any exposed skin thoroughly after handling. Do not eat, drink, smoke, or apply cosmetics while handling this product. Avoid breathing vapors or mists. Use only outdoors or in a well-ventilated area. Keep away from heat/sparks/open flames/hot surfaces. — No smoking. Ground/bond container and receiving equipment. Use non-sparking hand tools and explosion-proof electrical equipment. Take precautionary measures against static discharges.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep container tightly closed and store in a cool, dry and well-ventilated place. Keep locked up and out of reach of children. Do not contaminate water, food or feed by storage, disposal or by cleaning equipment. Do not store above 41°C (106°F).

Incompatible Materials Strong acids, strong bases, strong oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Diazinon 333-41-5	TWA: 0.01 mg/m^3 inhalable fraction and vapor S*	(vacated) TWA: 0.1 mg/m^3 (vacated) S*	TWA: 0.1 mg/m^3
Hydrocarbon blend	TWA: 25 ppm	(vacated) TWA: 25 ppm (vacated) TWA: 125 mg/m^3	-

Appropriate engineering controls

Engineering Controls Please refer to the product label. Use only with adequate ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures, such as personal protective equipment

Eye/Face Protection Use splash goggles or face shield when contact may occur.

Skin and Body Protection Wear chemical-resistant gloves, footwear, and protective clothing appropriate for the risk of exposure. Long sleeve shirt, trousers, and safety shoes. Chemical-resistant gloves, such as barrier laminate or butyl rubber >/=14 mils.

Respiratory Protection Ensure adequate ventilation, especially in confined areas. Wear a respirator with an organic-vapor removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C) or a canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G), or a NIOSH-approved respirator with an organic vapor (OV) cartridge or canister with any R, P, or HE prefilter when engineering controls are not feasible.

General Hygiene Considerations Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning and maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry. Wash at the end of each work shift and before eating, smoking or using the toilet. Promptly remove clothing that becomes contaminated. Discard contaminated leather articles. Launder or discard contaminated clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Liquid		
Appearance	Amber liquid	**Odor**	Slight sulfur
Color	Amber	**Odor Threshold**	Not determined
Property	**Values**	**Remarks • Method**	
pH	6-8	(1% solution) @ 25 °C (77 °F)	
Melting Point/Freezing Point	Not determined		
Boiling Point/Boiling Range	190 °C / 374 °F		
Flash Point	40 °C / 105 °F		
Evaporation Rate	Not determined		
Flammability (Solid, Gas)	Liquid-not applicable		
Upper Flammability Limits	Not determined		
Lower Flammability Limit	Not determined		
Vapor Pressure	1.20e-02 Pa	@ 25°C (77°F)	
Vapor Density	Not determined		
Specific Gravity	1.00 g/cc	@ 20°C (68°F)	
Water Solubility	60 mg/L @20°C	Diazinon	
Solubility in other solvents	Not determined		
Partition Coefficient	Not determined		
Auto-ignition Temperature	>450 °C / >842 °F		
Decomposition Temperature	Not determined		
Kinematic Viscosity	Not determined		
Dynamic Viscosity	Not determined		
Explosive Properties	Not determined		
Oxidizing Properties	Not determined		

10. STABILITY AND REACTIVITY

Reactivity
Not reactive under normal conditions.

Chemical Stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous Polymerization Hazardous polymerization does not occur.

Conditions to Avoid
Avoid heat, sparks, open flames and other ignition sources.

Incompatible Materials
Strong acids, strong bases, strong oxidizing agents.

Hazardous Decomposition Products
An impurity of toxicological concern, thiono-tetraethyl-pyrophosphate (O, S-TEPP) can be form when diazinon-containing products are exposed to trace amounts of water.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Eye Contact Avoid contact with eyes.

Skin Contact May be harmful in contact with skin.

Inhalation Toxic if inhaled.

Ingestion Harmful if swallowed.

Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Diazinon 333-41-5	= 66 mg/kg (Rat)	> 2150 mg/kg (Rat) = 3600 mg/kg (Rabbit)	> 2.33 mg/L (Rat) 4 h
Hydrocarbon blend	= 8970 mg/kg (Rat)	-	-

Information on physical, chemical and toxicological effects

Symptoms Please see section 4 of this SDS for symptoms.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Carcinogenicity May cause cancer.

Chemical Name	ACGIH	IARC	NTP	OSHA
Diazinon 333-41-5		Group 2A		X

IARC (International Agency for Research on Cancer)
Group 2A - Probably Carcinogenic to Humans
OSHA (Occupational Safety and Health Administration of the US Department of Labor)
X - Present

Product Information (Numerical measures of toxicity)

Acute Oral LD50 (Rat): 787 mg/kg
Acute Dermal LD50 (Rabbit): >2,000 mg/kg
Acute Inhalation LC50 (Rat): 1.68 mg/L (4-hr)
Eye Irritation: Mildly irritating.
Dermal Irritation: Moderately irritating.
Dermal Sensitization: A Skin Contact Sensitizer (Guinea Pig).

12. ECOLOGICAL INFORMATION

Ecotoxicity
Very toxic to aquatic life with long lasting effects. This product is highly toxic to birds, fish and other wildlife. Birds, especially waterfowl, feeding or drinking on treated areas may be killed. do not exceed maximum permitted label rates. Rates above those recommended significantly increase potential hazards to birds, especially waterfowl. Keep out of lakes, streams, ponds, tidal marshes, and estuaries. Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Drift and runoff may be hazardous to aquatic organisms in neighboring areas. Shrimp and crab may be killed at application rates recommended on this label. Do not apply where fish, shrimp, crab and other aquatic life are important resources. This pesticide is highly toxic to bees exposed to direct treatment or to residues on blooming crops or weeds. Do not apply this pesticide or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Diazinon 333-41-5	17.3: 120 h Desmodesmus subspicatus mg/L EC50 6.4: 168 h Desmodesmus subspicatus mg/L EC50	0.4 - 0.8: 96 h Pimephales promelas mg/L LC50 flow-through 4.7: 96 h Pimephales promelas mg/L LC50 semi-static 3.4 - 5.2: 96 h Pimephales promelas mg/L LC50 static 0.31 - 0.62: 96 h Lepomis macrochirus mg/L LC50 flow-through 0.022: 96 h Lepomis macrochirus mg/L LC50 0.022: 96 h Lepomis macrochirus mg/L LC50 static 0.09: 96 h Oncorhynchus mykiss mg/L LC50 static 2.3: 96 h Oncorhynchus mykiss mg/L LC50 4: 96 h Poecilia reticulata mg/L LC50 0.8: 96 h Poecilia reticulata mg/L LC50 semi-static 3: 96 h Poecilia reticulata mg/L LC50 static 3.43: 96 h Cyprinus carpio mg/L LC50 semi-static 0.000072: 96 h Cyprinus carpio mg/L LC50 static	EC50 = 1.7 mg/L 5 min	0.00096: 48 h Daphnia magna mg/L EC50 0.0004 - 0.00059: 48 h Daphnia magna mg/L EC50 Static 0.0006 - 0.0009: 48 h Daphnia magna mg/L EC50 semi-static
Hydrocarbon blend		7.72: 96 h Pimephales promelas mg/L LC50 flow-through		

Persistence/Degradability
Not determined.

Bioaccumulation
Not determined.

Mobility

Chemical Name	Partition Coefficient
Diazinon 333-41-5	3.3

Other Adverse Effects
Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative of the nearest EPA Regional Office for guidance.

Contaminated Packaging Disposal should be in accordance with applicable regional, national and local laws and regulations.

California Hazardous Waste Status

Chemical Name	California Hazardous Waste Status
Diazinon 333-41-5	Toxic

14. TRANSPORT INFORMATION

DOT

UN/ID No	NA1993
Proper Shipping Name	Combustible liquid, n.o.s. (diazinon, xylene)
Hazard Class	Comb. Liq.
Packing Group	III
Reportable Quantity (RQ)	RQ if package contains > 0.48 lb.
Non Bulk	DOT Exception 49 CFR 173.150(f) applies: No placard required on truck, no combustible label on carton is required.

IATA

UN/ID No	UN1993
Proper Shipping Name	Flammable liquid, n.o.s. (diazinon, xylene)
Hazard Class	3
Packing Group	III
Marine Pollutant	Yes

IMDG

UN/ID No	UN1993
Proper Shipping Name	Flammable liquid, n.o.s. (diazinon, xylene)
Hazard Class	3
Packing Group	III
Marine Pollutant	Yes

15. REGULATORY INFORMATION

International Inventories

TSCA Listed

Legend:

TSCA *- United States Toxic Substances Control Act Section 8(b) Inventory*

DSL/NDSL *- Canadian Domestic Substances List/Non-Domestic Substances List*

EINECS/ELINCS *- European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances*

ENCS *- Japan Existing and New Chemical Substances*

IECSC *- China Inventory of Existing Chemical Substances*

KECL *- Korean Existing and Evaluated Chemical Substances*

PICCS - Philippines Inventory of Chemicals and Chemical Substances

US Federal Regulations

CERCLA

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Diazinon 333-41-5	1 lb		RQ 1 lb final RQ RQ 0.454 kg final RQ

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	Yes
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

SARA 313

Chemical Name	CAS No	Weight-%	SARA 313 - Threshold Values %
Diazinon - 333-41-5	333-41-5	55.2	1.0

CWA (Clean Water Act)

Component	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Diazinon 333-41-5 (55.2)	1 lb			X

US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Diazinon 333-41-5	X	X	X
Hydrocarbon blend	X	X	X

EPA Pesticide Registration Number EPA Reg. No. 66222-9

EPA Statement

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

EPA Pesticide Label

Signal Word: Caution

Harmful if swallowed, inhaled, or absorbed through skin. Causes moderate eye injury. Avoid contact with eyes, skin, or clothing. Avoid breathing vapor or spray mist. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Avoid contamination of food and feed. Food utensils such as tablespoons and measuring cups should not be used for food purposes after use in measuring pesticides. Keep out of reach of domestic animals. Do not use on humans, household pets, or livestock. Do not contaminate ornamental fish ponds.

Difference between SDS and EPA pesticide label

	EPA	OSHA
Signal Word	Caution	Danger
Acute toxicity - Oral	Harmful if swallowed	Harmful if swallowed
Acute toxicity - Dermal	Harmful if absorbed through skin	May be harmful in contact with skin
Acute toxicity - Inhalation (Dusts/Mists)	Harmful if inhaled	Toxic if inhaled
Serious eye damage/eye irritation	Causes moderate eye injury	N/A
Carcinogenicity	N/A	May cause cancer

16. OTHER INFORMATION

NFPA	**Health Hazards**	**Flammability**	**Instability**	**Special Hazards**
	2	2	0	None
HMIS	**Health Hazards**	**Flammability**	**Physical Hazards**	**Personal Protection**
	2	2	0	See Section 8

Issue Date: 28-Aug-2013
Revision Date: 18-Aug-2015
Revision Note: Updated format from 30-Apr-2014

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

FORMULATED FOR:

LOVELAND PRODUCTS, INC.
P.O. Box 1286 • Greeley, CO 80632-1286

24-Hour Emergency Phone: 1-800-424-9300
Medical Emergencies: 1-866-944-8565
U.S. Coast Guard National Response Center: 1-800-424-8802

PRODUCT NAME: WARHAWK® CLEARFORM™
CHEMICAL NAME: Chlorpyrifos: O,O-diethyl-O-(3,5,6-trichloro-2-pyridinyl) phosphorothioate
CHEMICAL FAMILY: Organophosphate – Group 1B Insecticide
EPA REG. NO.: 34704-1077
MSDS Number: 001077-14b-LPI **MSDS Revisions:** Section 8 **Date of Issue:** 02/14/14 **Supersedes:** 02/11/14

2. HAZARDS IDENTIFICATION SUMMARY

KEEP OUT OF REACH OF CHILDREN – WARNING - AVISO – Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detaile (If you do not understand the label, find someone to explain it to you in detail.) May be fatal if swallowed • Harmful if absorbed through skin • Causes moderate eye irritation • Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Avoid contact with skin eyes or clothing.

This product is a clear, golden amber liquid with petroleum-like odor.

3. COMPOSITION, INFORMATION ON INGREDIENTS

Chemical Ingredients:	Percentage by Weight:	CAS No.	TLV (Units)
Chlorpyrifos	44.90	2921-88-2	0.1 mg/m^3
Other Ingredients, including	55.10		
Aromatic Solvent, including		64742-94-5	not listed
Naphthalene		91-20-3	52 mg/m^3

This product is hazardous according to the OSHA Hazard Communication Standard (29 CFR 1910.1200)

4. FIRST AID MEASURES

If swallowed: Immediately call a poison control center or doctor. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give any liquid to the person. Do not give anything by mouth to an unconscious person.

If in eyes: Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15 to 20 minutes. Call a poison control center or doctor for treatment advice.

NOTE TO PHYSICIAN: Chlorpyrifos is a cholinesterase inhibitor. Treat symptomatically. If exposed, plasma and red blood cell cholinesterase tests may indicate significance of exposure (baseline data are useful). Atropine, only by injection, is the preferable antidote. Oximes, such as 2-PAM/protopam, may be therapeutic if used early; however, use only in conjunction with atropine. In case of severe acute poisoning, use antidote immediately after establishing an open airway and respiration.

NOTE TO PHYSICIAN: Contains petroleum distillate - vomiting may cause aspiration pneumonia.

FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: 1-866-944-8565. Have the product label or container with you when calling a poison control center or doctor, or going for treatment.

5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Water fog, foam, dry chemical, or carbon dioxide.

HAZARDOUS COMBUSTION PRODUCTS: In a fire situation, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating and may include and are not limited to: oxides of sulfur, Phosphorus compounds, oxides of nitrogen, Hydrogen chloride, and oxides of carbon.

SPECIAL FIRE FIGHTING PROCEDURES: Wear self-contained breathing apparatus with full protective clothing. Fight fire from upwind and keep all non-essential personnel out of area.

UNUSUAL FIRE AND EXPLOSION HAZARDS: If water is used to fight fire and cool the containers, contain run-off by diking to prevent contamination of water supplies.

6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

For small spills, absorb with an absorbent material such as sand, vermiculite or other absorbent material. Place contaminated material in appropriate containers for proper disposal. For large spills: dike large spills using absorbent or impervious material such as clay or sand. Recover and contain as much free liquid as possible for reuse. Allow absorbed material to solidify, and scrape up for disposal. After removal, scrub the area with detergent and water and flush contaminated area thoroughly with water.

CAUTION: Keep spills and cleaning runoff out of municipal sewers and open bodies of water.

7. HANDLING AND STORAGE

HANDLING: Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

STORAGE: Store in original container in secured dry storage area. Prevent cross-contamination with other pesticides and fertilizers. Do not store above 100°F / 37.8°C for extended periods of time. Storage below 20°F / -6.7°C may result in the formation of crystals. If product crystallizes, store at 50°F / 10°C to 70°F / 21°C and agitate to redissolve crystals. Combustible. Do not use or store near heat or open flame. Do not contaminate water, food, or feed by storage or disposal.

Personal Protective Equipment (PPE): Mixers and loaders using a mechanical transfer loading system and applicators using aerial application equipment must wear: long-sleeved shirt and long pants, shoes and socks. In addition, **mixers and loaders**, using a mechanical transfer loading system must wear: chemical-resistant gloves, chemical-resistant apron, and a NIOSH-approved dust/mist filtering respirator with MSHA/NIOSH approval number prefix TC-21C or a NIOSH-approved respirator with any R, P, or HE filter. **All other mixers, loaders, applicators and other handlers must wear:** coveralls over long-sleeved shirt and long pants, chemical-resistant gloves, chemical-resistant apron when mixing or loading or exposed to the concentrate, chemical-resistant footwear plus socks, chemical-resistant headgear for overhead exposure, a NIOSH-approved dust/mist filtering respirator with MSHA/NIOSH approval number prefix TC-21C or a NIOSH-approved respirator with any R, P, or HE filter. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning and maintaining PPE. If no instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry. Refer to product label for additional information.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Mixers and loaders supporting aerial applications must use a mechanical transfer system that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d) (4)] for dermal protection, and must: wear the personal protective equipment require above for mixers/loaders; wear protective eyewear if the system operates under pressure, and be provided and have immediately available for use in an emergency, such as broken package, spill, or equipment breakdown: coveralls, chemical resistant footwear and chemical resistant headgear if overhead exposure. Refer to product label for additional information.

RESPIRATORY PROTECTION: Not normally required; if vapors or mists become excessive, wear a NIOSH approved pesticide respirator with cartridges for pesticide vapors.

EYE PROTECTION: Chemical goggles or shielded safety glasses.

SKIN PROTECTION: Wear protective clothing: long-sleeved shirts and long pants, chemical-resistant footwear with socks. Wear chemical-resistant gloves, such as barrier laminate or Viton®.

	OSHA PEL 8 hr TWA	ACGIH TLV-TWA
Chlorpyrifos	not listed	0.1 mg/m^3
Naphthalene	50 mg/m^3	52 mg/m^3

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE, PHYSICAL STATE, COLOR AND ODOR: Clear, golden amber liquid with petroleum-like odor. **SOLUBILITY:** Emulsifiable
SPECIFIC GRAVITY (Water = 1): 1.091 g/ml **BULK DENSITY:** 9.10 lbs/gal. **pH:** 4.98
VAPOR PRESSURE: Not established **BOILING POINT:** 354°F – 397°F /179° – 203° C (solvent) **FREEZING POINT:** No data
PERCENT VOLATILE (by volume): Not established **EVAPORATION RATE:** Not established
FLASH POINT (°F/Test Method): 176°F / 80°C (TCC)
FLAMMABLE LIMITS (LFL & UFL): LFL: 0.8%; UFL: 5.9% (aromatic solvent)

Note: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.

10. STABILITY AND REACTIVITY

STABILITY: Stable
CONDITIONS TO AVOID: Temperatures above 158°F / 70°C
INCOMPATIBILITY: Strong alkalis, amines, and oxidizers.
HAZARDOUS DECOMPOSITION PRODUCTS: May generate hydrogen chloride, ethyl sulfide, diethyl sulfide and oxides of nitrogen in a fire situation.
HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION

Acute Oral LD_{50} (female rat): 175 mg/kg **Acute Dermal LD_{50} (rat):** 2,000 – 5,000 mg/kg
Eye Irritation (rabbit): Mild irritant **Skin Irritation (rabbit):** Moderate irritant
Inhalation LC_{50} (rat): > 2.04 mg/L (Aerosol - 4 hrs.) **Local Lymph Node Assay [LLNA] (mice):** Sensitizer
Carcinogenic Potential: ACGIH lists Chlorpyrifos as TLV-A4: Not Classifiable as a Human Carcinogen and Naphthalene as TLV-A4: Not Classifiable as a Human Carcinogen. EPA lists Naphthalene as EPA-CBD: Cannot Be Determined as to Human Carcinogenicity; IARC lists Naphthalene as IARC-2B: Possibly Carcinogenic to Humans. Naphthalene is listed as NTP-R: Reasonably Anticipated to Be a Human Carcinogen. Not listed in OSHA.

12. ECOLOGICAL INFORMATION

This pesticide is toxic to fish, aquatic invertebrates, small mammals and birds. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Drift and runoff from treated areas may be hazardous to aquatic organisms in water adjacent to treated areas. Do not contaminate water when disposing of equipment wash waters or rinsate.
This product is highly toxic to bees exposed to direct treatment or residues on blooming crops. Do not apply this product or allow it to drift to blooming crops or weeds if bees are actively visiting the treatment area.

Toxicity

Data for Component: **Chlorpyrifos**
Material is very highly toxic to aquatic organisms on an acute basis (LC_{50}/EC_{50} <0.1 mg/L in the most sensitive species). Material is highly toxic to birds on a dietary basis (LC_{50} between 50 and 500 ppm).
Fish Acute & Prolonged Toxicity
LC_{50}, Oncorhynchus mykiss (rainbow trout), 96 h: 0.003 mg/l
Aquatic Invertebrate Acute Toxicity
EC_{50}, Daphnia magna (Water flea), 48 h: 0.00068 mg/l
Aquatic Plant Toxicity
EC_{50}, Skeletonema costatum, Growth inhibition (cell density reduction), 96 h: 0.255 - 0.328 mg/l
Toxicity to Micro-organisms
EC_{50}; activated sludge: > 100 mg/l
Fish Chronic Toxicity Value (ChV)
Pimephales promelas (fathead minnow), 216 d, NOEC:0.000568 mg/l
Aquatic Invertebrates Chronic Toxicity Value
Daphnia magna (Water flea), number of offspring, NOEC: 0.000056 mg/l
Toxicity to Above Ground Organisms
Oral LD_{50}, Other: 122 mg/kg bodyweight.
Dietary LC_{50}, Colinus virginianus (Bobwhite quail): 423 mg/kg diet.
Oral LD_{50}, Apis mellifera (bees): 0.36 micrograms/bee
Contact LD_{50}, Apis mellifera (bees): 0.070 micrograms/bee
Toxicity to Soil Dwelling Organisms
LC_{50}, Eisenia fetida (earthworms), 14 d: 129 mg/kg
Fish Acute & Prolonged Toxicity
LC_{50}, Pimephales promelas (fathead minnow), flow-through test, 96 h: 7.7 mg/l
Aquatic Invertebrate Acute Toxicity
EC_{50}, Daphnia magna (Water flea), 48 h: 3.6 mg/l
Fish Acute & Prolonged Toxicity
LC_{50}, Oncorhynchus mykiss (rainbow trout), semi-static test, 96 h: 2.7 mg/l
Aquatic Invertebrate Acute Toxicity
EC_{50}, Daphnia magna (Water flea), static test, 48 h, immobilization: 4.0 mg/l
Aquatic Plant Toxicity
EbC_{50}, Pseudokirchneriella subcapitata (green algae), static test, biomass growth inhibition, 72 h: 2.6 mg/l
Aquatic Invertebrates Chronic Toxicity Value
Daphnia magna (Water flea), semi-static test, 21 d, number of offspring, NOEC: 0.35 mg/l, LOEC: 0.66 mg/l
Toxicity to Above Ground Organisms
Oral LD_{50}, redwing blackbird (Agelaius phoeniceus): > 98 mg/kg
Fish Acute & Prolonged Toxicity
LC_{50}, Oncorhynchus mykiss (rainbow trout), 96 h: 9.2 mg/l
Aquatic Invertebrate Acute Toxicity
LC_{50}, Daphnia magna (Water flea), 48 h, lethality: 14.3 mg/l
Aquatic Plant Toxicity
EbC_{50}, Pseudokirchneriella subcapitata (green algae), biomass growth inhibition, 72 h: 3.2 - 4.9 mg/l
Persistence and Degradability
Data for Component: **Chlorpyrifos**
Biodegradation under aerobic laboratory conditions is below detectable limits (BOD20 or BOD28/ThOD < 2.5%).
Stability in Water (1/2-life): 72 d
OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
22 %	28 d	OECD 301D Test	fail

Theoretical Oxygen Demand: 3.17 mg/mg
Bioaccumulative potential
Data for Component: **Chlorpyrifos**
Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient, n-octanol/water (log Pow): 4.7 Estimated.
Bioconcentration Factor (BCF): 15 - 21; Fish; Measured
Mobility in soil
Data for Component: **Chlorpyrifos**
Mobility in soil: Expected to be relatively immobile in soil (Koc > 5000).
Partition coefficient, soil organic carbon/water (Koc): 8,151**Henry's Law Constant (H):** 6.6E-06 atm*m^3/mole Measured
Partition coefficient, soil organic carbon/water (Koc): 800 - 2,800 Estimated.
Henry's Law Constant (H): 1.15E-02 atm*m^3/mole; 25 °C Measured
Distribution in Environment: Mackay Level 1 Fugacity Model:

Air	Water.	Biota	Soil	Sediment
98.38 %	0.33 %	< 0.01 %	1.26 %	0.03 %

13. DISPOSAL CONSIDERATIONS

PESTICIDE DISPOSAL: Open dumping is prohibited. Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of federal law. If these wastes cannot be disposed of by the use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste Representative at the nearest EPA Regional Office for guidance.

CONTAINER DISPOSAL: Non-refillable container. Do not reuse this container to hold materials other than pesticides or dilute pesticides (rinsate). After emptying and cleaning, it may be allowable to temporarily hold rinsate or other pesticide-related materials in the container. Contact your state regulatory agency to determine allowable practices in your state. Once cleaned, some agricultural plastic pesticide containers can be taken to a container collection site or picked up for recycling. To find the nearest site, contact your chemical dealer or manufacturer, or contact The Agricultural Container Recycling Council (ACRC) at www.acrecycle.org. If not recycled, then puncture and dispose of in a sanitary landfill, or incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke. Triple rinse or pressure rinse container (or equivalent) promptly after emptying.

For packages up to 5 gallons: Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. **Pressure rinse as follows:** Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

For packages greater than 5 gallons and less than 56 gallons: Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. **Pressure rinse as follows:** Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

For packages greater than 56 gallons: To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

For refillable containers: Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. Then offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

14. TRANSPORT INFORMATION

DOT Shipping Description: RQ UN3018, ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC (CHLORPYRIFOS), 6.1, III MARINE POLLUTANT ERG GUIDE 152

U.S. Surface Freight Classification: INSECTICIDES OR FUNGICIDES, INSECT OR ANIMAL REPELLENTS, NOI, OR VERMIN EXTERMINATORS, ANIMAL OR POULTRY, NOI; POISON (NMFC 102100; CLASS: 77.5)

15. REGULATORY INFORMATION

NFPA & HMIS Hazard Ratings:

NFPA		HMIS
2 Health	0 Least	2 Health
2 Flammability	1 Slight	2 Flammability
1 Instability	2 Moderate	1 Reactivity
	3 High	G PPE
	4 Severe	

SARA Hazard Notification/Reporting
SARA Title III Hazard Category:

Immediate	Y	Fire	Y	Sudden Release of Pressure	N
Delayed	Y	Reactive	N		

Reportable Quantity (RQ) under U.S. CERCLA: Chlorpyrifos (CAS: 2921-88-2) 1 pound; Naphthalene (CAS: 91-20-3) 100 pounds
SARA, Title III, Section 313: Naphthalene (CAS: 91-20-3) 1.485%
RCRA Waste Code: U165 (Naphthalene).
CA Proposition 65: WARNING: This product contains chemicals known to the State of California to cause cancer or birth defects or other reproductive harm.

WARNING – This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals.

16. OTHER INFORMATION

MSDS STATUS: Section 8 revised

PREPARED BY: Registrations and Regulatory Affairs

REVIEWED BY: Environmental Health and Safety

This is a Restricted Use Pesticide (for retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification)

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Safety Data Sheet

Issue Date: 25-Jun-2014 **Revision Date:** 2-Oct-2015 **Version** 2

1. IDENTIFICATION

Product Identifier

Product Name **Karmex DF**

Other means of identification

SDS # ADAMA-022D

Registration Number(s) EPA Reg. No. 66222-51

UN/ID No UN3077

Recommended use of the chemical and restrictions on use

Recommended Use EPA registered pesticide.

Details of the supplier of the safety data sheet

Manufacturer Address

Makhteshim Agan of North America, Inc. (d/b/a ADAMA)
3120 Highwoods Blvd., Suite 100
Raleigh, NC 27604
1-919-256-9300

Emergency Telephone Number

Emergency Telephone (24 hr) For fire, spill and/or leak contact INFOTRAC:
1-800-535-5053 (North America) 1-352-323-3500 (International)
For medical emergencies and health/safety inquiries, contact PROSAR:
1-877-250-9291

2. HAZARDS IDENTIFICATION

This chemical is a product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-EPA registered chemicals. Please see Section 15 for additional EPA information.

Appearance Beige pellets **Physical State** Solid **Odor** Odorless

Classification

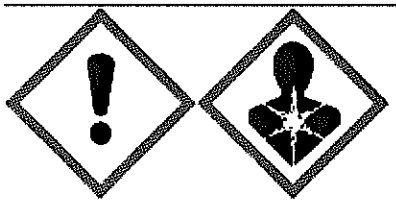
Acute toxicity - Oral	Category 4
Acute toxicity – Inhalation (Dusts/Mists)	Category 4
Specific target organ toxicity (repeated exposure)	Category 2

Signal Word

Warning

Hazard Statements

Harmful if swallowed
Harmful if inhaled
Suspected of causing cancer



Precautionary Statements - Prevention
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area

Precautionary Statements - Response
If exposed or concerned: Get medical advice/attention
IF INHALED: Remove person to fresh air and keep comfortable for breathing
Call a poison center/doctor if you feel unwell
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
Rinse mouth

Precautionary Statements - Storage
Store locked up

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Other Hazards
Very toxic to aquatic life with long lasting effects

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No	Weight-%
Diuron	330-54-1	80

If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. FIRST-AID MEASURES

First Aid Measures

General Advice IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician. When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.

Eye Contact Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.

Skin Contact Remove contaminated clothing and shoes. Wash off immediately with plenty of water for at least 15 minutes.

Inhalation Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Do not induce vomiting without medical advice. Immediately call a poison center or doctor/physician.

Most important symptoms and effects

Symptoms Irritating to eyes, respiratory system & skin. Ingestion may cause drowsiness, hyperreflexia, irritability, diarrhea, hyperthermia and weight loss. Extreme overexposure may cause glycosuria, proteinuria, and aciduria. Long term exposure may also cause enlarging of the liver and/or spleen. May aggravate pre-existing skin conditions. Inhalation may aggravate respiratory problems.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Dry chemical. Carbon dioxide (CO2). Water spray (fog). Foam.

Small Fire Dry chemical or CO2.

Large Fire Use foam or water spray.

Unsuitable Extinguishing Media Do not use a heavy water stream. Use of heavy stream of water may spread fire.

Specific Hazards Arising from the Chemical
Negligible fire hazard.

Hazardous Combustion Products Smoke, fumes or vapors, and oxides of carbon. Nitrogen oxides (NOx). Hydrogen chloride.

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Evacuate area of unprotected personnel. Remain upwind of fire to avoid hazardous vapors and decomposition products. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Wear protective clothing as described in Section 8 of this safety data sheet. Isolate hazard area. Keep unnecessary and unprotected personnel from entering.

Environmental Precautions Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. See Section 13: DISPOSAL CONSIDERATIONS.

Methods and material for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for Clean-Up Cover liquid spill with sand, earth or other non-combustible absorbent material. Sweep up and shovel into suitable containers for disposal. Dispose of in accordance with federal, state and local regulations.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling Handle in accordance with good industrial hygiene and safety practice. Use personal protective equipment as required. Wash face, hands, and any exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product. Do not breathe dust/fume/gas/mist/vapors/spray. Avoid contact with skin, eyes or clothing. Use only outdoors or in a well-ventilated area. Do not eat, drink, smoke, or apply cosmetics while handling this product.

Conditions for safe storage, including any incompatibilities

Storage Conditions Do not contaminate water, food, or feed by storage or disposal. Keep/store only in original container. Store locked up. Store at ambient conditions. Protect from excessive heat.

Packaging Materials Do not reuse container.

Incompatible Materials None known based on information supplied.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Diuron 330-54-1	TWA: 10 mg/m^3	(vacated) TWA: 10 mg/m^3	TWA: 10 mg/m^3

Appropriate engineering controls

Engineering Controls Please refer to the product label. Use only with adequate ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures, such as personal protective equipment

Eye/Face Protection Protective eyewear recommended.

Skin and Body Protection Wear appropriate clothing to prevent repeated or prolonged skin contact. Wear long-sleeved shirt, long pants, and shoes plus socks. Use chemical resistant gloves, such as P.V.C., butyl-rubber, nitrile-rubber, or neoprene.

Respiratory Protection NIOSH-approved respirator or mask in the absence of adequate ventilation.

General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practice. Wash face, hands and any exposed skin thoroughly after handling. Take off all contaminated clothing and wash it before reuse. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning and maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Solid		
Appearance	Beige pellets	**Odor**	Odorless
Color	Beige	**Odor Threshold**	Not determined

Property	Values	Remarks • Method
pH	6.8-9.0	(1% solution)
Melting Point/Freezing Point	158-159 °C / 316-318 °F	
Boiling Point/Boiling Range	Not applicable	
Flash Point	Not applicable	
Evaporation Rate	Not applicable	
Flammability (Solid, Gas)	Not determined	
Upper Flammability Limits	Not determined	
Lower Flammability Limit	Not determined	
Vapor Pressure	Not determined	
Vapor Density	Not determined	
Specific Gravity	0.61-0.77	
Water Solubility	Not determined	
Solubility in other solvents	Not determined	
Partition Coefficient	Not determined	
Auto-ignition Temperature	Not determined	
Decomposition Temperature	Not determined	
Kinematic Viscosity	Not determined	
Dynamic Viscosity	Not determined	
Explosive Properties	Not determined	
Oxidizing Properties	Not determined	
Bulk Density	5.17lb/gal	

10. STABILITY AND REACTIVITY

Reactivity
Not reactive under normal conditions.

Chemical Stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous Polymerization Hazardous polymerization does not occur.

Conditions to Avoid
Keep out of reach of children.

Incompatible Materials
None known based on information supplied.

Hazardous Decomposition Products
Smoke, fumes or vapors, and oxides of carbon. Nitrogen oxides (NOx). Hydrogen chloride.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Eye Contact Avoid contact with eyes.

Skin Contact Avoid contact with skin.

Inhalation Harmful if inhaled.

Ingestion Harmful if swallowed.

Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Diuron 330-54-1	= 1017 mg/kg (Rat)	> 5 g/kg (Rat)	> 0.265 mg/L (Rat)

Information on physical, chemical and toxicological effects

Symptoms Please see section 4 of this SDS for symptoms.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Carcinogenicity Not classifiable as a human carcinogen.

STOT - repeated exposure May cause damage to organs through prolonged or repeated exposure.

Product Information (Numerical measures of toxicity)
Acute Oral LD50 (Rat): >1,879 mg/kg
Acute Dermal LD50 (Rabbit): >5,000 mg/kg
Acute Inhalation LC50 (Rat): >2.03 mg/L (4-hr)
Eye Irritation: Mildly irritating.
Dermal Irritation: Non-irritating.
Dermal Sensitization: Not a skin sensitizer.

12. ECOLOGICAL INFORMATION

Ecotoxicity
Very toxic to aquatic life with long lasting effects. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water by cleaning of equipment or disposal of wastes. Do not apply when weather conditions favor drift from areas treated. Cover or incorporate spills.

Component Information

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Diuron 330-54-1	0.022: 96 h Desmodesmus subspicatus mg/L EC50 0.036: 72 h Desmodesmus subspicatus mg/L EC50 static 0.1: 72 h Pseudokirchneriella subcapitata mg/L EC50 static 0.0007: 96 h Pseudokirchneriella subcapitata mg/L EC50 static	13.4 - 15: 96 h Pimephales promelas mg/L LC50 flow-through 13.4 - 15: 96 h Pimephales promelas mg/L LC50 static 2.3 - 3.3: 96 h Lepomis macrochirus mg/L LC50 static 4: 96 h Lepomis macrochirus mg/L LC50 1.5 - 2.54: 96 h Oncorhynchus mykiss mg/L LC50 static 14.7: 96 h Oncorhynchus mykiss mg/L LC50 2.9: 96 h Cyprinus carpio mg/L LC50	EC50 = 16.38 mg/L 5 min	1.4: 48 h Daphnia magna mg/L EC50 6.3 - 13: 48 h Daphnia magna mg/L EC50 Static

Persistence/Degradability
Not determined.

Bioaccumulation
Not determined.

Mobility

Chemical Name	Partition Coefficient
Diuron 330-54-1	2.82

Other Adverse Effects
Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes

END USERS MUST DISPOSE OF ANY UNUSED PRODUCT AS PER THE LABEL RECOMMENDATIONS.
Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.
Under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste.

Contaminated Packaging

Disposal should be in accordance with applicable regional, national and local laws and regulations.

14. TRANSPORT INFORMATION

DOT

Package less than 125 lbs.: Not regulated

Package more than 125 Lbs.:

UN/ID No	UN3077
Proper Shipping Name	Environmentally hazardous substance, solid, n.o.s. (Diuron), RQ
Hazard Class	9
Packing Group	III
Reportable Quantity (RQ)	Diuron- 100 lbs
Marine Pollutant	Yes if package larger than 882 Lbs. (450 Kg)

IATA

UN/ID No	UN3077
Proper Shipping Name	Environmentally hazardous substance, solid, n.o.s. (Diuron)
Hazard Class	9
Packing Group	III

IMDG

UN/ID No	UN3077
Proper Shipping Name	Environmentally hazardous substance, solid, n.o.s. (Diuron)
Hazard Class	9
Packing Group	III
Marine Pollutant	Yes

15. REGULATORY INFORMATION

International Inventories

TSCA All ingredients are listed or exempt from listing on Chemical Substance Inventory

Legend:
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

US Federal Regulations

CERCLA

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Diuron 330-54-1	100 lb		RQ 100 lb final RQ RQ 45.4 kg final RQ

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

SARA 313

Chemical Name	CAS No	Weight-%	SARA 313 - Threshold Values %
Diuron - 330-54-1	330-54-1	77.6-82.4	1.0

CWA (Clean Water Act)

Component	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Diuron 330-54-1 (77.6-82.4)	100 lb			X

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals.

Chemical Name	California Proposition 65
Diuron - 330-54-1	Carcinogen

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Diuron 330-54-1	X	X	X

EPA Pesticide Registration Number EPA Reg. No. 66222-51

EPA Statement

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

EPA Pesticide Label
Signal Word: Caution

Harmful if swallowed. Causes moderate eye irritation. Avoid contact with eyes or clothing.

Difference between SDS and EPA pesticide label

	EPA	OSHA
Signal Word	Caution	Warning
Acute toxicity - Oral	Harmful if swallowed	Harmful if swallowed
Acute Toxicity – Inhalation	N/A	Harmful if inhaled
Serious eye damage/eye irritation	Causes moderate eye irritation	N/A
Carcinogenicity	N/A	Suspected of causing cancer
STOT - repeated exposure	N/A	May cause damage to organs through prolonged or repeated exposure

16. OTHER INFORMATION

NFPA	**Health Hazards**	**Flammability**	**Instability**	**Special Hazards**
	2	0	0	None
HMIS	**Health Hazards**	**Flammability**	**Physical Hazards**	**Personal Protection**
	2	0	0	See section 8

Issue Date: 25-Jun-2014
Revision Date: 2-Oct-2015
Revision Note: Updated format from 25-Jun-2014

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 PRODUCT IDENTIFIER:
TRADE NAME: **MAKAZE®**
1.2 RECOMMENDED USE: GROUP 9 HERBICIDE – LICENSED FOR ROUNDUP READY ALFALFA, COTTON, CORN, SOYBEANS, CANOLA, FLAX COTTON, SUGARBEETS
1.3 SUPPLIER DETAILS:
LOVELAND PRODUCTS, INC.
P.O. Box 1286 • Greeley, CO 80632-1286
1.4 24 Hour Emergency Phone: 1-800-424-9300 - **Medical Emergencies:** 1-866-944-8565 – **Product Information:** 1-888-574-2878 (LPI-CUST)
U.S. Coast Guard National Response Center: 1-800-424-8802

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to 29 CFR 1910.1200

Acute Toxicity - Dermal	Category 4	H312
Eye Damage/Irritation	Category 2B	H320

2.2 Label elements

Signal word: WARNING
Hazard Statement: H312 – Harmful in contact with skin.
H320 – Causes eye irritation.

Precautionary Statement: (Prevention): P280 – Wear protective gloves/protective clothing/eye protection/face protection.
P264 – Wash hands and face thoroughly after handling.

Precautionary Statement: (Response): P302+P352: IF ON SKIN: Wash with plenty of soap and water.
P331 – Call a Poison Center or doctor/physician if you feel unwell.
P320 – Specific treatment (see First Aid on the product label).
P362 – Take off contaminated clothing and wash it before reuse.
P305+P351+P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313 – If eye irritation persists: Get medical advice/attention.

Precautionary Statement: (Disposal): P501 – Dispose of contents/container resulting from the use of this product that cannot be used or chemically reprocessed in a landfill approved for pesticide disposal or in accordance with applicable Federal, state, or local procedures. Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleansed, reconditioned, or destroyed.

2.3 Other hazards
None known

3. COMPOSITION, INFORMATION ON INGREDIENTS

3.1 Substances

3.2 Mixtures

Classification according to 29 CFR 1910.1200

Chemical Name:	CAS No.	Concentration [%]
Isopropylamine salt of Glyphosate	38641-94-0	41.00
Other ingredients	n/a	Balance

4. FIRST AID MEASURES

4.1 Description of First Aid Measures

General Advice: Get medical attention if symptoms occur.

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

4.2 Most Important Symptoms and Effects, Acute and Delayed

Symptoms: Harmful in contact with skin. Causes eye irritation.

4.3 Immediate Medical Attention and Special Treatment

Treatment: Treat symptomatically. Symptoms may be delayed.
FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: **1-866-944-8565**
Take container, label or product name with you when seeking medical attention.

NOTES TO PHYSICIAN: Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE FIGHTING MEASURES

5.1 EXTINGUISHING MEDIA:

Suitable Extinguishing Media: Dry chemical, carbon dioxide (CO_2), alcohol foam, foam, water spray or fog. Do not use water jet as this will spread the fire.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE:

Specific Hazards During Firefighting: During a fire, hazardous by-products can be released.

5.3 SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS

Special Protective Equipment for Firefighters: Self-contained breathing apparatus and full protective gear should be worn in fighting large fires involving chemicals. Use water spray to keep fire exposed containers cool. Keep people away. Isolate fire and deny unnecessary entry.

6. ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Personal Precautions: Avoid inhalation of vapors and spray mist and contact with skin and eyes. Ensure adequate ventilation. Wear suitable protective clothing.

6.2 ENVIRONMENTAL PRECAUTIONS

Environmental Precautions: Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters or rinsate.

6.3 METHODS AND MATERIALS FOR CONTAINMENT AND CLEAN-UP

Methods for Clean-Up: Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. After removal flush contaminated area thoroughly with water.
Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to Remove residual contamination.
Never return spills to original containers for re-use.

7. HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING:

Advice on Safe Handling: Avoid inhalation of mists, vapors / spray and contact with eyes, skin and clothing. Do not breathe mists or vapor. Wear personal protective equipment. Do not use in areas without adequate ventilation. Avoid prolonged exposure. Wash thoroughly after handling. Do not empty into drains. Handle and open container with care. Use care in handling/storage. Wash before eating, drinking and/or smoking.

7.2 CONDITIONS FOR SAFE STORAGE:

Requirements for Storage Areas and Containers: Store above 10°F (-12.2°C) to keep product from crystallizing. Crystals will settle to the bottom of the container. If allowed to crystallize, place in a warm room at 68°F (20°C) for several days to redissolve and roll or shake container or recirculate in mini-bulk or bulk containers to mix well before using. Do not contaminate water, foodstuffs, feed or seed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 CONTROL PARAMETERS:

OCCUPATIONAL EXPOSURE LIMITS

U.S. Workplace Exposure Level (ACGIH) TLVs

Components	Type	Value
No data available.		

U.S. Workplace Exposure Level (OSHA) PELs

Components	Type	Value
No data available.		

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Specimen
No listings		

8.2 EXPOSURE CONTROLS:

Engineering Measures

Provide adequate general and local exhaust ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of vapors and spray mists. Provide eyewash station and safety shower.

Individual Protection Measures:

Eye / Face Protection: Goggles or shielded safety glasses are recommended.

Skin Protection: Coveralls worn over long-sleeved shirt and long pants. Chemical-resistant gloves. Chemical-resistant footwear plus socks.

Respiratory Protection: In case of inadequate ventilation or risk of inhalation of mists or vapors, use suitable respiratory equipment such as MSHA/NIOSH TC-21C or NIOSH approved respirator with N, R, P or HE filter. Wear respiratory protection during operations where spraying or misting occurs. If respirators are used, a program should be in place to assure compliance with 29 CFR 1910.134, the OSHA Respiratory Protection standard. Wear air supplied respiratory protection if exposure concentrations are unknown.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 APPEARANCE : Clear viscous liquid
ODOR: Amine.
ODOR THRESHOLD: No data available.
COLOR: Yellow.
pH: 4.6 – 5.1 (1% solution)
MELTING POINT / FREEZING POINT: No data available
BOILING POINT: No data available
FLASH POINT: Does not flash.
FLAMMABILILITY (solid, gas): No data available.
UPPER / LOWER FLAMMABILITY OR EXPLOSIVE LIMITS: No data available.
VAPOR PRESSURE: 25 mmHg @ 24°C
SOLUBILITY: Emulsifies
PARTITION CO-EFFICIENT, n-OCTANOL / WATER: <3.2 @ 25°C (Glyphosate).
AUTO-IGNITION TEMPERATURE: No data available.
DECOMPOSITION TEMPERATURE: No data available
VISCOSITY: (kinematic): 22.42 cST @ 24°C
SPECIFIC GRAVITY (Water = 1): 1.169 – 1.178 g/ml
DENSITY: 9.75 – 9.83 lbs./gal / 1.04 kg/L

Note: These physical data are typical values based on material tested but may vary from sample to sample.
Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.

10. STABILITY AND REACTIVITY

10.1 REACTIVITY
Stable

10.2 CHEMICAL STABILITY
Stable under normal temperature conditions

10.3 POSSIBILITY OF HAZARDOUS REACTIONS
No data available. Will not polymerize.

10.4 CONDITIONS TO AVOID
Use of galvanized or unlined steel.

10.5 INCOMPATIBILE MATERIALS
This product and its spray solutions will react with galvanized or unlined steel to produce hydrogen gas that may form a highly combustible gas mixture, which could flash or explode if ignited. Acids and bases.

10.6 HAZARDOUS DECOMPOSITION PRODUCTS
Will emit toxic fumes as it burns.

11 TOXICOLOGICAL INFORMATION

11.3 LIKELY ROUTES OF EXPOSURE
Eye contact. Skin contact.
LC_{50} (rat): >2.2 mg/L (4 HR)
LD_{50} Oral (rat): > 5,000 mg/kg
LD_{50} Dermal (rat): > 5,000 mg/kg
Acute Toxicity Estimates: No data available
Skin Irritation (rabbit): Harmful if absorbed.
Eye Irritation (rabbit): Causes moderate eye irritation
Specific Target Organ Toxicity: Single exposure: No data available.
Aspiration: No data available
Skin Sensitization (guinea pig): Not a sensitizer
Carcinogenicity: No data available
Germ Cell Mutagenicity: No data available
Interactive Effects: None known

12 ECOLOGICAL INFORMATION

12.3 ECOTOXICITY

The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Ecotoxicological Data

	Species	Test Results
Glyphosate acid	Rainbow trout	5.4 mg/L – 96-hour LC_{50}
	Bluegill	7.3 mg/L – 96-hour LC_{50}
	Bee	>100µ/bee – Contact LD_{50}

Drift or runoff may adversely affect non-target plants.
Do not apply directly to water.
Do not contaminate water when disposing of equipment wash water.
Do not apply when weather conditions favor drift from target area.

12.2 PERSISTENCE AND DEGRADABILITY

Biodegradability: No data available

12.3 BIOACCUMULATIVE POTENTIAL

Bioaccumulation: No data available.

12.4 MOBILITY IN SOIL

No data available.

12.5 OTHER ADVERSE EFFECTS

Assessment: No data available.

13 DISPOSAL CONSIDERATIONS

13.1 WASTE TREATMENT METHODS

Wastes may be disposed of on site or at an approved waste disposal facility. Triple rinse (or equivalent), adding rinse water to spray tank. Offer container for recycling or dispose of in a sanitary landfill or by other procedures approved by appropriate authorities. Recycling decontaminated containers is the best option of container disposal. The Agricultural Container Recycling Council (ACRC) operates the national recycling program. To contact your state and local ACRC recycler visit the ACRC web page at http://www.acrecycle.org/. Do not contaminate water, food or feed by storage or disposal.

14 TRANSPORT INFORMATION

14.3 LAND TRANSPORT

DOT Shipping Description: NOT REGULATED BY USDOT
U.S. Surface Freight Classification: COMPOUND, TREE OR WEED KILLING, NOI (NMFC 50320, SUB 2: CLASS 60)

15 REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS

NFPA & HMIS Hazard Ratings:

NFPA		HMIS
1 Health	0 Least	1 Health
0 Flammability	1 Slight	0 Flammability
0 Instability	2 Moderate	0 Reactivity
	3 High	B PPE
	4 Severe	

SARA Hazard Notification/Reporting
SARA Title III Hazard Category:

Immediate	Y	Fire	N	Sudden Release of Pressure	N
Delayed	N	Reactive	N		

Reportable Quantity (RQ) under U.S. CERCLA: Not listed.
SARA, Title III, Section 313: Not listed.
RCRA Waste Code: Not listed.
CA Proposition 65: Not applicable

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

CAUTION
Harmful if absorbed through skin.
Causes moderate eye irritation.
Avoid contact with eyes, skin, or clothing.

16 OTHER INFORMATION

SDS STATUS: Section 2 revised.

PREPARED BY: Registrations and Regulatory Affairs **REVIEWED BY:** Environmental Health and Safety

®Makaze is a registered trademark of Loveland Products, Inc.

®Roundup Ready is a registered trademark of Monsanto Technology, LLC

EPA REG. NO.: 34704-890

Disclaimer and Limitation of Liability: This data sheet was developed from information on the constituent materials identified herein and does not relate to the use of such materials in combination with any other material or process. No warranty is expressed or implied with respect to the completeness or ongoing accuracy of the information contained in this data sheet, and LOVELAND PRODUCTS, INC. disclaims all liability for reliance on such information. This data sheet is not a guarantee of safety. Users are responsible for ensuring that they have all current information necessary to safely use the product described by this data sheet for their specific purpose.

SAFETY DATA SHEET

DREXEL DEFOL® 750 DEFOLIANT/DESICCANT WITH FIRE RETARDANT

Section 1: Material Identification

Product Name:	Drexel Defol® 750 Defoliant/Desiccant with Fire Retardant
EPA Reg No.:	19713-486
CAS NO:	7775-09-9
Formula:	$ClNaO_3$
Company:	Drexel Chemical Company 1700 Channel Avenue Memphis, TN 38106

Identifiers:

EINECS:	231-887-4
RTECS:	FO0525000
DOT label:	Non-regulated

Emergency Telephone Number:

CHEMTREC	Drexel Chemical Co.
Tel: 1-800-424-9300	901-774-4370

This product is an EPA FIFRA registered pesticide. Some of the classifications on this SDS are not the same as the FIFRA label. Certain sections of this SDS are superseded by federal law governed by EPA for a registered pesticide. Please see **Section 15. REGULATORY INFORMATION** for explanation.

Section 2: Hazard Identification

(As defined by the OSHA Hazard Communication Standard, 29)

GHS Classification:

Health hazards:	Acute toxicity/inhalation	Category 4
	Skin corrosion/irritation	Category 2
	Eye damage/irritation	Category 2B
	Aquatic acute toxicity	Category 3
	Aquatic toxicity long term	Category 4

GHS Label Elements:

Signal word: Warning

Hazard statement:

Harmful if inhaled.
Causes skin irritation.
Causes eye irritation.
Harmful to aquatic life.
May cause long lasting harmful effects to aquatic life.

Precautionary statement:

Prevention:

Avoid breathing vapors or mist. Use only outdoors or in a well-ventilated area. Wash exposed skin thoroughly after handling. Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Neoprene, Nitrile/butadiene rubber ("nitrile" or "NBR") or Polyvinyl chloride ("PVC" or "vinyl"). Avoid release to the environment.

Response:

If inhaled: Remove person to fresh air and keep comfortable for breathing. Call Poison Control Center of Doctor if you feel unwell.
If on skin: Wash with plenty of water while removing contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Destroy contaminated leather items such as shoes, belts, and watchbands.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical attention, preferably from an ophthalmologist.

Storage:

Store in a cool, dry, well ventilated, and secure area designated specifically for pesticides and away from heat sources.
Keep in original containers and keep containers closed when not in use.
Do not store in excessive heat.
Do not store near children, food, foodstuffs, drugs or potable water supplies.

Disposal:

Dispose of contents/container in accordance with your local or area regulatory authorities.

Section 3: Composition Information

Components	CAS No.:	% By Wt.:	OSHA PEL:	ACGIH TLV:
Active Ingredient:				
Sodium chlorate	7775-09-9	52.00%	N/Av	5 mg/m^3
Inert Ingredients:	N/A	48.00%	N/A	N/A

Section 4: First-Aid Measures

Eye Contact: Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes for at least 10 minutes. Obtain medical attention without delay, preferably from an ophthalmologist.

If Swallowed: Call a poison control center or doctor immediately for treatment advice. Rinse mouth with water then have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person. Have product label with you when calling a poison control center or doctor.

Skin Contact: Immediately flush skin with water while removing contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Destroy contaminated leather items such as shoes, belts, and watchbands.

If Inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

Note to Physician: This product has low oral, dermal, and inhalation toxicity. If swallowed, gastric lavage using an endotracheal tube may be preferred to vomiting. This product is a severe eye irritant, and may cause irritation to the skin and respiratory tract.

Section 5: Fire Fighting Measures

Fire Hazards: Closed containers may rupture if exposed to excess heat or flame due to a build-up of internal pressure. Thermal decomposition during a fire can produce fumes and irritating gases.

Flammability classification (OSHA 29 CFR 1910.1200): Non-combustible
Flash point: >200°F
Lower flammable limit (% by volume): N/Av
Upper flammable limit (% by volume): N/Av

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Evacuate the area and fight the fire from upwind at a safe distance to avoid hazardous vapors or decomposition products. Dike and collect fire-extinguishing water to prevent environmental damage and excessive waste runoff.

Firefighting media: Use water fog when fighting fires involving this product. Do not use CO_2 or dry chemical, do not blanket with foam. Do not use water jet, as this may spread burning material. Minimize the use of water to avoid environmental contamination. Contain all runoff.

Special Protective Equipment for Firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective firefighting clothing (includes firefighting helmet, coat, trousers, boots, and gloves). Use full face shield and operate in positive pressure mode. Avoid contact with this material during firefighting operations. If contact is likely, change to full chemical resistant firefighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

Hazardous Combustion Products: Irritating fumes and smoke.

NFPA:	Health:	Flammability:	Reactivity:
	1	2	0

(Rating: 4-Extreme, 3-High, 2-Moderate, 1-Slight, 0-Insignificant)

Section 6: Accidental Release Measures

Steps to be taken if Material is Released or Spilled:

- Contain spilled material if possible. Small spills: Applied suitable absorbent then sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Drexel Chemical Co. for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

Personal Precautions:

- Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to Section 7, Handling, for additional precautionary measures. Spilled material may cause a slipping hazard. Ventilate area of leak or spill. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental Precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Section 7: Handling and Storage

KEEP OUT OF REACH OF CHILDREN

Handling: General Handling: Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Do not swallow. Avoid breathing vapor. Use with adequate ventilation. Wear rubber apron, boots, coveralls and long-sleeved shirt when handling. Keep away from heat, sparks and flame. See Section 8, Exposure Controls and Personal Protection.

Storage: Store in a cool, dry area designated specifically for pesticides and away from heat sources. Keep in original containers and keep containers closed when not in use. Do not store in excessive heat. Do not store near children, food, foodstuffs, drugs or potable water supplies.

Section 8: Exposure Controls / Personal Protection

Exposure Limits: TLV: Sodium Chlorate 5mg/m^3

Personal Protection:

Eye/Face Protection: Wear safety glasses with side shields or chemical splash goggles to prevent vapors or mists from entering the eyes. If using a full face shield, always use safety glasses or goggles along with the face shield to ensure adequate protection of the eyes.

Skin Protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task. Safety shower should be located in immediate work area. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse or dispose of properly. Items which cannot be decontaminated, such as shoes, belts and watchbands, should be removed and disposed of properly.

Hand protection: Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Neoprene, Nitrile/butadiene rubber ("nitrile" or "NBR") or Polyvinyl chloride ("PVC" or "vinyl").

Respiratory Protection: Respiratory protection should be worn when there is a potential to exceed the exposure

limit requirements or guidelines. When handling in enclosed areas, when large quantities of mists are generated or prolonged exposure is possible in excess of the TLV, use a respirator with either an organic vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C) or a canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G).

Ingestion: Avoid ingestion of even very small amounts; do not consume or store food or tobacco in the work area; wash hands and face before smoking or eating.

Engineering Controls:

Ventilation: When handling this product proper ventilation is required to maintain exposure below the TLV. Ventilate all transport vehicles prior to unloading. Facilities storing or utilizing this material should be equipped with and eyewash facility and safety shower.

Section 9: Physical and Chemical Properties

Physical State:	Slurry
Color:	Grey
Odor:	Slight ammonia
Flash Point:	>200°F
Vapor Pressure (mmHg):	N/Av
Boiling Point:	N/Av
Vapor Density (air = 1):	N/A
Bulk Density (H2O = 1):	1.65 g/cc
Freezing Point:	N/A
Solubility in water (wt. %):	Complete
pH:	7-7.5
Viscosity:	1700-2000 cP

Section 10: Stability and Reactivity

Stability/Instability: Thermally stable at typical use temperatures and in closed containers.

Conditions to Avoid: Avoid heat of open flame. Avoid high temperatures above 130°F (54.4°C). Avoid reducing agents.

Incompatible Materials: If concentrate solution dries on flammable objects can act as an oxidizer.

Hazardous Polymerization: Will not occur

Thermal Decomposition: Decomposition products can include toxic fumes, dense smoke.

Section 11: Toxicological Information

Data from laboratory studies conducted on a similar, but not identical, formulation:

Acute Toxicity:

Ingestion:

- Oral LD50, (rat): >5,000 mg/kg

Dermal:

- Dermal LD50, (rat): >5,000 mg/kg

Inhalation:

- Inhalation LC50, (rat): 2.09 mg/L

Eye Irritation: (rabbit):

- Mildly irritating

Skin Irritation (rabbit):

- Slightly irritating

Sensitization Skin (guinea pig):

- Non-sensitizer

Chronic Toxicity:

- May cause thyroid damage based on animal data

Carcinogenicity:

- Not likely to cause carcinogenicity in humans

Teratogenicity, mutagenicity, and other reproductive effects: None known

Section 12: Ecological Information

Ecotoxicological data: The information presented here is for the active ingredient sodium chlorate.

ENVIRONMENTAL FATE:

- This product is practically non-toxic to fish, poses no acute risks to birds, and is slightly toxic to aquatic invertebrates and plants.

Persistence and Degradability:

- Sodium chlorate has a low potential to bioaccumulate, is highly soluble and is completely ionized in water.

Aquatic Toxicity:

- Daphnia magna: EC50: (920 ppm)
- Duckweed EC50: (43 mg/L)
- Algae EC50: (133 mg/L)
- Fish: acute toxicity studies for fish consistent with practically non-toxic (no effects up to 1000mg/L)

Bird Toxicity:

- No acute risks to birds

Section 13: Disposal Considerations

If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical

properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

Section 14: Transport Information

DOT: Non-regulated

IMDG: Non-regulated

IATA: UN 2428, Sodium Chlorate Aqueous Solution, 5.1, PG-II

Freight Description: Agricultural Defoliant/Desiccant, liquid, n.o.s.

ERG Guide No.: 140

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

Section 15: Regulatory Information

OSHA Hazard Communication Standard:

- **This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200**
- **EPA FIFRA INFORMATION:**
  This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemical. The hazard information required on the pesticide label is listed out below. The pesticide label also includes other important information, including directions for use.
- **EPA/CERCLA Reportable Quantity:** None Known

SARA/TITLE III:

- **Sec. 302. Extremely Hazardous Substance Notification:** This material is not known to contain any Extremely Hazardous Substances.
- **Sec. 311/312. Hazard Categories:** Fire Hazard
  Immediate health hazard
  Reactivity hazard
- **Sec. 313. Toxic Chemical(s):** This material is not known to contain any Toxic Chemical constituents.
- **RCRA Waste Code:** D001

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986):

- This product is not listed.

Toxic Substances Control Act (TSCA):

- All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30

Section 16: Other Information

Drexel Chemical Company recommends that each customer or recipient of this SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown below. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific SDSs, we are not and cannot be responsible for SDSs obtained from any source other than ourselves. If you have obtained an SDS from another source or if you are not sure that the SDS you have is current, please contact us for the most current version.

Date Revised: April 1, 2016 **Supersedes: December 11, 2015**

Nichino America, Inc.
ET® Herbicide/Defoliant
Safety Data Sheet

1. IDENTIFICATION

Product Name: ET Herbicide/Defoliant
General Use: Herbicide/Defoliant
Product Description: Emulsifiable Concentrate
EPA Reg. No.: 71711-7

Manufacturer
Main Headquarters: Nihon Nohyaku Co., Ltd., Kyobashi OM Building, 19-8 Kyobashi 1-chome, Chuo-ku, Tokyo 104-8386 JAPAN

US Connection: Nichino America Inc.
4550 New Linden Hill Road, Suite 501
Wilmington, Delaware 19808
Phone: 302-636-9001
Fax: 302-636-9122

Emergency and Health and Safety Inquiries: **(800) 348-5832 (24-hours)**
In case of fire or spills: **(800) 424-9300 (24-hours)**
In case of international shipments: **(703) 527-3887 (24-hours)**

2. HAZARD(S) IDENTIFICATION

Classified according to OSHA 29 CFR 1910.1200 HCS
Classification:

Flammable Liquid	Category 4
Acute Toxicity (Inhalation):	Category 4
Skin Irritation	Category 2
Eye Irritation	Category 1
Carcinogenicity	Category 2
Reproductive Toxicity	Category 1B
Aspiration Hazard	Category 1

Signal Word: **DANGER**

Hazard Statements:

Combustible liquid
May be fatal if swallowed and enters airways
Harmful if inhaled
Causes skin irritation
Causes serious eye damage
Suspected of causing cancer
May damage fertility or the unborn child

Precautionary Statements:

Prevention:

Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use only outdoors or in a well-ventilated area.
Keep away from flames and hot surfaces. No smoking.
Avoid breathing mists, vapors, and/or spray.
Wear protective gloves/protective clothing/eye protection/face protection.
Wash thoroughly after handling.

Response:

In case of FIRE: Use appropriate media to extinguish.
If ON SKIN: Wash with plenty of water.
Specific treatment, see supplemental first aid information.
If skin irritation occurs: Get medical advice/attention.
Take off contaminated clothing and wash before reuse.
IF IN EYES: Rinse cautiously with water for several minutes.
Remove contact lenses, if present and easy to do. Continue rinsing.
Immediately call a poison control center or doctor/physician.
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
Do NOT induce vomiting.
If INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
If exposed or concerned: Get medical advice/attention.

Storage:

Store in a well-ventilated place. Keep cool.
Store locked up.

Disposal:

Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	Percentage
Pyraflufen-ethyl CAS Name: Acetic acid, [2-chloro-5-[4-chloro-5-(difluoromethoxy)-1-methyl-1*H*-pyrazol-3-yl]-4 -fluorophenoxy]-, ethyl ester	129630-19-9	2.5%
Calcium dodecylbenzenesulfonate	26264-06-2	4 - 8%
N-methyl-2-pyrrolidone	872-50-4	9 – 12%
*Other ingredients:		77.5 – 84.5%

*Specific chemical identity and percentage of composition withheld as a trade secret.

4. FIRST AID MEASURES

Eye Contact Immediately hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first five minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

Skin Contact Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Ingestion Call poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

Inhalation Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a poison control center or doctor for further

treatment advice.

Most important symptoms and effects, both acute and delayed: Refer to Section 11 – Toxicology Information.

Note to Physician: Contains petroleum distillates – vomiting may cause aspiration pneumonia. Probable mucosal damage may contraindicate the use of gastric lavage..

5. FIRE FIGHTING MEASURES

Suitable extinguishing media:	Water, foam, carbon dioxide, or dry powder.
Unsuitable extinguishing media:	No information available.
Special protective equipment and precautions for fire-fighters:	Firefighters should wear full protective clothing and self-contained breathing apparatus. Spray containers with water to keep cool. Avoid runoff from extinguishing media such as water, foam, and dry chemicals into ponds, rivers, and lakes due to danger of toxicity to aquatic organisms.
Specific hazards arising from the chemical (e.g. nature of any hazardous combustion products):	Combustion or thermal decomposition will evolve toxic oxides of carbon and nitrogen (HCl, HF, CO_2, CO, NO_x).

6. ACCIDENTAL RELEASE MEASURES

General and Disposal: Use proper protective equipment to minimize personal exposure (see Section 8). Take all necessary action to prevent and to remedy the effects of the spill. Ensure that the disposal is in compliance with federal or local disposal regulations (see Section 13). Notify the appropriate authorities immediately (see Section 15 for any applicable Reportable Quantity (RQ)). Report to authorities if water enters watercourse or sewer.

Land Spill or Leak:
Liquid spills on the floor or other impervious surfaces should be contained or diked and then absorbed with sawdust, sand, bentonite, or other absorbent clay. Collect contaminated absorbent, and place it in a properly labeled metal drum

with lid. Thoroughly scrub the floor or other impervious surface with a strong industrial type detergent and rinse with water.

Liquid spills that soak into the ground should be dug up and placed in metal drums. When a large spill or leakage is found, wear protective clothing and respirator to avoid exposure.

Avoid contaminated absorbents or water flow into ponds, rivers, and lakes, due to the danger of acute toxicity to aquatic organisms.

7. HANDLING AND STORAGE

Handling Precautions:

- Open container with care.
- Use adequate ventilation.
- Avoid handling near an open flame or heat source or ignition source.
- Do not contaminate water by cleaning of equipment or disposal of waste.
- Avoid contact with skin, eyes, or clothing.
- Do not eat, drink, smoke, or chew gum or tobacco while handling this product and until hands and face are thoroughly washed with soap and water.
- Do not use the toilet before thoroughly washing hands.
- Remove contaminated clothing immediately and wash thoroughly before reuse.

Storage Precautions:

- Do not contaminate water, food, or feed.
- Store in original container and keep closed.
- Store in a cool, dry place.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls
(Local exhaust): Ventilation may be necessary under certain confined conditions. If practical, use ventilation at the sources of air contamination. Control airborne contaminants below the exposure guidelines (see below for any applicable OSHA / ACGIH exposure limits).

Personal Protective Equipment (PPE):

Eye/Face Protection: Wear protective eyewear when there is significant potential for eye contact.

Skin Protection: Wear long-sleeved shirt, long pants, socks, shoes, and chemical-resistant gloves (such as nitrile or butyl) to prevent skin contact. Wash contaminated skin promptly with soap and water. Launder contaminated clothing and protective equipment.

Respiratory Protection: Ensure good ventilation. Avoid breathing mist or vapor. If ventilation is inadequate, use approved respiratory protection equipment when airborne exposure limits are exceeded.

Exposure Limits: None

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Brownish yellow mobile liquid
Physical state:	Liquid
Odor:	Similar to paraffin or naphthalene.
Odor threshold:	No information available
pH:	7.78 at 22°C
Melting point/freezing point	No data available
Initial boiling point and boiling range	No data available.
Flash point	89.0°C
Evaporation rate	No data available
Flammability (solid, gas)	No data available
Upper/Lower flammability or explosive limits	N/A No shock sensitivity to explosion No thermal sensitivity to explosion
Vapor pressure	1.04×10^{-6}Pa at 25°C (technical active ingredient)
Vapor density	No data available
Relative density	1.016 g/cm^3 at 20°C
Solubility(ies)	No data available for ET *TGAI:* Water solubility 0.0706 mg/L (20°C)
Partition coefficient (n-octanol/water)	No data available on ET *TGAI: log Pow = 3.49*
Auto ignition temperature	None observed up to 89.0°C
Decomposition temperature	No data available
Viscosity	5.34 mm^2/s at 25 °C

TGAI = Technical Grade Active Ingredient

10. STABILITY AND REACTIVITY

Reactivity	Non-reactive
Chemical stability	Stable under normal conditions
Possibility of hazardous reactions	None known
Conditions to avoid	Combustion and thermal decomposition that may result in hazardous combustion products listed below and in Section 5.
Incompatable materials	None known
Hazardous decomposition products	Combustion or thermal decomposition will evolve toxic oxides of carbon and nitrogen (HCl, HF, CO_2, CO, NO_x).

11. TOXICOLOGICAL INFORMATION

The following data were developed using ET:

Acute Studies:

Oral LD_{50} (rat):	Male: >5000 mg/kg Female: >3712 mg/kg)
Dermal LD_{50} (rat):	>2000 mg/kg (male / female)
Inhalation LC_{50} (rat):	>2.03 mg/L, 4 hrs (male / female)
Eye irritation (rabbit):	Corrosive/severe irritant
Skin irritation (rabbit):	Moderate irritant
Skin sensitization (guinea pig):	Not a sensitizer

Aspiration hazard - If swallowed, may be aspirated and cause lung damage.

The following data were developed using pyraflufen-ethyl technical:

Subchronic and Chronic Effects:

A 90-day rat feeding study was conducted at dose levels up to 15,000 ppm pyraflufen-ethyl. Liver and kidney effects were observed at the highest dose. The no observed effect level (NOEL) in this study was considered to be 1,000 ppm (~90 mg/kg body weight/day). In a 90-day oral toxicity study in dogs, pyraflufen-ethyl was administered at dose levels up to 1,000 mg/kg body weight/day. No effects in body weight or organ weight, clinical chemistry, hematology, histopathology, or gross pathology were observed. In long term studies, no effects were observed in dogs exposed for one year to a maximum

dose of 1,000 mg/kg body weight/day. In a two year rat chronic study, liver and kidney effects were observed at 2,000 ppm. The NOEL was 400 ppm (~20mg/kg body weight/day).

Cancer Effects:

Pyraflufen-ethyl was tested in lifetime studies in rats and mice. There was no evidence of carcinogenicity in the rat at doses as high as 10,000 ppm (~470 mg/kg body weight/day). In the mouse study, the incidence of hepatocellular adenomas was increased in mice receiving 5,000 ppm (~ 524 - 547 mg/kg body weight/day), a dose level considered to be in excess of a MTD (maximum tolerated dose). Based on the combined incidence of male mouse hepatocellular adenomas, carcinomas, and/or hepatoblastomas, the EPA has classified pyraflufen-ethyl as "Likely to be Carcinogenic to Humans". The EPA classification of pyraflufen-ethyl represents potential hazard without consideration of exposure information. Pyraflufen-ethyl is not classified as a carcinogen by NTP, OSHA, or IARC.

Teratogenicity (Birth Defects):

There is no evidence of developmental toxicity.

Reproductive Effects:

There is no evidence of reproductive toxicity.

Neurotoxicity:

There was no evidence of neurotoxicity after oral exposure in acute or subchronic studies.

Immunotoxicity:

Suppression of the humoral immune response was measured in male rats exposed to 12,000 ppm of pyraflufen-ethyl (equivalent to ~ 943 mg/kg body weight/day) in a 28-day feeding study, the same dose at which systemic toxicity was evident. No humoral immune suppression was observed in female rats at any dose level.

Mutagenicity (Genetic Effects):

There is no evidence of mutagenicity nor genotoxicity.

Toxicity of other components:

Solvent naphtha (petroleum), heavy aromatic

If swallowed, may be aspirated and cause lung damage.

N-methyl-2-pyrrolidone

Clear evidence of adverse effects on sexual function and fertility, and/or development, based on animal experiments.

12. ECOLOGICAL INFORMATION

Ecological data were developed using pyraflufen-ethyl technical.

Environmental Precautions:
Do not discharge effluent containing this product directly into lakes, streams, ponds, estuaries, oceans, or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA. Do not contaminate water when disposing of equipment washwaters.

13. DISPOSAL CONSIDERATIONS

General Disposal:
Wastes resulting from the use of this product must be disposed of on site or at an approved waste disposal facility.

Any disposal practice must be in compliance with all federal, state/provincial, and local laws and regulations. State (provincial) and local requirements for waste disposal may be more restrictive or otherwise different from federal laws and regulations. Chemical additions, processing, storage or otherwise altering this material may make the waste disposal information presented in this MSDS incomplete, inaccurate, or otherwise inappropriate. Waste characterization and disposal compliance are the responsibility solely of the party generating the waste or deciding to discard or dispose of the material.

Refer to appropriate federal (RCRA: 40 CFR.261), state/provincial, or local requirements for proper classification information. For regulatory information on the ingredient components, see Section 15.

Do not contaminate water, food, or feed by storage or disposal. Open dumping is prohibited. Pesticide wastes are toxic. Improper disposal of excess pesticide, pesticide spray, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Disposal:
Nonrefillable container. Do not reuse or refill this container. Triple rinse (or eq uivalent) promptly after emptying . Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and d rain for 10 seconds after the flow begins to drip. Fill the container % full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available, or reconditioning if appropriate, or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by State or local authorities, by burning. If burned, stay out of smoke.

14. TRANSPORT INFORMATION

Liquid transport:

DOT:	Non-bulk (≤ 119 gallons or 450L): Not regulated Bulk (>119 gallons or 450L): NA 1993, Combustible liquid, n.o.s. (petroleum distillate mixture), Comb liq, PG III
IATA	UN 3082, Environmentally hazardous substance, liquid, n.o.s, (pyraflufen-ethyl), Class 9, PG III.
IMDG	UN 3082, Environmentally hazardous substance, liquid, n.o.s, (pyraflufen-ethyl), Class 9, PG III, Marine Pollutant, EmS: F-A; S-F.

ET Herbicide/Defoliant is not regulated for transport under DOT in non-bulk containers.

15. REGULATORY INFORMATION

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including directions for use.

DANGER
Corrosive. Causes irreversible eye damage.
Harmful if swallowed.
Harmful if absorbed through skin.
This product is toxic to fish and aquatic invertebrates.

U.S. Federal Regulatory Information:
EPA Registration Number: 71711-7
TSCA Inventory: Registered pesticide; exempt from TSCA

SARA Title III Notification and Information:
Section 302 (EHS) Ingredients: None
Section 304 (EHS)
or CERCLA Ingredients (RQ):

Name	CAS #	Final Reportable Quantity
Calcium dodecylbenzenesulfonate	26264-06-2	1,000 lbs

Section 313 Ingredients:
N-methyl-2-pyrrolidone (CAS No. 872-50-4)

U.S. State Regulatory Information:
U.S. State Right-to-Know (RTK) Ingredients:
- N-methyl-2-pyrrolidone (CAS No. 872-50-4)

California Proposition 65 List:
- California Proposition 65: WARNING. This product contains chemicals known to the State of California to cause cancer or birth defects or other reproductive harm.
  - N-Methyl-2-pyrrolidone (CAS No. 872-50-4) - CA DEVELOPMENTAL

16. OTHER INFORMATION

HMIS® Hazard Rating:
Health: 3*
Flammability: 2
Physical Hazard.: 0
*indicates both acute and chronic health hazard

NFPA Hazard Rating:
Health: 3
Flammability: 2
Instability: 0
Special Hazards: None

Prepared by: Regulatory Affairs

Date: 3/10/2016
Reason for Editing: Revised sections, 2, 3,14, and 15.

Disclaimer of Expressed and Implied Warranties:
This information is provided in good faith but without express or implied warranty. Buyer assumes all responsibility for safety and use not in accordance with FIFRA label instructions.

Nichino America, Inc.
ET®X Herbicide/Defoliant
Safety Data Sheet

1. IDENTIFICATION

Product Name: ETX Herbicide/Defoliant
General Use: Herbicide
Product Description: Emulsifiable Concentrate
EPA Reg. No.: 71711-41

Manufacturer
Main Headquarters: Nihon Nohyaku Co., Ltd., Kyobashi OM Building, 19-8 Kyobashi 1-chome, Chuo-ku, Tokyo 104-8386 JAPAN

US Connection: Nichino America, Inc.
4550 New Linden Hill Rd., Suite 501
Wilmington, DE 19808
Phone: 302-636-9001
Fax: 302-636-9122

Emergency and Health and Safety Inquiries: **(800) 348-5832 (24-hours)**
In case of fire or spills: **(800) 424-9300 (24-hours)**
In case of international shipments: **(703) 527-3887 (24-hours)**

2. HAZARD(S) IDENTIFICATION

Classified according to OSHA 29 CFR 1910.1200 HCS
Classification:

Acute Toxicity (Oral)	Category 4
Skin Irritation	Category 2
Eye Irritation	Category 1
Acute Toxicity (Inhalation):	Category 4
Carcinogenicity	Category 2
Reproductive Toxicity	Category 1B
Specific Target Organ Toxicity Single Exposure	Category 3

Signal Word: **DANGER**

Hazard Statements:

Harmful if swallowed
Harmful if inhaled
Causes skin irritation
Causes serious eye damage
Suspected of causing cancer
May damage fertility or the unborn child
May cause respiratory irritation

Precautionary Statements:

Prevention:

Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use only outdoors or in a well-ventilated area.
Obtain special instructions before use.
Keep away from heat, sparks, open flames and/or hot surfaces. No smoking.
Do not breathe mists, vapors, and/or spray.
Do not get in eyes, on skin, or on clothing.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Wear protective gloves/protective clothing/eye protection/face protection.
Wear respiratory protection.
Contaminated work clothing must not be allowed out of the workplace.

Response:

In case of fire: Use appropriate media for extinction.
If ON SKIN: Wash with plenty of water.
Specific treatment, see supplemental first aid information.
If skin irritation occurs: Get medical advice/attention.
Take off contaminated clothing and wash before reuse.
IF IN EYES: Rinse cautiously with water for several minutes.
Remove contact lenses, if present and easy to do. Continue rinsing.
Immediately call a poison control center or doctor/physician.

IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
Rinse mouth.
If INHALED: Remove person to fresh air and keep comfortable for breathing.
Call a POISON CENTER or doctor/physician if you feel unwell.
If exposed or concerned: Get medical advice/attention.

Storage:

Store in a well-ventilated place. Keep cool.
Store locked up.

Disposal:

Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	Percentage
Pyraflufen-ethyl CAS Name: Acetic acid, [2-chloro-5-[4-chloro-5-(difluoromethoxy)-1-methyl-1*H*-pyrazol-3-yl]-4 - fluorophenoxy]-, ethyl ester	129630-19-9	4.0%
Calcium dodecylbenzenesulfonate	26264-06-2	1 - 10
N-methyl-2-pyrrolidone	872-50-4	15 – 25%
Solvent naphtha (Petroleum), Heavy Aromatic	64742-94-5	30 – 40%
*Other ingredients		21 - 50%

*Specific chemical identity and percentage of composition withheld as a trade secret

4. FIRST AID MEASURES

Eye Contact

Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first five minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

Skin Contact

Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Ingestion	Call poison control center or doctor immediately for treatment advice. Do not give any liquid to the person. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.
Inhalation	Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.
Most important symptoms and effects, both acute and delayed:	Refer to Section 11 – Toxicology Information.
Note to Physician:	May pose an aspiration pneumonia hazard. Contains petroleum distillates. Probable mucosal damage may contraindicate the use of gastric lavage.

5. FIRE FIGHTING MEASURES

Suitable extinguishing media:	Water, foam, carbon dioxide, or dry powder.
Unsuitable extinguishing media:	No information available.
Specific hazards arising from the chemical (e.g. nature of any hazardous combustion products):	Combustion or thermal decomposition will evolve toxic oxides of carbon and nitrogen (HCl, HF, CO_2, CO, NO_x).
Special protective equipment and precautions for fire-fighters:	Firefighters should wear full protective clothing and self-contained breathing apparatus. Spray containers with water to keep cool. Avoid runoff from extinguishing media such as water, foam, and dry chemicals into ponds, rivers, and lakes due to danger of toxicity to aquatic organisms.

6. ACCIDENTAL RELEASE MEASURES

General and Disposal: Use proper protective equipment to minimize personal exposure (see Section 8). Take all necessary action to prevent and to remedy the effects of the spill. Ensure that the disposal is in compliance with federal or local disposal regulations (see Section 13). Notify the appropriate authorities immediately (see Section 15 for any applicable Reportable Quantity (RQ)). Report to authorities if water enters watercourse or sewer.

Land Spill or Leak:
Liquid spills on the floor or other impervious surfaces should be contained or diked and then absorbed with sawdust, sand, bentonite, or other absorbent clay. Collect contaminated absorbent, and place it in a properly labeled metal drum with lid. Thoroughly scrub the floor or other impervious surface with a strong industrial type detergent and rinse with water.

Liquid spills that soak into the ground should be dug up and placed in metal drums. When a large spill or leakage is found, wear protective clothing and respirator to avoid exposure.

Avoid contaminated absorbents or water flow into ponds, rivers, and lakes, due to the danger of acute toxicity to aquatic organisms.

7. HANDLING AND STORAGE

Handling Precautions:

- Open container with care.
- Use adequate ventilation.
- Avoid handling near an open flame or heat source or ignition source.
- Do not contaminate water by cleaning of equipment or disposal of waste.
- Avoid contact with skin, eyes, or clothing.
- Do not eat, drink, smoke, or chew gum or tobacco while handling this product and until hands and face are thoroughly washed with soap and water.
- Do not use the toilet before thoroughly washing hands.
- Remove contaminated clothing immediately and wash thoroughly before reuse.

Storage Precautions:

- Do not contaminate water, food, or feed.
- Store in original container and keep closed.
- Store in a cool, dry place.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls
(Local exhaust): Ventilation may be necessary under certain confined conditions. If practical, use ventilation at the sources of air contamination. Control airborne contaminants below the exposure guidelines (see below for any applicable OSHA / ACGIH exposure limits).

Personal Protective Equipment (PPE):

Eye/Face Protection: Wear protective eyewear when there is significant potential for eye contact.

Skin Protection: Wear long-sleeved shirt and long pants, socks and shoes, and chemical-resistant gloves (such as nitrile or butyl) to prevent skin contact. Wash contaminated skin promptly with soap and water. Launder contaminated clothing and protective equipment.

Respiratory Protection: Ensure good ventilation. Avoid breathing mist. If ventilation is inadequate, use approved respiratory protection equipment when airborne exposure limits are exceeded.

Exposure Limits: None

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Amber, clear liquid
Physical state:	Liquid
Odor:	Oil/gasoline-like odor
Odor threshold	No information available
pH:	4.32 (as a 1% w/w solution)
Melting point/freezing point	Data not available
Initial boiling point and boiling range	Data not available
Flash point	>100°C
Evaporation rate	No data
Flammability (solid, gas)	Data not available
Upper/Lower flammability or explosive limits	Not explosive
Vapor pressure	1.04×10^{-6} Pa at 25°C (technical grade active ingredient)
Vapor density	No data available
Relative density	1.005 g/cm^3 at 20°C

Solubility(ies) in water	Data not available *TGAI:* Water solubility 0.0706 mg/L (20°C)
Partition coefficient (n-octanol/water)	No data available on ETX *TGAI: log Pow = 3.49*
Auto ignition temperature	None observed up to 100°C
Decomposition temperature	No data available
Viscosity, kinematic	8.558 cSt at 20°C and 4.969 cSt at 40°C.

TGAI = Technical Grade Active Ingredient

10. STABILITY AND REACTIVITY

Reactivity:	Non-reactive.
Chemical stability:	Stable under normal conditions
Possibility of hazardous reactions:	None known.
Conditions to avoid:	Combustion.
Incompatible materials:	None known.
Hazardous decomposition products:	Combustion or thermal decomposition will evolve toxic oxides of carbon and nitrogen (CO_2, CO, NO_x).

11. TOXICOLOGICAL INFORMATION

The following data were developed using ETX:

Acute Studies:

Oral LD_{50} (rat):	Female: 1,750 mg/kg
Dermal LD_{50} (rat):	>2,000 mg/kg
Inhalation LC_{50} (rat):	>2.13 mg/L (4 hrs)
Eye irritation (rabbit):	Corrosive/severe irritant
Skin irritation (rabbit):	Moderately irritating
Skin sensitization (guinea pig):	Non-sensitizing

Aspiration Hazard - If swallowed, may be aspirated and cause lung damage.

The following data were developed using pyraflufen-ethyl technical:

Subchronic and Chronic Effects:

A 90-day rat feeding study was conducted at dose levels up to 15,000 ppm pyraflufen-ethyl. Liver and kidney effects were observed at the highest dose. The no observed effect level (NOEL) in this study was considered to be 1,000 ppm (~90 mg/kg body weight/day). In a 90-day oral toxicity study in dogs, pyraflufen-ethyl was administered at dose levels up to 1,000 mg/kg body weight/day. No effects in body weight or organ weight, clinical chemistry, hematology, histopathology, or gross pathology were observed. In long term studies, no effects were observed in dogs exposed for one year to a maximum dose of 1,000 mg/kg body weight/day. In a two year rat chronic study, liver and kidney effects were observed at 2,000 ppm. The NOEL was 400 ppm (~20mg/kg body weight/day).

Cancer Effects:

Pyraflufen ethyl was tested in lifetime studies in rats and mice. There was no evidence of carcinogenicity in the rat at doses as high as 10,000 ppm (~470 mg/kg body weight/day). In the mouse study, the incidence of hepatocellular adenomas was increased in mice receiving 5,000 ppm (~ 524 - 547 mg/kg body weight/day), a dose level considered to be in excess of a MTD (maximum tolerated dose). Based on the combined incidence of male mouse hepatocellular adenomas, carcinomas, and/or hepatoblastomas, the EPA has classified pyraflufen-ethyl as "Likely to be Carcinogenic to Humans". The EPA classification of pyraflufen-ethyl represents potential hazard without consideration of exposure information. The active ingredient pyraflufen-ethyl is not classified as a carcinogen by NTP, OSHA, or IARC.

Teratogenicity (Birth Defects):

There is no evidence of developmental toxicity.

Reproductive Effects:

There is no evidence of reproductive toxicity.

Neurotoxicity:

There is no evidence of neurotoxicity after oral exposure in acute or subchronic studies.

Immunotoxicity:

Suppression of the humoral immune response was measured in male rats exposed to 12,000 ppm of pyraflufen-ethyl (equivalent to ~ 943 mg/kg body weight/day) in a 28-day feeding study, the same dose at which systemic toxicity was evident. No humoral immune suppression was observed in female rats at any dose level.

Mutagenicity (Genetic Effects):
There is no evidence of mutagenicity nor genotoxicity.

Toxicity of other components:

Solvent naphtha (petroleum), heavy aromatic
If swallowed, may be aspirated and cause lung damage.

N-methyl-2-pyrrolidone
Clear evidence of adverse effects on sexual function and fertility, and/or development, based on animal experiments.

12. ECOLOGICAL INFORMATION

Ecological data were developed using pyraflufen-ethyl technical.

Environmental Precautions:
This product is toxic to fish and aquatic invertebrates. This product may contaminate water through drift of spray in wind or via runoff events. Use care when applying in areas adjacent to any body of water. Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas. Do not contaminate water when disposing of equipment wash waters or rinsate. Do not apply when weather conditions favor drift from treated areas.

13. DISPOSAL CONSIDERATIONS

General Disposal:
Wastes resulting from the use of this product must be disposed of on site or at an approved waste disposal facility.

Any disposal practice must be in compliance with all federal, state/provincial, and local laws and regulations. State (provincial) and local requirements for waste disposal may be more restrictive or otherwise different from federal laws and regulations. Chemical additions, processing, storage or otherwise altering this material may make the waste disposal information presented in this MSDS incomplete, inaccurate, or otherwise inappropriate. Waste characterization and disposal compliance are the responsibility solely of the party generating the waste or deciding to discard or dispose of the material.

Refer to appropriate federal (RCRA: 40 CFR.261), state/provincial, or local requirements for proper classification information. For regulatory information on the ingredient components, see Section 15.

Do not contaminate water, food, or feed by storage or disposal. Open dumping is prohibited. Pesticide wastes are toxic. Improper disposal of excess pesticide, pesticide spray, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Disposal:
Nonrefillable plastic container. Do not reuse or refill this container. Clean container promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available or reconditioning if appropriate or puncture and dispose of in a sanitary landfill or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

14. TRANSPORT INFORMATION

DOT:	Not regulated.
IATA:	UN 3082, Environmentally hazardous substance, liquid, n.o.s., (pyraflufen-ethyl), Class 9, PG III.
IMDG:	UN 3082, Environmentally hazardous substance, liquid, n.o.s, (pyraflufen-ethyl), Class 9, PG III, Marine Pollutant, EmS: F-A, S-F.

ETX Herbicide/Defoliant is not regulated for transport unless shipped by water or air.

15. REGULATORY INFORMATION

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. The hazard information required on

the pesticide label is reproduced below. The pesticide label also includes other important information, including directions for use.

DANGER
Corrosive. Causes irreversible eye damage.
Harmful if swallowed or absorbed through skin.

U.S. Federal Regulatory Information:
EPA Registration Number: 71711-41
TSCA Inventory: Registered pesticide; exempt from TSCA

SARA Title III Notification and Information:
Section 302 (EHS) Ingredients:
Section 304 (EHS)
or CERCLA Ingredients (RQ):

Name	CAS #	Final Reportable Quantity
Calcium dodecylbenzenesulfonate	26264-06-2	1000 lbs

Section 313 Ingredients:
N-Methyl-2-pyrrolidone (CAS No. 872-50-4)

U.S. State Regulatory Information:
U.S. State Right-to-Know (RTK) Ingredients:
Solvent Naphtha (Petroleum), Heavy Aromatic (CAS No. 64742-94-5)
California Proposition 65 List:

- California Proposition 65: WARNING. This product contains chemicals known to the State of California to cause cancer or birth defects or other reproductive harm.
  - N-Methyl-2-pyrrolidone (CAS No. 872-50-4) - CA DEVELOPMENTAL

16. OTHER INFORMATION

HMIS® Hazard Rating:
Health: 3*
Flammability: 2
Physical Hazard.: 0
*indicates both acute and chronic health hazard

NFPA Hazard Rating:

Health:	3
Flammability:	2
Instability:	0
Specific Hazard:	None

Prepared by: Regulatory Affairs
Date: 12/21/2015
Reason for Editing: Revised section 14.

Disclaimer of Expressed and Implied Warranties:
This information is provided in good faith but without express or implied warranty. Buyer assumes all responsibility for safety and use not in accordance with FIFRA label instructions.

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 PRODUCT IDENTIFIER:
TRADE NAME: **DIURON 4L HERBICIDE**
1.2 RECOMMENDED USE: FOR CONTROL OF MANY ANNUAL AND PERENNIAL GRASSES AND HERBACEOUS WEEDS
1.3 SUPPLIER DETAILS:
LOVELAND PRODUCTS, INC.
P.O. Box 1286 • Greeley, CO 80632-1286
1.4 24 Hour Emergency Phone: 1-800-424-9300 - **Medical Emergencies:** 1-866-944-8565 - **Product Information:** 1-888-574-2878 (LPI-CUST)
U.S. Coast Guard National Response Center: 1-800-424-8802

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to 29 CFR 1910.1200

Acute Toxicity – Oral	Category 4	H302
Skin Corrosion/Irritation	Category 2	H315
Eye Damage/Irritation	Category 2B	H320
Carcinogenicity	Category 2	H351
Aquatic acute toxicity	Category 1	H400
Aquatic chronic toxicity	Category 1	H410

2.2 Label elements

Signal word: WARNING

Hazard Statement:
H302 – Harmful if swallowed.
H320 – Causes eye irritation.
H315 – Causes skin irritation.
H351 – Suspected of causing cancer.
H400 – Very toxic to aquatic life.
H410 – Very toxic to aquatic life with long lasting effects.

Precautionary Statement: (Prevention):
P262 – Do not get in eyes, on skin, or on clothing.
P264 - Wash thoroughly after handling.
P271 – Use only outdoors or in a well-ventilated area.
P280 – Wear protective gloves / eye protection / face protection.
P102 – Keep out of reach of children.

Precautionary Statement: (Response):
P305+P351+P338: IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.
P101 – If medical advice is needed, have the product container or label at hand.
P363 – Wash contaminated clothing before reuse.
P391 – Collect spillage.

Precautionary Statement: (Storage):
P402+P234 – Store above 10°F (-12°C) to keep product from crystallizing. Keep only in original container.
P405 – Store locked up.

2.3 Other hazards
None known

3. COMPOSITION, INFORMATION ON INGREDIENTS

3.1 Substances

3.2 Mixtures

Classification according to 29 CFR 1910.1200

Chemical Name:	CAS No.	Concentration [%]
Diuron	330-54-1	40.00
Other ingredients	n/a	Balance

4. FIRST AID MEASURES

4.1 Description of First Aid Measures

General Advice: Get medical attention if symptoms occur.

If on skin or clothing: Take of contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

If swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

4.2 Most Important Symptoms and Effects, Acute and Delayed

Symptoms: Eyes: Causes eye irritation.
Skin: Causes skin irritation.

4.3 Immediate Medical Attention and Special Treatment

Treatment: Treat symptomatically. Symptoms may be delayed.
FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: **1-866-944-8565**
Take container, label or product name with you when seeking medical attention.

NOTES TO PHYSICIAN: Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE FIGHTING MEASURES

5.1 EXTINGUISHING MEDIA:

Suitable Extinguishing Media: Dry chemical, carbon dioxide (CO_2), alcohol foam, foam, water spray or fog. Do not use water jet as this will spread the fire.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE:

Specific Hazards During Firefighting: During a fire, hazardous by-products can be released.

5.3 SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS

Special Protective Equipment for Firefighters: Self-contained breathing apparatus and full protective gear should be worn in fighting large fires involving chemicals. Use water spray to keep fire exposed containers cool. Keep people away. Isolate fire and deny unnecessary entry.

6. ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Personal Precautions: Avoid inhalation of vapors and spray mist and contact with skin and eyes. Ensure adequate ventilation. Wear suitable protective clothing.

6.2 ENVIRONMENTAL PRECAUTIONS

Environmental Precautions: Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters or rinsate.

6.3 METHODS AND MATERIALS FOR CONTAINMENT AND CLEAN-UP

Methods for Clean-Up: Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. After removal flush contaminated area thoroughly with water.
Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to Remove residual contamination.
Never return spills to original containers for re-use.

7. HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING:

Advice on Safe Handling: Avoid inhalation of mists, vapors / spray and contact with eyes, skin and clothing. Do not breathe mists or vapor. Wear personal protective equipment. Do not use in areas without adequate ventilation. Avoid prolonged exposure. Wash thoroughly after handling. Do not empty into drains. Handle and open container with care. Use care in handling/storage. Wash before eating, drinking and/or smoking.

7.2 CONDITIONS FOR SAFE STORAGE:

Requirements for Storage Areas and Containers: Store above 10°F (-12.2°C) to keep product from crystallizing. Crystals will settle to the bottom of the container. If allowed to crystallize, place in a warm room at 68°F (20°C) for several days to redissolve and roll or shake container or recirculate in mini-bulk or bulk containers to mix well before using. Do not contaminate water, foodstuffs, feed or seed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 CONTROL PARAMETERS:

OCCUPATIONAL EXPOSURE LIMITS

U.S. Workplace Exposure Level (ACGIH) TLVs

Components	Type	Value
Diuron	TLV	10 mg/m^3

U.S. Workplace Exposure Level (OSHA) PELs

Components	Type	Value
No data available.		

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Specimen
No listings		

8.2 EXPOSURE CONTROLS:

Engineering Measures

Provide adequate general and local exhaust ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of vapors and spray mists. Provide eyewash station and safety shower.

Individual Protection Measures:

Eye / Face Protection:	Goggles or shielded safety glasses are recommended.
Skin Protection:	Long-sleeved shirt and long pants. Chemical-resistant gloves, such as polyethylene or polyvinylchloride. Shoes plus socks.
Respiratory Protection:	In case of inadequate ventilation or risk of inhalation of mists or vapors, use suitable respiratory equipment such as MSHA/NIOSH TC-84A with NIOSH equipped N, R, or P class filter media. Wear respiratory protection during operations where spraying or misting occurs. If respirators are used, a program should be in place to assure compliance with 29 CFR 1910.134, the OSHA Respiratory Protection standard. Wear air supplied respiratory protection if exposure concentrations are unknown.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 APPEARANCE : Liquid
ODOR: Slight.
ODOR THRESHOLD: No data available.
COLOR: Light beige.
pH: 7.1
MELTING POINT / FREEZING POINT: No data available
BOILING POINT: No data available
FLASH POINT: Does not flash.
FLAMMABILILITY (solid, gas): No data available.
UPPER / LOWER FLAMMABILITY OR EXPLOSIVE LIMITS: No data available.
VAPOR PRESSURE: No data available.
SOLUBILITY: Dispersible.
PARTITION CO-EFFICIENT, n-OCTANOL / WATER: No data available.
AUTO-IGNITION TEMPERATURE: No data available.
DECOMPOSITION TEMPERATURE: No data available.
VISCOSITY: (kinematic): 580 cps
SPECIFIC GRAVITY (Water = 1): 1.20 g/ml
DENSITY: 10.04 lbs./gal / 1.20 kg/L

Note: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.

10. STABILITY AND REACTIVITY

10.1 REACTIVITY
Stable

10.2 CHEMICAL STABILITY
Stable under normal temperature conditions

10.3 POSSIBILITY OF HAZARDOUS REACTIONS
No data available. Will not polymerize.

10.4 CONDITIONS TO AVOID
Excessive heat and moisture.

10.5 INCOMPATIBILE MATERIALS
Strong acids.

10.6 HAZARDOUS DECOMPOSITION PRODUCTS
Oxides of nitrogen and other unknown hazardous material may be formed in a fire situation. Oxides of carbon and/or other asphyxiants may be formed from incomplete combustion.

11 TOXICOLOGICAL INFORMATION

11.3 LIKELY ROUTES OF EXPOSURE

Eye contact. Skin contact. Ingestion.
LC_{50} (rat): >6.49 mg/L (4 HR)
LD_{50} Oral (rat): > 3,000 mg/kg
LD_{50} Dermal (rat): > 2,000 mg/kg
Acute Toxicity Estimates: No data available
Skin Irritation (rabbit): Causes skin irritation.
Eye Irritation (rabbit): Causes eye irritation
Specific Target Organ Toxicity: Single exposure: No data available.
Aspiration: No data available
Skin Sensitization (guinea pig): Not a sensitizer
Carcinogenicity: Likely to cause cancer in humans (EPA 10/2/2014)
Germ Cell Mutagenicity: No data available
Interactive Effects: None known

12 ECOLOGICAL INFORMATION

12.3 ECOTOXICITY

The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Ecotoxicological Data

	Species	Test Results
Diuron	Rainbow trout	1.95 ppm – 96-hour LC_{50}
	Bluegill	2.8 ppm – 96-hour LC_{50}
	Daphnia magna	1.4 ppm – 48-hour EC_{50}
	Bee	>145 µ/bee – Contact LD_{50}

Drift or runoff may adversely affect non-target plants.
Do not apply directly to water.
Do not contaminate water when disposing of equipment wash water.
Do not apply when weather conditions favor drift from target area.

12.2 PERSISTENCE AND DEGRADABILITY

Biodegradability: No data available

12.3 BIOACCUMULATIVE POTENTIAL

Bioaccumulation: No data available.

12.4 MOBILITY IN SOIL

No data available.

12.5 OTHER ADVERSE EFFECTS

Assessment: No data available.

13 DISPOSAL CONSIDERATIONS

13.1 WASTE TREATMENT METHODS

Wastes may be disposed of on site or at an approved waste disposal facility. Triple rinse (or equivalent), adding rinse water to spray tank. Offer container for recycling or dispose of in a sanitary landfill or by other procedures approved by appropriate authorities. Recycling decontaminated containers is the best option of container disposal. The Agricultural Container Recycling Council (ACRC) operates the national recycling program. To contact your state and local ACRC recycler visit the ACRC web page at http://www.acrecycle.org/. Do not contaminate water, food or feed by storage or disposal.

14 TRANSPORT INFORMATION

14.3 LAND TRANSPORT

DOT Shipping Description: < 30 GALLONS NOT REGULATED BY DOT
DOT Shipping Description: > 30 GALLONS: RQ UN3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (DIURON), 9, III, ERG GUIDE 171
U.S. Surface Freight Classification: COMPOUND, TREE OR WEED KILLING, NOI (NMFC 50320, SUB 2: CLASS: 60)

15 REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS

NFPA & HMIS Hazard Ratings:

NFPA		HMIS	
2 Health	0 Least	2 Health	
0 Flammability	1 Slight	0 Flammability	
0 Instability	2 Moderate	0 Reactivity	
	3 High	B PPE	
	4 Severe		

SARA Hazard Notification/Reporting
SARA Title III Hazard Category:

Immediate	Y	Fire	N	Sudden Release of Pressure	N
Delayed	Y	Reactive	N		

Reportable Quantity (RQ) under U.S. CERCLA: Diuron (CAS: 330-54-1) 100 pounds.
SARA, Title III, Section 313: Diuron (CAS: 330-54-1) 40.0%.
RCRA Waste Code: Not listed.
CA Proposition 65: WARNING: This product contains chemicals known to the State of California to cause cancer or birth defects or other reproductive harm.

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

CAUTION
Harmful if swallowed.
Causes moderate eye irritation.
Avoid breathing spray mist.
Avoid contact with eyes, skin, or clothing.

16 OTHER INFORMATION

SDS STATUS: Sections 1 and 15 revised.
PREPARED BY: Registrations and Regulatory Affairs **REVIEWED BY:** Environmental Health and Safety
EPA REG. NO.: 34704-854

Disclaimer and Limitation of Liability: This data sheet was developed from information on the constituent materials identified herein and does not relate to the use of such materials in combination with any other material or process. No warranty is expressed or implied with respect to the completeness or ongoing accuracy of the information contained in this data sheet, and LOVELAND PRODUCTS, INC. disclaims all liability for reliance on such information. This data sheet is not a guarantee of safety. Users are responsible for ensuring that they have all current information necessary to safely use the product described by this data sheet for their specific purpose.

* * *Section 1 - PRODUCT AND COMPANY IDENTIFICATION* * *

Product Name: Helmquat 3SL

EPA Registration Number: 74530-48

Manufacturer Information

HELM AGRO US, INC.
8275 Tournament Drive, Ste 340
Memphis, TN 38125
info@helmagro.com

Phone: 901-312-1525
Fax: 901-312-1531
Emergency # +1-800-424-9300 ChemTrec

Product Use

Herbicide

* * *Section 2 - HAZARDS IDENTIFICATION* * *

Overview

DANGER_POISON

EMERGENCY OVERVIEW

Color: blue to green
Physical Form: liquid
Odor: faint, characteristic odor
Health Hazards: May be fatal if inhaled. Harmful if swallowed. May cause skin irritation. May cause eye irritation.
Physical Hazards: Corrosive to metals.

POTENTIAL HEALTH EFFECTS

Inhalation

Short Term: May be harmful or fatal if inhaled.
Long Term: No information on significant adverse effects.

Skin

Short Term: May cause irritation.
Long Term: Prolonged or repeated exposure may cause irritation.

Eye

Short Term: May cause irritation.
Long Term: Prolonged or repeated contact may cause irritation.

Ingestion

Short Term: Harmful if swallowed.
Long Term: No information on significant adverse effects.

Potential Environmental Effects

May be harmful to aquatic life.

Regulatory Status

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). This product is a controlled product according to Canada's Controlled Product Regulation.

* * *Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS* * *

CAS	Component	Percent
1910-42-5	Paraquat dichloride	30-60
12125-02-9	Ammonium chloride	1-5
67-56-1	Methyl alcohol	1-5

* * *Section 4 - FIRST AID MEASURES* * *

Inhalation

If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get medical attention immediately.

Skin

Immediately flush contaminated areas with water. Remove contaminated clothing, jewelry and shoes. Get medical attention. Wash contaminated clothing before reuse. Thoroughly clean and dry contaminated clothing and shoes before reuse.

Eyes

Flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention, if needed.

Ingestion

Get medical attention immediately. Contact local poison control center or physician immediately. Do not induce vomiting unless told to do so by the poison control center or doctor. Never give anything by mouth to an unconscious or convulsive person.

* * *Section 5 - FIRE FIGHTING MEASURES* * *

See Section 9 for Flammability Properties

NFPA Ratings: Health: 4 Fire: 1 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Flammable Properties

Slight fire hazard.

Extinguishing Media

regular dry chemical, carbon dioxide, water spray, regular foam

Unsuitable Extinguishing Media

high-pressure water streams

Protective Equipment and Precautions for Firefighters

Wear self-contained breathing apparatus and protective clothing.

Fire Fighting Measures

Move container from fire area if it can be done without risk. Do not scatter spilled material with high-pressure water streams. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

Thermal Decomposition Products

Combustion: oxides of carbon, oxides of chlorine, oxides of nitrogen

* * *Section 6 - ACCIDENTAL RELEASE MEASURES* * *

Personal Precautions

Wear appropriate personal protective equipment recommended in Section 8 of the MSDS.

Methods for Containment

Prevent entry into waterways, sewers, basements, or confined areas.

Environmental Precautions

Keep out of water supplies and sewers.

Methods for Cleanup

Do not touch spilled material. Collect spilled material in appropriate container for disposal. Keep unnecessary people away, isolate hazard area and deny entry.

* * *Section 7 - HANDLING AND STORAGE* * *

Handling Procedures

Do not breathe vapor or mist. Use only with adequate ventilation. Avoid contact with eyes, skin and clothing. Do not eat, drink, or smoke when using this product. Wash thoroughly after handling. Keep away from metals.

Storage Procedures

Store and handle in accordance with all current regulations and standards. Store in a tightly closed container. Store in a cool, dry place. Store in a well-ventilated area. Keep away from incompatible materials. Keep away from metals. Store in corrosive resistant container with a resistant inner liner.

* * *Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION* * *

Component Exposure Limits

Paraquat dichloride (1910-42-5)

OSHA: 0.5 mg/m3 TWA (respirable dust)
prevent or reduce skin absorption
NIOSH: 0.1 mg/m3 TWA (respirable dust)
Potential for dermal absorption

Ammonium chloride (12125-02-9)

ACGIH: 10 mg/m3 TWA (fume)
20 mg/m3 STEL (fume)
NIOSH: 10 mg/m3 TWA (fume)
20 mg/m3 STEL (fume)
Mexico 10 mg/m3 TWA LMPE-PPT (fume)
20 mg/m3 STEL [LMPE-CT] (fume)

Methyl alcohol (67-56-1)

ACGIH: 200 ppm TWA
250 ppm STEL
Skin - potential significant contribution to overall exposure by the cutaneous route
OSHA: 200 ppm TWA; 260 mg/m3 TWA
NIOSH: 200 ppm TWA; 260 mg/m3 TWA
250 ppm STEL; 325 mg/m3 STEL
Potential for dermal absorption
Mexico 200 ppm TWA LMPE-PPT; 260 mg/m3 TWA LMPE-PPT
250 ppm STEL [LMPE-CT]; 310 mg/m3 STEL [LMPE-CT]
Skin - potential for cutaneous absorption

Engineering Controls

Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

Eyes/Face

Wear chemical safety goggles with a faceshield to protect against skin and eye contact when appropriate. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Protective Clothing

Wear appropriate chemical resistant clothing.

Glove Recommendations

Wear appropriate chemical resistant gloves.

Respiratory Protection

Where vapor concentration exceeds or is likely to exceed applicable exposure limits, a NIOSH approved respirator is required.

* * *Section 9 - PHYSICAL AND CHEMICAL PROPERTIES* * *

Physical State:	Liquid	**Appearance:**	Blue to green liquid
Color:	Blue to green	**Physical Form:**	Liquid
Odor:	faint,characteristic odor	**Odor Threshold:**	Not available
pH:	5.35	**Melting Point:**	Not available
Boiling Point:	Not available	**Flash Point:**	No data available
Evaporation Rate:	Not available	**Vapor Pressure:**	Not available
Vapor Density (air = 1):	Not available	**Density:**	1.148 g/ml
Specific Gravity (water = 1):	Not available	**Water Solubility:**	Not available
Coeff. Water/Oil Dist:	Not available	**Viscosity:**	Not available
VOC:	Not available	**Volatility:**	Not available

* * *Section 10 - STABILITY AND REACTIVITY* * *

Chemical Stability

Stable at normal temperatures and pressure.

Conditions to Avoid

Avoid contact with combustible materials.

Materials to Avoid

oxidizing agents, aluminum, copper, zinc

Decomposition Products

Combustion: oxides of carbon, oxides of chlorine, oxides of nitrogen

Possibility of Hazardous Reactions

Will not polymerize.

* * *Section 11 - TOXICOLOGICAL INFORMATION* * *

Acute and Chronic Toxicity

May be harmful or fatal if inhaled. May be harmful if swallowed.

Product Toxicity Data:

Oral: Rat LD50: 1030 mg/kg

Dermal: Rat LD50: >5000 mg/kg

Inhalation: Rat LC50: <0.052 mg/l

Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and the following selected endpoints are published:

Paraquat dichloride (1910-42-5)

Oral: Rat LD50: 57 mg/kg

Dermal: Rat LD50: 80 mg/kg

Dermal: Rabbit LD50: 325 mg/kg

Ammonium chloride (12125-02-9)

Oral: Rat LD50: 1410 mg/kg

Methyl alcohol (67-56-1)

Oral: Rat LD50: 5628 mg/kg

Dermal: Rabbit LD50: 15800 mg/kg

Inhalation: Rat 4-hr LC50: 83.2 mg/L

Inhalation: Rat 4-hr LC50: 64000 ppm

Component Carcinogenicity
None of this product's components are listed by ACGIH, IARC, OSHA, NIOSH, or NTP.

Irritation
May cause irritation of the skin and eyes.

Respiratory Sensitizer
No information available for the product.

Dermal Sensitizer
Not known to be a sensitizing agent.

Carcinogenicity
No information available for the product.

Component Carcinogenicity
None of this product's components are listed by ACGIH, IARC, OSHA, NIOSH, or NTP.

Mutagenic Data
No information available for the product.

Reproductive Effects
No information available for the product.

* * *Section 12 - ECOLOGICAL INFORMATION* * *

Ecotoxicity
May be harmful to aquatic life.

Component Analysis - Aquatic Toxicity

Paraquat dichloride (1910-42-5)

Fish: 96 hr LC50 Cyprinus carpio: 15 mg/l [static]
96 hr LC50 Lepomis macrochirus: 8.5-19 mg/l [static]
96 hr LC50 Oncorhynchus mykiss: 11.0-19.0 mg/l [static]

Invertebrate: 48 hr EC50 Daphnia magna: 9.1 - 12.2 mg/l [static]

Ammonium chloride (12125-02-9)

Fish: 24 hr LC50 Lepomis macrochirus: 725 mg/L
96 hr LC50 Cyprinus carpio: 209 mg/l [static]

Invertebrate: 24 hr LC50 Daphnia magna: 202 mg/l

Methyl alcohol (67-56-1)

Fish: 96 hr LC50 Pimephales promelas: 28200 mg/l [flow-through]
96 hr LC50 Pimephales promelas: >100 mg/l [static]
96 hr LC50 Oncorhynchus mykiss: 19500 - 20700 mg/l [flow-through]
96 hr LC50 Oncorhynchus mykiss: 18 - 20 ml/l [static]
96 hr LC50 Lepomis macrochirus: 13500 - 17600 mg/l [flow-through]

* * *Section 13 - DISPOSAL CONSIDERATIONS* * *

Disposal Methods
Dispose in accordance with all applicable regulations. Keep out of water supplies, sewers and soil.

Component Waste Numbers

Methyl alcohol (67-56-1)

RCRA: waste number U154 (Ignitable waste)

* * *Section 14 - TRANSPORT INFORMATION* * *

US DOT Information

Shipping Name: Corrosive liquids, toxic, n.o.s. (Contains: Paraquat dichloride)
UN/NA #: UN2922 **Hazard Class:** 8 **Packing Group:** III

Required Label(s): 8, 6.1

TDG Information

Shipping Name: Corrosive liquid, toxic, n.o.s. (Contains: Paraquat dichloride)
UN #: UN2922 **Hazard Class:** 8 **Packing Group:** III
Required Label(s): 8, (6.1)

* * *Section 15 - REGULATORY INFORMATION* * *

U.S. Federal Regulations

This material contains one or more of the following chemicals required to be identified under SARA Section 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

Paraquat dichloride (1910-42-5)

SARA 302: 10 lb lower TPQ; 10000 lb upper TPQ
10 lb EPCRA RQ
SARA 304: 10 lb EPCRA RQ

Ammonium chloride (12125-02-9)

CERCLA: 5000 lb final RQ; 2270 kg final RQ

Methyl alcohol (67-56-1)

CERCLA: 5000 lb final RQ; 2270 kg final RQ

SARA 311/312

Acute Health: Yes **Chronic Health:** No **Fire:** No **Pressure:** No **Reactive:** No

U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA
Paraquat dichloride	1910-42-5	Yes	Yes	Yes	Yes	Yes
Ammonium chloride	12125-02-9	Yes	Yes	Yes	Yes	Yes
Methyl alcohol	67-56-1	Yes	Yes	Yes	Yes	Yes

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING! This product contains a chemical known to the state of California to cause cancer.

WARNING! This product contains a chemical known to the state of California to cause reproductive/developmental effects.

Canada

This product has been classified in accordance with the criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

Canadian WHMIS Ingredient Disclosure List (IDL)

Components of this material have been checked against the Canadian WHMIS Ingredients Disclosure List. The List is composed of chemicals which must be identified on MSDSs if they are included in products which fall under WHMIS criteria specified in the Controlled Products Regulations and present above the threshold limits listed on the IDL.

Ammonium chloride (12125-02-9)

1 %

Methyl alcohol (67-56-1)

1 %

WHMIS Classification

D1A, D2B.

Component Analysis - Inventory

Component	CAS	US	CA	EU	AU	PH	JP	KR	CN	NZ
Paraquat dichloride	1910-42-5	No	No	EIN	Yes	Yes	Yes	Yes	No	Yes
Ammonium chloride	12125-02-9	Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	Yes
Methyl alcohol	67-56-1	Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	Yes

* * *Section 16 - OTHER INFORMATION* * *

Summary of Changes

Revision 2.0000, 20 March 2013: Major corrections in section 2 'physical hazards' and section 14 'transport information'.

Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States

Other Information

SELLER MAKES NO WARRANTY, EXPRESS OR IMPLIED, CONCERNING THE PRODUCT OR THE MERCHANTABILITY OR FITNESS THEREOF FOR ANY PURPOSE, except that the product shall conform to contracted specifications, and that the product does not infringe any valid United States or Canadian patent. No claim of any kind shall be greater in amount than the purchase price of the quantity of product in respect of which damages are claimed. In no event shall Seller be liable for incidental or consequential damages, whether Buyer's claim is based on contract, breach of warranty, negligence or otherwise.

End of Sheet 74530-48

Safety Data Sheet

BOLERO® UltraMax

1. IDENTIFICATION: CHEMICAL PRODUCT AND COMPANY

PRODUCT NAME: BOLERO® UltraMax
EPA REGISTRATION NUMBER: 59639-112
VC NUMBER(S): 1403
SYNONYM(S): None
PRODUCT DESCRIPTION: Rice herbicide

MANUFACTURER/DISTRIBUTOR
VALENT U.S.A. CORPORATION
P.O. Box 8025
1600 Riviera Avenue, Suite 200
Walnut Creek, CA 94596-8025

EMERGENCY TELEPHONE NUMBERS
HEALTH EMERGENCY OR SPILL (24 hr):
(800) 892-0099
TRANSPORTATION (24 hr.): CHEMTREC
(800) 424-9300 or (202) 483-7616

PRODUCT INFORMATION
AGRICULTURAL PRODUCTS: (800) 682-5368

The current MSDS is available through our website (www.valent.com), or by calling the product information numbers listed above.

2. HAZARDS IDENTIFICATION

For EPA FIFRA-specific information see Section 15

Classification

Acute toxicity - Inhalation (Dusts/Mists)	Category 4

Label elements

EMERGENCY OVERVIEW

WARNING

Hazard statements
Harmful if inhaled

Precautionary Statements - Prevention
Read product label prior to using this product. For specific handling instruction refer to Section 7, Handling and Storage

Precautionary Statements - Response
See Section 4, First Aid Measures

Precautionary Statements - Storage
For information on Storage and Handling see Section 7.

Precautionary Statements - Disposal
For further information on product and container disposal see Section 13.

Hazards not otherwise classified (HNOC)
Other Information
• Very toxic to aquatic life
• Very toxic to aquatic life with long lasting effects
100% of the mixture consists of ingredient(s) of unknown toxicity

For information on Transportation requirements see Section 14.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	Weight/ Percent	TRADE SECRET
Thiobencarb (S-[(4-chlorophenyl)methyl] diethylcarbamothioate)	28249-77-6	14 - 17	
Magnesium silicate, hydrated †	63800-37-3	82.1 - 87.1	
Hydrated amorphous silica †	7631-86-9	82.1 - 87.1	
Quartz (crystalline silica)	14808-60-7	trace	

* The chemical name, CAS number and/or exact percentage have been withheld as a trade secret

Other ingredients, which may be maintained as trade secrets, are any substances other than an active ingredient contained in this product. Some of these may be hazardous, but their identities are withheld because they are considered trade secrets. The hazards associated with the other ingredients are addressed in this document. Specific information on other ingredients for the management of exposures, spills, or safety assessments can be obtained by a treating physician or nurse by calling **(800) 892-0099** at any time.

4. FIRST AID MEASURES

EMERGENCY NUMBER (800) 892-0099

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact **1-800-892-0099** for emergency medical treatment information.

EYE CONTACT:
Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

SKIN CONTACT:
Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

INGESTION:
Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. DO NOT induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

INHALATION:
Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

NOTES TO PHYSICIAN:
Thiobencarb is a cholinesterase inhibitor. If signs of cholinesterase inhibition appear, atropine is antidotal.

5. FIRE FIGHTING MEASURES

Flash point °F Not applicable
FLAMMABLE LIMITS IN AIR - LOWER (%): Not applicable
FLAMMABLE LIMITS IN AIR - UPPER (%): Not applicable

NFPA RATING:

Health:	1
Flammability:	1
Reactivity:	0
Special:	None

(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using professional judgement. Values were not available in the guidelines or published evaluations prepared by the National Fire Protection Association, NFPA.

HAZARDOUS DECOMPOSITION PRODUCTS: Normal combustion forms carbon dioxide, water vapor and may produce: Oxides of sulfur, nitrogen compounds and toxic chlorine compounds. Incomplete combustion can produce carbon monoxide.

6. ACCIDENTAL RELEASE MEASURES

VALENT EMERGENCY PHONE NUMBER: (800) 892-0099
CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300
OBSERVE PRECAUTIONS IN SECTION 8: PERSONAL PROTECTION
Stop the source of the spill if safe to do so. Contain the spill to prevent further contamination of the soil, surface water, or ground water. For additional spill response information refer to the North American Emergency Response Guidebook.

UN/NA NUMBER: Not applicable **EMERGENCY RESPONSE GUIDEBOOK NO.:** Not applicable

FOR SPILLS ON LAND:

CONTAINMENT: Reduce airborne dust. Avoid runoff into storm sewers or other bodies of water.

CLEANUP: Clean up spill immediately. Vacuum or sweep up material and place in a chemical waste container. Wash area with soap and water. Pick up wash liquid with additional absorbent and place in a chemical waste container.

FOR SPILLS IN WATER:

CONTAINMENT: This material is miscible/dispersible in water. Stop or reduce contamination of any water. Isolate contaminated water.

CLEANUP: Remove contaminated water for treatment or disposal.

7. HANDLING AND STORAGE

END USER MUST READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.

HANDLING:

Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing. Use this material only in well ventilated areas. If operating conditions result in airborne concentrations of this material, the use of an approved respirator is recommended.

STORAGE:

Keep pesticide in original container only. Do not put concentrate into food or drink containers. Do not dilute concentrate in food or drink containers. Store in cool, dry, secure place. Protect from excessive heat.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

END USER MUST READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.

EYES & FACE: Do not get this material in your eyes. Eye contact can be avoided by wearing safety goggles or a face shield.

RESPIRATORY PROTECTION: Use this material only in well ventilated areas. If ventilation is not adequate to keep airborne concentrations below recommended exposure standards, approved respiratory protection should be worn.

SKIN & HAND PROTECTION: Avoid contact with skin or clothing. Skin contact can be minimized by wearing protective clothing including gloves.

EXPOSURE LIMITS

Chemical Name	ACGIH Exposure Limits	OSHA Exposure Limits	Manufacturer's Exposure Limits
Thiobencarb (S-[(4-chlorophenyl)methyl] diethylcarbamothioate)	None	None	None
Magnesium silicate, hydrated †	None	None	None
Hydrated amorphous silica †	10 mg/m³ TWA (total amorphous dust) 3 mg/m³ TWA (respirable nuisance particles)	6 mg/m³ (total dust)	None
Quartz (crystalline silica)	None	(10)/(%SiO2 + 2) mg/m³ TWA (250)/(%SiO2 + 5) mppcf TWA (30)/(%SiO2 + 2) mg/m³ TWA	None

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	Solid		
Appearance	dry, free flowing granules	**Odor**	No information available
Color	Tan	**Odor threshold**	No information available

PROPERTIES	Values	Remarks • Method
pH	7.7 at 25°C (1% suspension)	
Melting point/freezing point	No information available	
Boiling point/boiling range	No information available	
Flash point	Not applicable	

Evaporation rate	No information available
Flammability (solid, gas)	No information available
Flammability Limits in Air	
Upper flammability limits	No information available
Lower flammability limit	No information available
Vapor pressure	No information available
Vapor density	No information available
Specific Gravity	No information available
Water solubility	Dispersible
Solubility in other solvents	No information available
Partition coefficient	No information available
Autoignition temperature	No information available
Decomposition temperature	No information available
Viscosity	Not applicable
Explosive properties	No information available
Oxidizing properties	No information available
Density	No information available
Bulk density	0.754 g/mL = 47.0 lb/cu ft

10. STABILITY AND REACTIVITY

Reactivity
No data available

Chemical stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

Conditions to avoid
Extremes of temperature and direct sunlight.

Incompatible materials
None known based on information supplied.

Hazardous Decomposition Products
None known based on information supplied.

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY:

There is no toxicology information available for this product. The following information is for a similar product.

Oral Toxicity LD_{50} (rats)	> 5,000 mg/kg	EPA Tox Category	IV
Dermal Toxicity LD_{50} (rabbits)	> 5,000 mg/kg	EPA Tox Category	IV
Inhalation Toxicity LC_{50} (rats)	> 2.55 mg/L (4h)	EPA Tox Category	IV
Eye Irritation (rabbits)	Slightly irritating	EPA Tox Category	III
Skin Irritation (rabbits)	Slightly irritating	EPA Tox Category	IV
Skin Sensitization (guinea pigs)	Non-sensitizer	EPA Tox Category	Not applicable

CARCINOGEN CLASSIFICATION

Chemical Name	IARC	ACGIH	NTP Carcinogen List
Thiobencarb (S-[(4-chlorophenyl)methyl] diethylcarbamothioate)	Not listed	Not listed	Not listed
Magnesium silicate, hydrated †	Group 3	Not listed	Not listed
Hydrated amorphous silica †	Group 3	Not listed	Not listed
Quartz (crystalline silica)	Group 1	A2	Known Carcinogen

TOXICITY OF THIOBENCARB TECHNICAL

SUBCHRONIC: The dermal administration of Bolero 8 EC to rats, six hours per day, five days per week for three weeks, at doses up to 500 mg/kg/day caused reduced body weight gains, body weight and food efficiency. Slight increases in red, dry and flaky skin were observed. The LOEL was 40 mg/kg/day. An eight week dietary range-finding study in rats with thiobencarb technical at doses up to 450 mg/kg/day produced effects consistent with poor palatability (taste) such as weight loss, decreased food consumption, etc. In a 4-week oral toxicity study with thiobencarb technical in dogs with doses of 1, 4, 16 and 64 mg/kg/day, the primary observation was decreased plasma cholinesterase values in the 16 and 64 mg/kg/day dose groups

CHRONIC/CARCINOGENICITY: Prolonged administration of the active ingredient thiobencarb technical to rats, mice and dogs did not increase their incidence of cancer over that of untreated animals. The primary significant findings were generally attributable to the poor palatability of the diet (e.g. weight loss). The 2 year mouse oncogenicity study demonstrated no oncogenic potential. The systemic NOEL was 3 mg/kg/day for males and 5 mg/kg/day for females based on histopathological changes in the liver. The 2-year rat oncogenicity study showed no carcinogenicity at 25 mg/kg/day and a systemic NOEL of 1 mg/kg/day based on decreased body weight gain, food consumption and efficiency and increased blood urea nitrogen. A 1-year dog study showed a systemic NOEL of 8 mg/kg/day based on decreased body weight gain, increased liver and kidney weights, and hematological and clinical chemistry changes, and a plasma cholinesterase NOEL of 1 mg/kg/day.

NEUROTOXICITY: Based on acute and subchronic (13-week) studies in rats, thiobencarb technical is not expected to be neurotoxic. The systemic and neurobehavioral NOEL in the rat acute study was 100 mg/kg based on increased clinical signs and gait abnormalities, decreased sensory responses, decreased body temperature and decreased motor activity. In the subchronic study, the systemic NOEL was 2 mg/kg/day based on increased clinical signs, decreased body weights, and increased liver and kidney weights. The neurotoxicity NOEL was > 100 mg/kg/day, the highest dose tested.

DEVELOPMENTAL TOXICITY: Thiobencarb technical did not cause birth defects when tested in experimental animals. Teratology studies conducted in rats with 5, 25 and 150 mg/kg for gestation days 6 to 19 show no teratogenic effects at any dose level. Treatment with 150 mg/kg did, however, result in reduced maternal body weight gain and in reduced fetal weights. The maternal and developmental NOELs are 25 mg/kg/day. A teratology study was also conducted in rabbits at dose levels of 2, 20 and 100 mg/kg/day for the day 7-29 gestation period. Maternal body weight gain and mean fetal weights were reduced at 20 and 100 mg/kg/day dose levels, but there were no teratogenic effects. Shortening the treatment period in rabbits to gestation day 6 - 18 reduced maternal and fetal toxicity. Treatment with 20, 100 and 200 mg/kg/day produced no fetal toxicity, teratogenicity or significant maternal effects. Therefore, the maternal NOEL is 100 mg/kg/day and the developmental NOEL is 200 mg/kg/day (the highest dose tested).

REPRODUCTION: Two generation reproduction studies conducted with thiobencarb technical in rats at dose levels ranging from 2 to 100 mg/kg/day did not impair reproductive performance. Relative and absolute liver and kidney weights were increased in both F0 and F1 generations at 20 and 100 mg/kg/day. Decreased body weight gain was observed at 100 mg/kg/day in both generations of the male and in the F1 female generation. The reproductive toxicity NOEL was 100 mg/kg/day.

MUTAGENICITY: Thiobencarb technical is not expected to pose a genetic hazard. It has been studied in in vitro assays for gene mutation, structural chromosome aberrations and DNA damage/repair as well as in vivo assays measuring micronucleus formation and in the dominant lethal assay. The results for all tests except the in vivo micronucleus test were negative. This single report of a positive response is not cause for concern when evaluated in the context of the oncogenicity, teratogenicity and reproductive toxicity studies.

TOXICITY OF OTHER INGREDIENTS:
This product contains crystalline silica. Repeated inhalation of the dust may cause insidious lung injury and possibly silicosis. In patients with silicosis, areas of the lung become filled with scar tissue. The signs and symptoms may include cough, shortness of breath, difficulty in breathing, and loss of weight. The disease can progressively worsen and result in death. In their Monograph - Volume 42, the International Agency for Research on cancer (IARC) classified crystalline silica as a probable human carcinogen. Users of this product should confirm that their operating, storage, and distribution facilities comply with the OSHA Hazard Communication Standard (29 CFR 1910.1200) for all materials containing more than 0.1% crystalline silica. Employee exposures to airborne crystalline silica dust should be controlled to below the OSHA 8 hour PEL for the particular type of crystalline silica present.

For a summary of the potential for adverse health effects from exposure to this product, refer to Section 2. For information regarding regulations pertaining to this product, refer to Section 15.

12. ECOLOGICAL INFORMATION

AVIAN TOXICITY: Thiobencarb technical is practically nontoxic to birds. Test results include:

Oral LD_{50} Northern bobwhite: >1938 mg/kg
Oral LC_{50} (feeding for 8 weeks) Northern bobwhite: >5620 ppm
Oral LC_{50} (feeding for 5 days) Mallard duck: >5000 ppm
Reproduction (Northern bobwhite): NOEC: 267 ppm, LOEC: 930 ppm
Reproduction (Mallard duck): NOEC: 100 ppm, LOEC: 300 ppm

AQUATIC ORGANISM TOXICITY: Freshwater species: Thiobencarb technical is moderately to highly toxic to freshwater fish and invertebrates. Studies with the technical material and the formulated product show that the LC50's were generally greater than 1 ppm. The following LC_{50} values summarize the acute toxicity findings for Bolero 8 EC:

Bluegill sunfish: 1.7 ppm
Rainbow trout:: 1.1 ppm
Channel catfish: 2.3 ppm
Daphnid: 0.17 ppm
Scud Gammarus: 1.0 ppm
Apple snail: 1.85 ppm

Thiobencarb technical can inhibit the reproduction in freshwater invertebrates (Daphnid) at concentrations as low as 3.0 µg/L. Marine/estuarine species: Thiobencarb technical and Bolero 8 EC are moderately to highly acutely toxic to marine/estuarine fish and invertebrates.

OTHER NON-TARGET ORGANISM TOXICITY: Exposure of non-target organisms such as honey bees is not expected under normal use conditions of products containing Thiobencarb Technical.

OTHER ENVIRONMENTAL INFORMATION:
This product is toxic to fish and shrimp. Do not apply directly to water, to areas where surface water is present or to intertidal areas below mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash-waters. See Directions for Use on product label for additional precautions and restrictions.

13. DISPOSAL CONSIDERATIONS

END USERS MUST DISPOSE OF ANY UNUSED PRODUCT AS PER THE LABEL RECOMMENDATIONS.

PRODUCT DISPOSAL: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL: Nonrefillable outer bag. Do not reuse or refill the outer bag. Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

DISPOSAL METHODS: Do not contaminate water, food or feed by storage, disposal or cleaning of equipment. Open dumping is prohibited. Check government regulations and local authorities for approved disposal of this material. Dispose in accordance with applicable laws and regulations.

14. TRANSPORTATION INFORMATION

DOT (ground) SHIPPING NAME:	Not regulated for domestic ground transport by U.S. DOT
EMERGENCY RESPONSE GUIDEBOOK NO.:	Not applicable
ICAO/IATA PROPER SHIPPING NAME:	UN 3082 Environmentally Hazardous Substance, Solid, N.O.S. (Thiobencarb), 9, III, Marine Pollutant
REMARKS:	Single or inner packaging less than 5 L (liquid) or 5 Kg net (solids) excepted from Dangerous Goods regulations -- see UN Special Provision 375. For U.S. Shipping, Emergency Response Guidebook No. 171
IMDG PROPER SHIPPING NAME:	UN 3082 Environmentally Hazardous Substance, Solid, N.O.S. (Thiobencarb), 9, III, Marine Pollutant
EMS NO.:	F-A, S-F

15. REGULATORY INFORMATION

EPA-FIFRA LABEL INFORMATION THAT DIFFERS FROM OSHA-GHS REQUIREMENTS:

This material is a pesticide product registered by the EPA under FIFRA and is subject to certain labeling requirements under federal pesticide law. These requirements may differ from the classification criteria and hazard information required by OSHA GHS for safety data sheets, and for workplace labels of non-pesticide chemicals. The following is the hazard information as required on the FIFRA pesticide label:

- ***EPA FIFRA SIGNAL WORD: CAUTION***
- ***Causes eye irritation***
- ***Avoid contact with eyes, skin and clothing***
- ***Avoid breathing dust***
- ***Keep out of reach of children***

PESTICIDE REGULATIONS: All pesticides are governed under FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act). Therefore, the regulations presented below are pertinent only when handled outside of the normal use and applications of pesticides. This includes waste streams resulting from manufacturing/formulation facilities, spills or misuse of products, and storage of large quantities of products containing hazardous or extremely hazardous substances.

U.S. FEDERAL REGULATIONS: Ingredients in this product are reviewed against an inclusive list of federal regulations. Therefore, the user should consult appropriate authorities. The federal regulations reviewed include: Clean Water Act, SARA, CERCLA, RCRA, DOT, TSCA and OSHA. If no components or information is listed in the space below this paragraph, then none of the regulations reviewed are applicable.

Thiobencarb (S-[(4-chlorophenyl)methyl] diethylcarbamothioate)

SARA 313 Chemicals	1.0% de minimis concentration

SARA (311, 312):

Immediate Health:	Yes
Chronic Health:	Yes
Fire:	No
Sudden Pressure:	No
Reactivity:	No

STATE REGULATIONS: Each state may promulgate standards more stringent than the federal government. This section cannot encompass an inclusive list of all state regulations. Therefore, the user should consult state or local authorities. The state regulations reviewed include: California Proposition 65, California Directors List of Hazardous Substances, Massachusetts Right to Know, Michigan Critical Materials List, New Jersey Right to Know, Pennsylvania Right to Know, Rhode Island Right to Know and the Minnesota Hazardous Substance list. For Washington State Right to Know, see Section 8 for Exposure Limit information. For Louisiana Right to Know refer to SARA information listed under U.S. Regulations above. If no components or information is listed in the space below this paragraph, then none of the regulations reviewed are applicable.

Thiobencarb (S-[(4-chlorophenyl)methyl] diethylcarbamothioate)

California - Directors List of Hazardous Substances	Present
NJ Right To Know	3472

Hydrated amorphous silica †

California - Directors List of Hazardous Substances	Present
MA Right To Know	Present
NJ Right To Know	1655
PA Right To Know	Present
MN Hazardous Substance	Carcinogen

Quartz (crystalline silica)

California Proposition 65	carcinogen
MA Right To Know	Carcinogen Extraordinarily hazardous
NJ Right To Know	1660
PA Right To Know	Present
RI Right To Know	Listed
MN Hazardous Substance	Carcinogen

For information regarding potential adverse health effects from exposure to this product, refer to Sections 2 and 11.

16. OTHER INFORMATION

REASON FOR ISSUE:	Updated information to meet OSHA Hazcom 2012 (GHS) regulations.
SDS NO.:	0351
EPA REGISTRATION NUMBER:	59639-112
REVISION NUMBER:	1
REVISION DATE:	12/13/2013
SUPERCEDES DATE:	
RESPONSIBLE PERSON(S):	Valent U.S.A. Corporation, Corporate EH&S, (925) 256-2803

This Safety Data Sheet (SDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-APPROVED PRODUCT LABELING (attached to and accompanying the product container). This SDS provides important health, safety, and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course.

Use, storage and disposal of pesticide products is regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling. All necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling. It is a violation of federal law to use a pesticide product in any manner not prescribed on the EPA-approved label.

The information in this SDS is based on data available to us as of the revision date given herein, and believed to be correct. Contact Valent U.S.A. Corporaton to confirm if you have the most current SDS.

Judgements as to the suitability of information herein for the individual's own use or purposes are necessarily the individual's own responsibility. Although reasonable care has been taken in the preparation of such information, Valent extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the individual's purposes or the consequences of its use.

2013 Valent U.S.A. Corporation

Safety Data Sheet

syngenta®

GRAMOXONE® SL 2.0

Date: 7/8/2015

Replaces: 3/10/2015

1. PRODUCT IDENTIFICATION

Product identifier on label: **GRAMOXONE® SL 2.0**

Product No.: A7813Q

Use: Herbicide

Manufacturer: Syngenta Crop Protection, LLC
Post Office Box 18300
Greensboro NC 27419

Manufacturer Phone: 1-800-334-9481

Emergency Phone: 1-800-888-8372

2. HAZARDS IDENTIFICATION

Classifications:

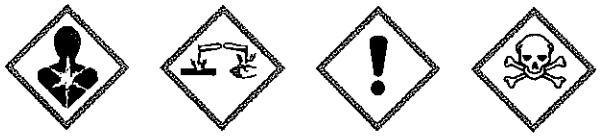
Skin Corrosion/Irritation: Category 2
Specific Target Organ Toxicity: Single Category 1
Corrosive to Metals: Category 1
Oral: Category 4
Specific Target Organ Toxicity: Repeated Category 1
Inhalation: Category 1

Signal Word (OSHA): Danger

Hazard Statements:

May be corrosive to metals
Harmful if swallowed
Causes skin irritation
Fatal if inhaled
Causes damage to organs
Causes damage to organs through prolonged or repeated exposure

Hazard Symbols:



Precautionary Statements:

Keep only in original container.
Do not breathe mist, vapors, spray.
Wash hands and face thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Wear protective gloves, protective clothing, eye protection.
In case of inadequate ventilation wear respiratory protection. See Section 8 Exposure Control/Personal Protection.

If swallowed: Call a poison center, doctor or Syngenta if you feel unwell. Rinse mouth.

If on skin: Wash with plenty of soap and water.

If skin irritation occurs: Get medical advice.

If inhaled: Remove person to fresh air and keep comfortable for breathing.

If exposed or concerned: Call a poison center, doctor or Syngenta.

Immediately call a poison center, doctor or Syngenta.

Get medical advice if you feel unwell.

Specific treatment is urgent (see Section 4 First Aid Measures).

Take off contaminated clothing and wash it before reuse.

Absorb spillage to prevent material damage.

Store locked up.

Store in corrosive resistant plastic, plastic-lined steel, stainless steel or fiberglass container.

Dispose of contents and container in accordance with local regulations.

Other Hazard Statements: Flammable hydrogen gas may be formed on contact with incompatible metals. See "Conditions to Avoid", Section 10.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Common Name	CAS Number	Concentration
Other ingredients	Other ingredients	Trade Secret	69.9%
(1,1'-dimethyl-4,4'-bipyridinium dichloride)	Paraquat Dichloride	1910-42-5	30.1%

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.

4. FIRST AID MEASURES

Have the product container, label or Safety Data Sheet with you when calling Syngenta (800-888-8372), a poison contol center or doctor, or going for treatment.

Ingestion: SPEED IS ESSENTIAL. Immediate medical attention is required. If available, give an adsorbent such as activated charcoal, bentonite or Fuller's Earth.
Call a poison control center or doctor immediately for treatment advice.
Do not give anything by mouth to an unconscious person.

Eye Contact: If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.

Skin Contact: If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.

Inhalation: Move person to fresh air.
The odor of this product is from the stenching agent, which has been added, not from the paraquat.
If person is not breathing, call 911 or an ambulance.
Call a poison control center or doctor for further treatment advice.

Most important symptoms/effects:

Skin irritation

Indication of immediate medical attention and special treatment needed:

Refer to the booklet 'Paraquat Poisoning. A Practical guide to Diagnosis, First Aid and Hospital Treatment'. (http://www.syngenta.com/pqmedguide/) Administer either activated charcoal (100 g for adults or 2 g/kgbody weight in children) or Fuller's Earth (15% solution; 1 liter for adults or 15 ml/kg body weight in children). NOTE: The use of gastric lavage without administration of an adsorbent has not shown any clinical benefit. Do not use supplemental oxygen. Eye splashes from concentrated material should be treated by an eye specialist after initial treatment. With the possibility of late onset corneal ulceration, it is advised that patients with paraquat eye injuries are reviewed by an eye specialist the day after first presentation. Use treatment that is appropriate for chemical burns. Intact skin is an effective barrier to paraquat, however, contact with irritated or cut skin or repeated contact with intact skin may result in poisoning.

5. FIRE FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media:

Use dry chemical, foam or CO2 extinguishing media. If water is used to fight fire, dike and collect runoff.

Specific Hazards:

Hydrolyzes in alkaline media. This product reacts with aluminum to produce hydrogen gas. Do not mix or store in containers or systems made of aluminum or having aluminum fittings.

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

Special protective equipment and precautions for firefighters:

Wear full protective clothing and self-contained breathing apparatus. Evacuate nonessential personnel from the area to prevent human exposure to fire, smoke, fumes or products of combustion.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures:

Follow exposure controls/personal protection outlined in Section 8.

Methods and materials for containment and cleaning up:

Untreated spilled material can dry to a highly irritating dust.

Control the spill at its source. Contain the spill to prevent from spreading or contaminating soil or from entering sewage and drainage systems or any body of water. Clean up spills immediately, observing precautions outlined in Section 8. Cover entire spill with absorbing material and place into compatible disposal container. Scrub area with hard water detergent (e.g. commercial products such as Tide, Joy, Spic and Span). Pick up wash liquid with additional absorbent and place into compatible disposal container. Once all material is cleaned up and placed in a disposal container, seal container and arrange for disposition.

7. HANDLING AND STORAGE

Precautions for safe handling:

Store above 32°F (0°C).

Avoid contact with skin and eyes. Avoid inhalation of high concentrations of dusts. Avoid inhalation of liquid aerosols. Empty container retains product residue. Triple rinse, or equivalent, empty container, return rinse water to dilution mixture, and dispose of dilution mixture as a hazardous waste if it cannot be disposed of by use according to label instructions. Do not reuse container.

Store the material in a well-ventilated, secure area out of reach of children and domestic animals. Do not store food, beverages or tobacco products in the storage area. Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

Conditions for safe storage, including any incompatibilities:

Store locked up.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION AND PACKAGING OF THIS PRODUCT.

FOR COMMERCIAL APPLICATIONS AND/OR ON-FARM APPLICATIONS CONSULT THE PRODUCT LABEL.

Occupational Exposure Limits:

Chemical Name	OSHA PEL	ACGIH TLV	Other	Source
Other ingredients	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Paraquat Dichloride	0.5 mg/m³ TWA (respirable; skin; as paraquat)	Not Established	0.01 mg/m³ TWA (inhalable); 0.03 mg/m³ STEL (inhalable)	Syngenta

Appropriate engineering controls:

Use effective engineering controls to comply with occupational exposure limits (if applicable).

Individual protection measures:

Ingestion:

Store the material in a well-ventilated area out of the reach of children and domestic animals. Do not store food, beverages, or tobacco products in the storage area. Prevent eating, drinking, tobacco usage and cosmetic application in areas where there is a potential for exposure to the material. Always wash thoroughly after handling.

Eye Contact:

To avoid eye contact, wear safety glasses with side shields or chemical goggles.

Skin Contact:

This product is FIFRA regulated. Refer to product labeling for end-user Personal Protection requirements. When handling or when exposure to concentrate is possible, wear: long-sleeved shirt and long pants, waterproof gloves, shoes and socks, face shield and chemical-resistant apron. Remove any contaminated clothing promptly. Syngenta conducted ASTM permeation tests using PVC gloves (0.2mm thickness) and showed no breakthrough of the product after eight hours of testing.

Inhalation:

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below exposure limits. The potential for overexposure in manufacturing operations is low. However, a NIOSH-certified combination air-purifying respirator with an N, P or R 95 or HE class filter and an organic vapor cartridge may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits (for example, where spray mists may be generated). Protection provided by air-purifying respirators is limited. Use a pressure demand atmosphere-supplying respirator if there is any potential for uncontrolled release, exposure levels are not known, or under any other circumstances where air-purifying respirators may not provide adequate protection.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Bluish green liquid

Odor: Characteristic, strong

Odor Threshold: Not Available

pH: 6.5 - 7.5 (100% @ 68 - 77°F)

Melting point/freezing point: Not Available

Initial boiling point and boiling range: Not Available

Flash Point (Test Method): 103°C

Flammable Limits (% in Air): Not Available

Flammability: Not Available

Vapor Pressure: Paraquat Dichloride 7.5 x 10(-8) mmHg @ 77°F (25°C)

Vapor Density: Not Available

Relative Density: 1.07 - 1.13 g/ml @ 68°F ; 9.12 lbs/gal

Solubility (ies): Paraquat Dichloride 620 g/l @ 68°F (20°C)

Partition coefficient: n-octanol/water: Not Avaliable

Autoignition Temperature: Not Available

Decomposition Temperature: Not Available

Viscosity: Not Available

Other: None

10. STABILITY AND REACTIVITY

Reactivity: Not reactive.

Chemical stability: Stable under normal use and storage conditions.

Possibility of hazardous reactions: Will not occur.

Conditions to Avoid: Store above 32°F (0°C).
Stable in acidic and neutral solution. Decomposed by alkali and in the presence of U.V. light. Compound inactivated by adsorption onto inert clay.

Incompatible materials: None known.

Hazardous Decomposition Products: Combustion products of dry material: Carbon dioxide, carbon monoxide, chlorine, hydrogen chloride, possible trace amounts of phosgene, nitrogen oxides, ammonia, and other toxic and noxious fumes.

11. TOXICOLOGICAL INFORMATION

Health effects information

Likely routes of exposure: Dermal, Inhalation

Symptoms of exposure: Skin irritation, Respiratory irritation

Delayed, immediate and chronic effects of exposure: Kidney, liver damage, Skin irritation, Respiratory irritation

Numerical measures of toxicity (acute toxicity/irritation studies (finished product))

Ingestion:	Oral (LD50 Female Rat) :	1098 mg/kg body weight
Dermal:	Dermal (LD50 Rat) :	> 2000 mg/kg body weight
Inhalation:	Inhalation (LC50 Rat) :	0.0006 mg/l air - 4 hours (data based on similar formulation[s])
Eye Contact:	Mildly Irritating (Rabbit)	
Skin Contact:	Moderately Irritating (Rabbit)	
Skin Sensitization:	Not a Sensitizer (Guinea Pig)	

Reproductive/Developmental Effects

Paraquat Dichloride: A 3-generation reproduction study showed no evidence of fertility or reproductive effects at doses below that causing maternal toxicity. Reproductive NOEL was above 7.5 mg/kg/day, the highest dose level.

Chronic/Subchronic Toxicity Studies

Paraquat Dichloride: Rodent studies showed signs of irritation in 21-day dermal studies. In a 2.5 year chronic study, rats showed evidence of cataracts, body weight reduction and lung effects (alveolar macrophage infiltration) at 75 ppm and above. A 90-day dog diet study showed evidence of lung effects leading to alveolar collapse and death at 3 mg/kg/day. Chronic pneumonitis was seen in a 1-year dog study at 0.93 mg/kg/day and above.

Carcinogenicity

Paraquat Dichloride: No evidence in the rat or mouse.

Chemical Name	NTP/IARC/OSHA Carcinogen
Other ingredients	No
(1,1'-dimethyl-4,4'-bipyridinium dichloride)	No

Other Toxicity Information

Occupational exposure to paraquat does not pose any health issues as long as normal hygiene precautions are followed. Paraquat has a history of use in suicides; although difficult to quantify, it is estimated that 15 ml of parquat (approx 37% paraquat dichloride) by oral ingestion is sufficient to cause death. Two types of deaths can be identified: acute fulminate poisoning leading to multi-organ failure in a few days, and a more protracted form resulting in kidney failure and pulmonary fibrosis. Treatment is available and successful, providing the quantity of product injested is low and the time to treatment is short.

Toxicity of Other Components

Other ingredients

Not Applicable

Target Organs

Active Ingredients

Paraquat Dichloride: Lung, kidney

Inert Ingredients

Other ingredients: Not Applicable

12. ECOLOGICAL INFORMATION

Eco-Acute Toxicity

Paraquat Dichloride:

Fish (Bluegill Sunfish) 96-hour LC50 13 ppm

Invertebrate (Water Flea) Daphnia Magna 48-hour EC50 1.2 ppm

Bird (Bobwhite Quail) 8-day LD50 176 mg/kg

Green Algae 4-day EC50 0.32 ppm

Environmental Fate

Paraquat Dichloride:

The information presented here is for the active ingredient, paraquat dichloride.

Low bioaccumulation potential. Persistent in soil. Not persistent in water. Immobile in soil. Sinks in water (after 24 h).

13. DISPOSAL CONSIDERATIONS

Disposal:

Do not reuse product containers. Dispose of product containers, waste containers, and residues according to local, state, and federal health and environmental regulations.

Characteristic Waste: Not Applicable

Listed Waste: Not Applicable

14. TRANSPORT INFORMATION

DOT Classification

Ground Transport - NAFTA
Proper Shipping Name: Corrosive Liquid, N.O.S. (Paraquat)
Hazard Class: Class 8
Identification Number: UN 1760
Packing Group: III

Comments

Water Transport - International
Proper Shipping Name: Corrosive Liquid, N.O.S. (Paraquat), Marine Pollutant
Hazard Class: Class 8
Identification Number: UN 1760
Packing Group: III

Air Transport
Proper Shipping Name: Corrosive Liquid, N.O.S. (Paraquat)
Hazard Class: Class 8
Identification Number: UN 1760
Packing Group: III

15. REGULATORY INFORMATION

Pesticide Registration:

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

Danger-Poison: May be fatal if swallowed. Fatal if inhaled. Do not breathe spray mist. Wear a dust mist NIOSH-approved respirator with any N, R, P, or HE filter. Causes substantial but temporary eye injury. Wear protective eyewear (face shield required when mixing/loading). Harmful if absorbed through skin. Do not get in eyes, on skin, or on clothing. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before reuse.

EPA Registration Number(s):

100-1431

EPCRA SARA Title III Classification:

Section 311/312 Hazard Classes:	Acute Health Hazard Chronic Health Hazard
Section 313 Toxic Chemicals:	Paraquat Dichloride 30.1% (CAS No. 1910-42-5)

CERCLA/SARA 304 Reportable Quantity (RQ):
Report product spills > 5 gal. (based on paraquat dichloride [RQ = 10 lbs.] content in the formulation) (SARA 304)
RCRA Hazardous Waste Classification (40 CFR 261):
Not Applicable
TSCA Status:
Exempt from TSCA, subject to FIFRA

16. OTHER INFORMATION

NFPA Hazard Ratings		HMIS Hazard Ratings	
Health:	3	Health:	3
Flammability:	0	Flammability:	0
Instability:	0	Reactivity:	0

0	Minimal
1	Slight
2	Moderate
3	Serious
4	Extreme
*	Chronic

Syngenta Hazard Category: D,S

For non-emergency questions about this product call:

1-800-334-9481

Original Issued Date: 2/6/2012
Revision Date: 7/8/2015 Replaces: 3/10/2015
Section(s) Revised: 2, 4, 11

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.

CHATEAU® Herbicide SW

Safety Data Sheet - GHS

1. IDENTIFICATION: CHEMICAL PRODUCT AND COMPANY

PRODUCT NAME: CHATEAU® Herbicide SW
EPA REGISTRATION NUMBER: 59639-99
PRODUCT CODE: 88504
VC NUMBER(S): 1420
SYNONYM(S): VALOR® WDG Herbicide; VALOR™ Herbicide
PRODUCT DESCRIPTION: Herbicide

MANUFACTURER/DISTRIBUTOR
VALENT U.S.A. CORPORATION
P.O. Box 8025
1600 Riviera Avenue, Suite 200
Walnut Creek, CA 94596-8025

EMERGENCY TELEPHONE NUMBERS
HEALTH EMERGENCY OR SPILL (24 hr):
(800) 892-0099
TRANSPORTATION (24 hr.): CHEMTREC
(800) 424-9300 or (202) 483-7616

PRODUCT INFORMATION
AGRICULTURAL PRODUCTS: (800) 682-5368

The current SDS is available through our website (www.valent.com), or by calling the product information numbers listed above.

2. HAZARDS IDENTIFICATION

This product is an EPA FIFRA registered pesticide. Some classifications on this SDS are not the same as the FIFRA-required classifications on the product label. Certain sections of this SDS are superseded by federal law under EPA FIFRA for a registered pesticide. Please see Section 15, REGULATORY INFORMATION for an explanation.

Classification - (per U.S. OSHA 29 CFR 1910.1200 (Hazcom 2012))

Acute toxicity - Inhalation (Dusts/Mists)	Category 4
Reproductive toxicity	Category 2

Label elements

EMERGENCY OVERVIEW

WARNING

Hazard statements
Harmful if inhaled
May damage fertility or the unborn child

Precautionary statements

Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Avoid breathing dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area

Response
IF exposed or concerned: Get medical advice/attention
Eyes None.
Skin None.
Inhalation IF INHALED: Remove person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms: Call a POISON CENTER or doctor.
Ingestion None.
FIRE None.
Spill None.

Storage
Store locked up

Disposal
Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)
Other Information
• Toxic to aquatic life with long lasting effects
<5% of the mixture consists of ingredient(s) of unknown toxicity

For information on Transportation requirements see Section 14.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	Weight/ Percent	TRADE SECRET
Flumioxazin	103361-09-7	51	
Kaolin clay	1332-58-7	16	
Ammonium sulfate	7783-20-2	20	
Others	Various CAS#s	32	*

* The chemical name, CAS number and/or exact percentage have been withheld as a trade secret

Other ingredients, which may be maintained as trade secrets, are any substances other than an active ingredient contained in this product. Some of these may be hazardous, but their identities are withheld because they are considered trade secrets. The hazards associated with the other ingredients are addressed in this document. Specific information on other ingredients for the management of exposures, spills, or safety assessments can be obtained by a treating physician or nurse by calling **(800) 892-0099** at any time.

4. FIRST AID MEASURES

EMERGENCY NUMBER (800) 892-0099

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact **1-800-892-0099** for emergency medical treatment information.

EYE CONTACT:
Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

SKIN CONTACT:
Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

INGESTION:
Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. DO NOT induce vomiting unless told to do so by the poison control center or doctor. Do not give anything to an unconscious person.

INHALATION:
Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

NOTES TO PHYSICIAN:
None

5. FIRE FIGHTING MEASURES

Flash point °C
Flash point °F
EXTINGUISHING MEDIA: Water fog, carbon dioxide, foam, dry chemical

NFPA RATING:

Health:	1
Flammability:	1
Reactivity:	0
Special:	None

(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using professional judgement. Values were not available in the guidelines or published evaluations prepared by the National Fire Protection Association, NFPA.

FIRE FIGHTING INSTRUCTIONS: Will not burn but if involved in a fire toxic fumes may be evolved. Avoid breathing smoke and mists. Avoid personnel and equipment contact with fallout and runoff. Minimize the amount of water used for fire fighting. Do not enter any enclosed area without full protective equipment, including self-contained breathing equipment. Contain and isolate runoff and debris for proper disposal. Decontaminate personal protective equipment and fire fighting equipment before reuse. Read the entire document.

HAZARDOUS DECOMPOSITION PRODUCTS: Normal combustion forms carbon dioxide, water vapor and may produce: Nitrogen compounds Fluorine compounds. Incomplete combustion can produce carbon monoxide.

6. ACCIDENTAL RELEASE MEASURES

VALENT EMERGENCY PHONE NUMBER: (800) 892-0099
CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300
OBSERVE PRECAUTIONS IN SECTION 8: PERSONAL PROTECTION
Stop the source of the spill if safe to do so. Contain the spill to prevent further contamination of the soil, surface water, or ground water. For additional spill response information refer to the North American Emergency Response Guidebook.

UN/NA NUMBER: Not applicable **EMERGENCY RESPONSE GUIDEBOOK NO.:** Not applicable

FOR SPILLS ON LAND:

CONTAINMENT: Reduce airborne dust. Avoid runoff into storm sewers or other bodies of water.

CLEANUP: Clean up spill immediately. Vacuum or sweep up material and place in a chemical waste container. Wash area with soap and water. Pick up wash liquid with additional absorbent and place in a chemical waste container.

FOR SPILLS IN WATER:

CONTAINMENT: This material will disperse or dissolve in water. Stop the source of the release. Contain and isolate to prevent further release into soil, surface water and ground water.

CLEANUP: Clean up spill immediately. Absorb spill with inert material. Remove contaminated water for treatment or disposal.

7. HANDLING AND STORAGE

END USER MUST READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.

HANDLING:
Do not contaminate food or feed. Do not put material into food or drink containers. Do not dilute material in food or drink containers. Users should wash hands thoroughly with soap and water before eating, drinking, chewing gum, using tobacco or using the toilet.

STORAGE:
Keep pesticide in original container only. Store in a cool, dry place, out of direct sunlight. Do not store or transport near food or feed. Not for use or storage in or around the home.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

END USER MUST READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.

INFORMATION FOR END USERS

EYES & FACE: Do not get this material in your eyes. Eye contact can be avoided by wearing protective eyewear.

RESPIRATORY PROTECTION: Use this material only in well ventilated areas. If ventilation is not adequate to keep airborne concentrations below recommended exposure standards, approved respiratory protection should be worn.

SKIN & HAND PROTECTION: Avoid contact with skin or clothing. Skin contact should be minimized by wearing protective clothing including long pants, long-sleeved shirt and shoes plus socks and chemical-resistant gloves. Remove contaminated clothing. Wash before reuse.

EXPOSURE LIMITS

Chemical Name	ACGIH Exposure Limits	OSHA Exposure Limits	Manufacturer's Exposure Limits
Flumioxazin	None	None	None
Kaolin clay	2 mg/m³ TWA (respirable fraction)	15 mg/m³ TWA 5 mg/m³ TWA	None
Ammonium sulfate	None	None	None
Others	None	None	None

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	Solid		
Appearance	Granules	**Odor**	SLIGHT
Color	Light brown	**Odor threshold**	No information available

PROPERTIES	Values	Remarks • Method
pH	5.4	@ 25°C (1% suspension)
Melting point/freezing point	No information available	
Boiling point/boiling range	No information available	
Flash point		
Evaporation rate	No information available	
Flammability (solid, gas)	No information available	
Flammability Limits in Air		
Upper flammability limits	No information available	
Lower flammability limit	No information available	
Vapor pressure	No information available	
Vapor density	No information available	
Specific Gravity	No information available	
Water solubility	Dispersible in water	
Solubility in other solvents	No information available	
Partition coefficient	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Viscosity	Not Applicable	
Explosive properties	No information available	
Oxidizing properties	No information available	
Density	No information available	
Bulk density	30.8 lb.ft.^{3}	

10. STABILITY AND REACTIVITY

Reactivity
No data available

Chemical stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

Conditions to avoid
Extremes of temperature and direct sunlight.

Incompatible materials
May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

Hazardous Decomposition Products
None known based on information supplied.

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY:

The following information is for the technical material or a similar formulation.

Oral Toxicity LD_{50} (rats)	> 5,000 mg/kg	EPA Tox Category	IV
Dermal Toxicity LD_{50} (rabbits)	> 2,000 mg/kg	EPA Tox Category	III
Inhalation Toxicity LC_{50} (rats)	> 2.18	EPA Tox Category	IV
Eye Irritation	Brief and/or minor irritation	EPA Tox Category	III
Skin Irritation	Brief and/or minor irritation	EPA Tox Category	IV
Skin Sensitization	Probable non-sensitizer	EPA Tox Category	Not applicable

CARCINOGEN CLASSIFICATION

Chemical Name	IARC	OSHA - Select Carcinogens	NTP Carcinogen List
Flumioxazin	Not listed	Not listed	Not listed
Kaolin clay	Not listed	Not listed	Not listed
Ammonium sulfate	Not listed	Not listed	Not listed
Others	Not listed	Not listed	Not listed

TOXICITY OF FLUMIOXAZIN TECHNICAL:

SUBCHRONIC: Compound related effects of Flumioxazin Technical noted in rats following subchronic exposures at high dose levels were hematotoxicity including anemia, and increases in liver, spleen, heart, kidney and thyroid weights. In dogs, the effects produced at high dose levels included a slight prolongation in activated partial thromboplastin time, increased cholesterol and phospholipid, elevated alkaline phosphatase, increased liver weights and histological changes in the liver. The lowest no-observable-effect-level (NOEL) in subchronic studies was 30 ppm in the three-month toxicity study in rats.

CHRONIC/CARCINOGENICITY: In a one year dog feeding study, Flumioxazin Technical produced treatment-related changes in blood chemistry and increased liver weights at 100 and 1000 mg/kg/day. Minimal treatment-related histological changes were noted in the livers of animals in the 1000 mg/kg/day group. Based on these data the NOEL is 10 mg/kg/day. Dietary administration of Flumioxazin Technical for 18 months produced liver changes in mice of the 3000 and 7000 ppm groups. There was no evidence of any treatment-related oncogenic effect. The NOEL for this study is 300 ppm. Dietary administration of Flumioxazin Technical for 24 months produced anemia and chronic nephropathy in rats of the 500 and 1000 ppm groups. The anemia lasted throughout the treatment period, however, it was not progressive nor aplastic in nature. No evidence of an oncogenic effect was observed. The NOEL for this study is 50 ppm.

DEVELOPMENTAL TOXICITY: Flumioxazin Technical produces developmental toxicity in rats in the absence of maternal toxicity at doses of 30 mg/kg/day by the oral route and 300 mg/kg/day by the dermal route. The developmental effects noted consisted primarily of decreased number of live fetuses and fetal weights, cardiovascular abnormalities, wavy ribs and decreased number of ossified sacrococcygeal vertebral bodies. The developmental NOEL in the rat oral and dermal developmental toxicity studies were 10 and 100 mg/kg/day, respectively. The response in rabbits was very different from that in rats. No developmental toxicity was noted in rabbits at doses up to 3000 mg/kg/day, a dose well above the maternal NOEL of 1000 mg/kg/day.

Mechanistic studies indicate that the effects seen in the rat are highly unlikely to occur in the human and that flumioxazin would not be a developmental toxicant in the human.

REPRODUCTION: Reproductive toxicity was observed in F1 males, P1 females and F1 females at 300 ppm Flumioxazin Technical, the highest dose tested and a dose that also produced signs of systemic toxicity. Toxicity was also observed in the F1 and F2 offspring at doses of 200 ppm and greater.

MUTAGENICITY: Flumioxazin Technical was not mutagenic in most *in vitro* assays: gene mutation and a chromosome aberration assay in the absence of metabolic activation. In three *in vivo* assays, chromosome aberration, unscheduled DNA synthesis and micronucleus assay, Flumioxazin Technical was not mutagenic. The only positive response was observed in the *in vitro* chromosome aberration assay in the presence of metabolic activation. Overall, Flumioxazin Technical does not present a genetic hazard.

For a summary of the potential for adverse health effects from exposure to this product, refer to Section 2. For information regarding regulations pertaining to this product, refer to Section 15.

12. ECOLOGICAL INFORMATION

AVIAN TOXICITY:

Based upon EPA designation, Flumioxazin Technical is practically non-toxic to avian species. The following results were obtained from studies with Flumioxazin Technical:

Oral LD_{50} bobwhite quail: greater than 2250 mg/kg
Dietary LC_{50} bobwhite quail: greater than 5620 ppm
Dietary LC_{50} mallard duck: greater than 5620 ppm.

Flumioxazin Technical in the diet. In mallard ducks, a slight, but not statistically significant reduction in hatchlings and 14-day old survivors was observed. Based on a possible, slight effect on egg production at 500 ppm, the NOEL for this study was 250 ppm.

AQUATIC ORGANISM TOXICITY: Based upon EPA designation, Flumioxazin Technical is slightly to moderately toxic to freshwater fish; moderately toxic to freshwater invertebrates; moderately toxic to estuarine/marine fish and moderately to highly toxic to estuarine/marine invertebrates, based on the following tests:

96-hour LC_{50} rainbow trout: 2.3 mg/L
96-hour LC_{50} bluegill sunfish: greater than 21 mg/L
48-hour LC_{50} Daphnia magna: greater than 5.5 mg/L
96-hour LC_{50} sheepshead minnow: greater than 4.7 mg/L
96-hour (shell deposition) EC_{50} eastern oyster: 2.8 mg/L
96-hour LC_{50} mysid shrimp: 0.23 mg/L
Fish early life-stage (rainbow trout): NOEC >7.7 µg/L, <16 µg/L
Chronic toxicity (mysid shrimp): NOEC >15 µg/L, <27 µg/L
Chronic toxicity (Daphnia magna): NOEC >52 µg/L, <99 µg/L.

OTHER NON-TARGET ORGANISM TOXICITY: Flumioxazin Technical is practically non-toxic to bees. The acute contact LC50 in bees was greater than 105 µg/bee.

13. DISPOSAL CONSIDERATIONS

END USERS MUST DISPOSE OF ANY UNUSED PRODUCT AS PER THE LABEL RECOMMENDATIONS.

PRODUCT DISPOSAL: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL: Triple rinse container (or equivalent) promptly after emptying. Then offer for recycling or reconditioning or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

DISPOSAL METHODS: Check government regulations and local authorities for approved disposal of this material. Dispose of in accordance with applicable laws and regulations.

14. TRANSPORTATION INFORMATION

DOT (ground) SHIPPING NAME: Not regulated for domestic ground transport by US DOT or Canada TDG.
EMERGENCY RESPONSE GUIDEBOOK NO.: Not Applicable

ICAO/IATA SHIPPING NAME: UN 3077 Environmentally Hazardous Substance, Solid, N.O.S. (Flumioxazin), 9, III, Marine Pollutant
REMARKS: Single or inner packaging less than 5 L (liquid) or 5 Kg net (solids) excepted from Dangerous Goods regulations -- see UN Special Provision 375.

IMDG SHIPPING NAME: UN 3077, Environmentally Hazardous Substance, Solid, N.O.S. (flumioxazin), Marine pollutant
EMS NO.: F-A, S-F

15. REGULATORY INFORMATION

EPA-FIFRA LABEL INFORMATION THAT DIFFERS FROM OSHA-GHS REQUIREMENTS:

Pesticide products in the U.S. are registered by the EPA under FIFRA and are subject to certain labeling requirements under federal pesticide law. These requirements may differ from the classification criteria and hazard information required by OSHA GHS for safety data sheets, and for workplace labels of non-pesticide chemicals. The following is the hazard information as required on the FIFRA pesticide label:

EPA FIFRA SIGNAL WORD: CAUTION

- ***Harmful if inhaled or absorbed through skin.***
- ***Avoid breathing dust or spray mist***
- ***Avoid contact with eyes, skin and clothing***
- ***Causes moderate eye irritation***
- ***Keep out of reach of children.***

PESTICIDE REGULATIONS: All pesticides are governed under FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act). Therefore, the regulations presented below are pertinent only when handled outside of the normal use and applications of pesticides. This includes waste streams resulting from manufacturing/formulation facilities, spills or misuse of products, and storage of large quantities of products containing hazardous or extremely hazardous substances.

U.S. FEDERAL REGULATIONS: Ingredients in this product are reviewed against an inclusive list of federal regulations. Therefore, the user should consult appropriate authorities. The federal regulations reviewed include: Clean Water Act, SARA, CERCLA, RCRA, DOT, TSCA and OSHA. If no components or information is listed in the space below this paragraph, then none of the regulations reviewed are applicable.

Kaolin clay

TSCA Inventory List -	Present

SARA (311, 312):

Immediate Health:	Yes
Chronic Health:	Yes
Fire:	No
Sudden Pressure:	No
Reactivity:	No

STATE REGULATIONS: Each state may promulgate standards more stringent than the federal government. This section cannot encompass an inclusive list of all state regulations. Therefore, the user should consult state or local authorities. The state regulations reviewed include: California Proposition 65, California Directors List of Hazardous Substances, Massachusetts Right to Know, Michigan Critical Materials List, New Jersey Right to Know, Pennsylvania Right to Know, Rhode Island Right to Know and the Minnesota Hazardous Substance list. For Washington State Right to Know, see Section 8 for Exposure Limit information. For Louisiana Right to Know refer to SARA information listed under U.S. Regulations above. If no components or information is listed in the space below this paragraph, then none of the regulations reviewed are applicable.

Kaolin clay

MA Right To Know	Present
NJ Right To Know	4016
PA Right To Know	Present
RI Right To Know	Listed
MN Hazardous Substance	Present

Ammonium sulfate

PA Right To Know	Environmental hazard

For information regarding potential adverse health effects from exposure to this product, refer to Sections 2 and 11.

16. OTHER INFORMATION

REASON FOR ISSUE:	Revision to Sections 2 and 11. Minor edits throughout.
SDS NO.:	0235
EPA REGISTRATION NUMBER:	59639-99
REVISION NUMBER:	2
REVISION DATE:	11/21/2016
SUPERCEDES DATE:	11/21/2016
RESPONSIBLE PERSON(S):	Valent U.S.A. Corporation, Corporate EH&S, (925) 256-2803

The information provided in this Safety Data Sheet (SDS) is provided in good faith and believed to be accurate at the time of preparation of the SDS. However, to the extent consistent with applicable law, Valent U.S.A. Corporation and its subsidiaries or affiliates extend no warranties, make no representations, and assume no responsibility as to the acccuracy, suitability, or completeness of such information. Additionally, to the extent consistent with applicable law, neither Valent U.S.A. Corporation nor any of its subsidiaries or affiliates represents or guarantees that this information or product may be used without infringing the intellectual property rights of others. Except to the extent a particular use and particular information are expressly stated on the product label, it is the users' own responsibility to determine the suitability of this information for their own particular use of this product. If necessary, contact Valent U.S.A. Corporation to confirm that you have the most current product label and SDS.

This Safety Data Sheet (SDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-APPROVED PRODUCT LABEL (attached to and accompanying the product container). This SDS provides important health, safety, and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use as required by the Occupational Health and Safety Act (29 CFR 1910.1200, "Hazcom").

The product label provides information specifically for product use in the ordinary course. Use, storage and disposal of pesticide products is regulated by the EPA under the authority of FIFRA through the proudct label. All necessary hazard classification and appropriate precautionary use, storage, and disposal information is set forth on that label or labeling accompanying the pesticide or to which reference is made on the label. It is a violation of federal law to use an EPA-registered pesticide product in any manner inconsistent with its labeling.

2016 Valent U.S.A. Corporation

SAFETY DATA SHEET

Willowood Propanil 4SC

Section 1. Identification

GHS product identifier	: Willowood Propanil 4SC
Chemical name	: Propanil ({N-3,4-dichlorophenyl}propanamide)
Other means of identification	: Acetanilide Herbicide
EPA Product Registration Number	: 87290-18
EPA Signal Word	: CAUTION
Product type	: Liquid.

Identified uses

Herbicide.

Supplier's details	: Willowood, LLC 1600 NW Garden Valley Blvd., Suite 120 Roseburg, Oregon 97471 Tel: 877-679-9963
Emergency telephone number (with hours of operation)	: CHEMTREC (24/7): U.S. :800-424-9300 International: +1-703-527-3887 24/7 Health Emergencies: Call 800-858-7378 (National Pesticide Information Center)

Section 2. Hazards identification

OSHA/HCS status	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture	: ACUTE TOXICITY (oral) - Category 4 SKIN SENSITIZATION - Category 1 AQUATIC HAZARD (ACUTE) - Category 1 AQUATIC HAZARD (LONG-TERM) - Category 1

GHS label elements

Hazard pictograms :

Signal word	: Warning
Hazard statements	: Harmful if swallowed. May cause an allergic skin reaction. Very toxic to aquatic life with long lasting effects.

Precautionary statements

General	: Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Section 2. Hazards identification

Prevention	: Wear protective gloves. Avoid release to the environment. Avoid breathing vapor. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace.
Response	: Collect spillage. IF SWALLOWED: Call a POISON CENTER or physician if you feel unwell. Rinse mouth. IF ON SKIN: Wash with plenty of soap and water. Wash contaminated clothing before reuse. If skin irritation or rash occurs: Get medical attention.
Storage	: Not applicable.
Disposal	: Dispose of contents and container in accordance with all local, regional, national and international regulations.
Hazards not otherwise classified	: None known.

Section 3. Composition/information on ingredients

Substance/mixture	: Mixture
Chemical name	: Propanil ({N-3,4-dichlorophenyl}propanamide)
Other means of identification	: Acetanilide Herbicide

CAS number/other identifiers

CAS number	: Not applicable.
Product code	: Not available.

Ingredient name	%	CAS number
Propanil (ISO) (N-[3,4-diclorophenyl] propanamide)	30 - 60	709-98-8
Poly(oxy-1,2-ethanediyl), α-sulfo-ω-[2,4,6-tris(1-phenylethyl)phenoxy]-, ammonium salt (1:1)	5 - 10	119432-41-6
Poloxalene	1 - 5	9003-11-6
1,2-Benzisothiazol-3(2H)-one	0 - 0.1	2634-33-5

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact	: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 20 minutes. Get medical attention if irritation occurs.
Inhalation	: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
Skin contact	: Wash with plenty of soap and water. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 20 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Section 4. First aid measures

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : May cause an allergic skin reaction.

Ingestion : Harmful if swallowed.

Over-exposure signs/symptoms

Eye contact : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : Adverse symptoms may include the following:
irritation
redness

Ingestion : No known significant effects or critical hazards.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : In case of fire, use water spray (fog), foam, dry chemical or CO_2.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : This material is very toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Section 5. Fire-fighting measures

Hazardous thermal decomposition products	:	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides sulfur oxides halogenated compounds metal oxide/oxides
Special protective actions for fire-fighters	:	No special measures are required.
Special protective equipment for fire-fighters	:	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	:	No action shall be taken involving any personal risk or without suitable training. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
For emergency responders	:	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
Environmental precautions	:	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

Small spill	:	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
Large spill	:	Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures	:	Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapor or mist. Avoid release to the environment. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Section 7. Handling and storage

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. See also Section 8 for additional information on hygiene measures. Remove contaminated clothing and protective equipment before entering eating areas.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
1,2-Propylene glycol Sodium Chloride	**AIHA WEEL (United States, 10/2011).** TWA: 10 mg/m³ 8 hours. **ACGIH TLV (United States).** TWA: 10 mg/m³ Form: Inhalable fraction. TWA: 3 mg/m³ Form: Respirable dust **OSHA PEL (United States).** PEL: 5 mg/m³ Form: Respirable dust PEL: 15 mg/m³ Form: Total dust

Appropriate engineering controls : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Section 8. Exposure controls/personal protection

Body protection	:	Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Other skin protection	:	Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Respiratory protection	:	Use a properly fitted, air-purifying or supplied air respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state	:	Liquid.
Color	:	Light tan.
Odor	:	Slight
Odor threshold	:	Not available.
pH	:	5 to 6.5
Melting point	:	Not available.
Boiling point	:	Not available.
Flash point	:	Not flammable.
Evaporation rate	:	Not available.
Flammability (solid, gas)	:	Not flammable.
Lower and upper explosive (flammable) limits	:	Not flammable.
Vapor pressure	:	Not available.
Vapor density	:	Not available.
Relative density	:	>1.2
Solubility	:	Soluble in the following materials: cold water and hot water.
Partition coefficient: n-octanol/water	:	Not available.
Auto-ignition temperature	:	Not flammable.
Decomposition temperature	:	Not available.
Viscosity	:	Not available.

Section 10. Stability and reactivity

Reactivity	:	No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	:	The product is stable.
Possibility of hazardous reactions	:	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	:	No specific data.

Section 10. Stability and reactivity

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials, acids and alkalis.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Propanil (ISO) (N-[3,4-diclorophenyl] propanamide)	LD50 Dermal	Rabbit	4830 mg/kg	-
	LD50 Dermal	Rat	>5 g/kg	-
	LD50 Oral	Rat	367 mg/kg	-
1,2-Benzisothiazol-3(2H)-one	LD50 Oral	Rat	1020 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
1,2-Benzisothiazol-3(2H)-one	Skin - Mild irritant	Human	-	48 hours 5%	-

Sensitization

There is no data available.

Carcinogenicity

There is no data available.

Specific target organ toxicity (single exposure)

There is no data available.

Specific target organ toxicity (repeated exposure)

There is no data available.

Aspiration hazard

There is no data available.

Information on the likely routes of exposure : Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : May cause an allergic skin reaction.

Ingestion : Harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : Adverse symptoms may include the following:
irritation
redness

Ingestion : No known significant effects or critical hazards.

Section 11. Toxicological information

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : No known significant effects or critical hazards.

Potential delayed effects : No known significant effects or critical hazards.

Long term exposure

Potential immediate effects : No known significant effects or critical hazards.

Potential delayed effects : No known significant effects or critical hazards.

Potential chronic health effects

General : Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	877.3 mg/kg
Dermal	11582.1 mg/kg

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Propanil (ISO) (N-[3,4-diclorophenyl] propanamide)	Acute EC50 0.09 ug/ml Fresh water	Algae - Chlorella pyrenoidosa - Exponential growth phase	4 days
	Acute EC50 0.29 mg/L Fresh water	Algae - Scenedesmus acutus	72 hours
	Acute EC50 1.2 ppm Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 1520 µg/L Fresh water	Crustaceans - Ceriodaphnia dubia	48 hours
	Acute LC50 0.43 ppm Fresh water	Fish - Ictalurus punctatus	96 hours
	Chronic EC10 0.12 mg/L Fresh water	Algae - Scenedesmus acutus	72 hours
	Chronic NOEC 0.016 mg/L Fresh water	Daphnia - Daphnia magna - Neonate	21 days
	Chronic NOEC 0.4 ppb	Fish - Pimephales promelas	60 days
1,2-Benzisothiazol-3(2H)-one	Acute EC50 97 ppb Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 >10 mg/L Fresh water	Crustaceans - Ceriodaphnia dubia	48 hours
	Acute LC50 167 ppb Fresh water	Fish - Oncorhynchus mykiss	96 hours

Persistence and degradability

There is no data available.

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Propanil (ISO) (N-[3,4-diclorophenyl] propanamide)	3.07	69.18	low

Section 12. Ecological information

Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling empty containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	IMDG	IATA
UN number	UN3082	UN3082	UN3082
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Propanil (ISO) (N-[3,4-diclorophenyl] propanamide))	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Propanil (ISO) (N-[3,4-diclorophenyl] propanamide))	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Propanil (ISO) (N-[3,4-diclorophenyl] propanamide))
Transport hazard class(es)	9	9	9
Packing group	III	III	III
Environmental hazards	Yes.	Yes.	Yes.
Additional information	Non-bulk packages of this product are not regulated as hazardous materials unless transported by inland waterway. The marine pollutant mark is not required when transported on inland waterways in sizes of ≤5 L or ≤5 kg.	The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.	The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg.

AERG : 171

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined
United States inventory (TSCA 8b): All components are listed or exempted.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

Name	%	EHS	SARA 302 TPQ		SARA 304 RQ	
			(lbs)	(gallons)	(lbs)	(gallons)
Ethylene oxide	0 - 0.1	Yes.	1000	-	10	-

SARA 304 RQ : 1851851.9 lbs / 840740.7 kg [168257.7 gal / 636924.8 L]

SARA 311/312

Classification : Immediate (acute) health hazard

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Propanil (ISO) (N-[3,4-diclorophenyl] propanamide)	30 - 60	No.	No.	No.	Yes.	No.
Poly(oxy-1,2-ethanediyl), α-sulfo-ω-[2,4,6-tris(1-phenylethyl)phenoxy]-, ammonium salt (1:1)	5 - 10	No.	No.	No.	Yes.	No.
1,2-Benzisothiazol-3(2H)-one	0 - 0.1	No.	No.	No.	Yes.	No.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	Propanil (ISO) (N-[3,4-diclorophenyl] propanamide)	709-98-8	30 - 60
Supplier notification	Propanil (ISO) (N-[3,4-diclorophenyl] propanamide)	709-98-8	30 - 60

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts : None of the components are listed.

New York : None of the components are listed.

Section 15. Regulatory information

New Jersey : The following components are listed: Propanil (ISO) (N-[3,4-diclorophenyl] propanamide); 1,2-Propylene glycol

Pennsylvania : The following components are listed: 1,2-Propylene glycol

California Prop. 65

WARNING: This product contains less than 0.1% of a chemical known to the State of California to cause cancer.
WARNING: This product contains less than 1% of a chemical known to the State of California to cause birth defects or other reproductive harm.

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
Ethylene oxide	Yes.	Yes.	Yes.	Yes.

International regulations

International lists : **Australia inventory (AICS)**: All components are listed or exempted.
China inventory (IECSC): All components are listed or exempted.
Japan inventory: Not determined.
Korea inventory: All components are listed or exempted.
Malaysia Inventory (EHS Register): Not determined.
New Zealand Inventory of Chemicals (NZIoC): All components are listed or exempted.
Philippines inventory (PICCS): Not determined.
Taiwan inventory (CSNN): Not determined.

Chemical Weapons Convention List Schedule I Chemicals : Not listed

Chemical Weapons Convention List Schedule II Chemicals : Not listed

Chemical Weapons Convention List Schedule III Chemicals : Not listed

Section 16. Other information

History

Date of issue mm/dd/yyyy : 11/15/2015

Date of previous issue : 07/30/2015

Version : 1.1

Revised Section(s) : 1, 8, 16.

Prepared by : KMK Regulatory Services Inc.

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

Section 16. Other information

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

SAFETY DATA SHEET

Willowood Propanil 4SC (CA)

Section 1. Identification

GHS product identifier	: Willowood Propanil 4SC (CA)
Chemical name	: Propanil ({N-3,4-dichlorophenyl}propanamide)
Other means of identification	: Acetanilide Herbicide
EPA Product Registration Number	: 87290-18
EPA Signal Word	: CAUTION
Product type	: Liquid.

Identified uses

Herbicide.

Supplier's details	: Willowood, LLC 1600 NW Garden Valley Blvd., Suite 120 Roseburg, Oregon 97471 Tel: 877-679-9963
Emergency telephone number (with hours of operation)	: CHEMTREC (24/7): U.S. :800-424-9300 International: +1-703-527-3887 24/7 Health Emergencies: Call 800-858-7378 (National Pesticide Information Center)

Section 2. Hazards identification

OSHA/HCS status	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture	: ACUTE TOXICITY (oral) - Category 4 SKIN SENSITIZATION - Category 1 AQUATIC HAZARD (ACUTE) - Category 1 AQUATIC HAZARD (LONG-TERM) - Category 1

GHS label elements

Hazard pictograms :

Signal word	: Warning
Hazard statements	: Harmful if swallowed. May cause an allergic skin reaction. Very toxic to aquatic life with long lasting effects.

Precautionary statements

General	: Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Section 2. Hazards identification

Prevention	: Wear protective gloves. Avoid release to the environment. Avoid breathing vapor. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace.
Response	: Collect spillage. IF SWALLOWED: Call a POISON CENTER or physician if you feel unwell. Rinse mouth. IF ON SKIN: Wash with plenty of soap and water. Wash contaminated clothing before reuse. If skin irritation or rash occurs: Get medical attention.
Storage	: Not applicable.
Disposal	: Dispose of contents and container in accordance with all local, regional, national and international regulations.
Hazards not otherwise classified	: None known.

Section 3. Composition/information on ingredients

Substance/mixture	: Mixture
Chemical name	: Propanil ({N-3,4-dichlorophenyl}propanamide)
Other means of identification	: Acetanilide Herbicide

CAS number/other identifiers

CAS number	: Not applicable.
Product code	: Not available.

Ingredient name	%	CAS number
Propanil (ISO) (N-[3,4-diclorophenyl] propanamide)	30 - 60	709-98-8
Poly(oxy-1,2-ethanediyl), α-sulfo-ω-[2,4,6-tris(1-phenylethyl)phenoxy]-, ammonium salt (1:1)	5 - 10	119432-41-6
Poloxalene	1 - 5	9003-11-6
1,2-Benzisothiazol-3(2H)-one	0 - 0.1	2634-33-5

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact	: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 20 minutes. Get medical attention if irritation occurs.
Inhalation	: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
Skin contact	: Wash with plenty of soap and water. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 20 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Section 4. First aid measures

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : May cause an allergic skin reaction.

Ingestion : Harmful if swallowed.

Over-exposure signs/symptoms

Eye contact : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : Adverse symptoms may include the following:
irritation
redness

Ingestion : No known significant effects or critical hazards.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : In case of fire, use water spray (fog), foam, dry chemical or CO_2.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : This material is very toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Section 5. Fire-fighting measures

Hazardous thermal decomposition products	: Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides sulfur oxides halogenated compounds metal oxide/oxides
Special protective actions for fire-fighters	: No special measures are required.
Special protective equipment for fire-fighters	: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	: No action shall be taken involving any personal risk or without suitable training. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
For emergency responders	: If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
Environmental precautions	: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

Small spill	: Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
Large spill	: Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures	: Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapor or mist. Avoid release to the environment. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Section 7. Handling and storage

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. See also Section 8 for additional information on hygiene measures. Remove contaminated clothing and protective equipment before entering eating areas.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
1,2-Propylene glycol Sodium Chloride	**AIHA WEEL (United States, 10/2011).** TWA: 10 mg/m³ 8 hours. **ACGIH TLV (United States).** TWA: 10 mg/m³ Form: Inhalable fraction. TWA: 3 mg/m³ Form: Respirable dust **OSHA PEL (United States).** PEL: 5 mg/m³ Form: Respirable dust PEL: 15 mg/m³ Form: Total dust

Appropriate engineering controls : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Section 8. Exposure controls/personal protection

Body protection	: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Other skin protection	: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Respiratory protection	: Use a properly fitted, air-purifying or supplied air respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state	: Liquid.
Color	: Light tan.
Odor	: Slight
Odor threshold	: Not available.
pH	: 5 to 6.5
Melting point	: Not available.
Boiling point	: Not available.
Flash point	: Not flammable.
Evaporation rate	: Not available.
Flammability (solid, gas)	: Not flammable.
Lower and upper explosive (flammable) limits	: Not flammable.
Vapor pressure	: Not available.
Vapor density	: Not available.
Relative density	: >1.2
Solubility	: Soluble in the following materials: cold water and hot water.
Partition coefficient: n-octanol/water	: Not available.
Auto-ignition temperature	: Not flammable.
Decomposition temperature	: Not available.
Viscosity	: Not available.

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: No specific data.

Section 10. Stability and reactivity

compatible materials : Reactive or incompatible with the following materials: oxidizing materials, acids and alkalis.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Propanil (ISO) (N-[3,4-diclorophenyl] propanamide)	LD50 Dermal	Rabbit	4830 mg/kg	-
	LD50 Dermal	Rat	>5 g/kg	-
	LD50 Oral	Rat	367 mg/kg	-
1,2-Benzisothiazol-3(2H)-one	LD50 Oral	Rat	1020 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
1,2-Benzisothiazol-3(2H)-one	Skin - Mild irritant	Human	-	48 hours 5%	-

Sensitization

There is no data available.

Carcinogenicity

There is no data available.

Specific target organ toxicity (single exposure)

There is no data available.

Specific target organ toxicity (repeated exposure)

There is no data available.

Aspiration hazard

There is no data available.

Information on the likely routes of exposure : Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : May cause an allergic skin reaction.

Ingestion : Harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : Adverse symptoms may include the following:
irritation
redness

Ingestion : No known significant effects or critical hazards.

Section 11. Toxicological information

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : No known significant effects or critical hazards.

Potential delayed effects : No known significant effects or critical hazards.

Long term exposure

Potential immediate effects : No known significant effects or critical hazards.

Potential delayed effects : No known significant effects or critical hazards.

Potential chronic health effects

General : Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	877.3 mg/kg
Dermal	11582.1 mg/kg

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Propanil (ISO) (N-[3,4-diclorophenyl] propanamide)	Acute EC50 0.09 ug/ml Fresh water	Algae - Chlorella pyrenoidosa - Exponential growth phase	4 days
	Acute EC50 0.29 mg/L Fresh water	Algae - Scenedesmus acutus	72 hours
	Acute EC50 1.2 ppm Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 1520 µg/L Fresh water	Crustaceans - Ceriodaphnia dubia	48 hours
	Acute LC50 0.43 ppm Fresh water	Fish - Ictalurus punctatus	96 hours
	Chronic EC10 0.12 mg/L Fresh water	Algae - Scenedesmus acutus	72 hours
	Chronic NOEC 0.016 mg/L Fresh water	Daphnia - Daphnia magna - Neonate	21 days
	Chronic NOEC 0.4 ppb	Fish - Pimephales promelas	60 days
1,2-Benzisothiazol-3(2H)-one	Acute EC50 97 ppb Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 >10 mg/L Fresh water	Crustaceans - Ceriodaphnia dubia	48 hours
	Acute LC50 167 ppb Fresh water	Fish - Oncorhynchus mykiss	96 hours

Persistence and degradability

There is no data available.

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Propanil (ISO) (N-[3,4-diclorophenyl] propanamide)	3.07	69.18	low

Section 12. Ecological information

Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling empty containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	IMDG	IATA
UN number	UN3082	UN3082	UN3082
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Propanil (ISO) (N-[3,4-diclorophenyl] propanamide))	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Propanil (ISO) (N-[3,4-diclorophenyl] propanamide))	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Propanil (ISO) (N-[3,4-diclorophenyl] propanamide))
Transport hazard class(es)	9	9	9
Packing group	III	III	III
Environmental hazards	Yes.	Yes.	Yes.
Additional information	Non-bulk packages of this product are not regulated as hazardous materials unless transported by inland waterway. The marine pollutant mark is not required when transported on inland waterways in sizes of ≤5 L or ≤5 kg.	The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.	The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg.

AERG : 171

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined
United States inventory (TSCA 8b): All components are listed or exempted.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

Name	%	EHS	SARA 302 TPQ		SARA 304 RQ	
			(lbs)	(gallons)	(lbs)	(gallons)
Ethylene oxide	0 - 0.1	Yes.	1000	-	10	-

SARA 304 RQ : 1851851.9 lbs / 840740.7 kg [168257.7 gal / 636924.8 L]

SARA 311/312

Classification : Immediate (acute) health hazard

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Propanil (ISO) (N-[3,4-diclorophenyl] propanamide)	30 - 60	No.	No.	No.	Yes.	No.
Poly(oxy-1,2-ethanediyl), α-sulfo-ω-[2,4,6-tris(1-phenylethyl)phenoxy]-, ammonium salt (1:1)	5 - 10	No.	No.	No.	Yes.	No.
1,2-Benzisothiazol-3(2H)-one	0 - 0.1	No.	No.	No.	Yes.	No.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	Propanil (ISO) (N-[3,4-diclorophenyl] propanamide)	709-98-8	30 - 60
Supplier notification	Propanil (ISO) (N-[3,4-diclorophenyl] propanamide)	709-98-8	30 - 60

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts : None of the components are listed.

New York : None of the components are listed.

Section 15. Regulatory information

New Jersey : The following components are listed: Propanil (ISO) (N-[3,4-diclorophenyl] propanamide); 1,2-Propylene glycol

Pennsylvania : The following components are listed: 1,2-Propylene glycol

California Prop. 65

WARNING: This product contains less than 0.1% of a chemical known to the State of California to cause cancer.
WARNING: This product contains less than 1% of a chemical known to the State of California to cause birth defects or other reproductive harm.

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
Ethylene oxide	Yes.	Yes.	Yes.	Yes.

International regulations

International lists : **Australia inventory (AICS)**: All components are listed or exempted.
China inventory (IECSC): All components are listed or exempted.
Japan inventory: Not determined.
Korea inventory: All components are listed or exempted.
Malaysia Inventory (EHS Register): Not determined.
New Zealand Inventory of Chemicals (NZIoC): All components are listed or exempted.
Philippines inventory (PICCS): Not determined.
Taiwan inventory (CSNN): Not determined.

Chemical Weapons Convention List Schedule I Chemicals : Not listed

Chemical Weapons Convention List Schedule II Chemicals : Not listed

Chemical Weapons Convention List Schedule III Chemicals : Not listed

Section 16. Other information

History

Date of issue mm/dd/yyyy : 11/15/2015

Date of previous issue : 01/15/2015

Version : 1.1

Revised Section(s) : 1, 8, 16.

Prepared by : KMK Regulatory Services Inc.

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

Section 16. Other information

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

SAFETY DATA SHEET
DOW AGROSCIENCES LLC

Product name: GRANDSTAND™ CA Herbicide

Issue Date: 11/30/2015
Print Date: 11/30/2015

DOW AGROSCIENCES LLC encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: GRANDSTAND™ CA Herbicide

Recommended use of the chemical and restrictions on use
Identified uses: End use herbicide product

COMPANY IDENTIFICATION
DOW AGROSCIENCES LLC
9330 ZIONSVILLE RD
INDIANAPOLIS IN 46268-1053
UNITED STATES

Customer Information Number: 800-992-5994
info@dow.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 800-992-5994
Local Emergency Contact: 352-323-3500

2. HAZARDS IDENTIFICATION

Hazard classification
This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.
Flammable liquids - Category 3
Eye irritation - Category 2A
Specific target organ toxicity - repeated exposure - Category 2

Label elements
Hazard pictograms

Signal word: **WARNING!**

Hazards
Flammable liquid and vapour.
Causes serious eye irritation.
May cause damage to organs (Kidney) through prolonged or repeated exposure.

Precautionary statements

Prevention
Keep away from heat/sparks/open flames/hot surfaces. No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ ventilating/ lighting/ equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Wear protective gloves/ eye protection/ face protection.

Response
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Get medical advice/ attention if you feel unwell.
If eye irritation persists: Get medical advice/ attention.
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Storage
Store in a well-ventilated place. Keep cool.

Disposal
Dispose of contents/ container to an approved waste disposal plant.

Other hazards
No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature: Mixture
This product is a mixture.

Component	CASRN	Concentration
Triclopyr Triethylamine Salt	57213-69-1	44.4%
Ethanol	64-17-5	2.1%
Alkylphenol alkoxylate	69029-39-6	1.0%
Balance	Not available	52.5%

4. FIRST AID MEASURES

Description of first aid measures
General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice.

Skin contact: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Eye contact: Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice. Suitable emergency eye wash facility should be immediately available.

Ingestion: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed: Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed
Notes to physician: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. General purpose synthetic foams (including AFFF type) or protein foams are preferred if available. Alcohol resistant foams (ATC type) may function.

Unsuitable extinguishing media: No data available

Special hazards arising from the substance or mixture
Hazardous combustion products: Under fire conditions some components of this product may decompose. The smoke may contain unidentified toxic and/or irritating compounds. Combustion products may include and are not limited to: Nitrogen oxides. Hydrogen chloride. Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: This material will not burn until the water has evaporated. Residue can burn. May produce flash fire. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. If exposed to fire from another source and water is evaporated, exposure to high temperatures may cause toxic fumes.

Advice for firefighters
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Eliminate ignition sources. To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Evacuate area. Keep unnecessary and unprotected personnel from entering the area. Keep personnel out of low areas. Keep upwind of spill. Ventilate area of leak or spill. No smoking in area. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Vapor explosion hazard. Keep out of sewers. Refer to section 7, Handling, for additional precautionary measures. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Ground and bond all containers and handling equipment. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Pump with explosion-proof equipment. If available, use foam to smother or suppress. Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling: Keep away from heat, sparks and flame. Keep out of reach of children. No smoking, open flames or sources of ignition in handling and storage area. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Do not get in eyes. Avoid contact with skin and clothing. Avoid breathing vapor or mist. Do not swallow. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. Electrically ground and bond all equipment. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. Use of non-sparking or explosion-proof equipment may be necessary,

depending upon the type of operation. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage: Store in a dry place. Store in original container. Keep container tightly closed when not in use. Do not store near food, foodstuffs, drugs or potable water supplies. Minimize sources of ignition, such as static build-up, heat, spark or flame.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Triclopyr Triethylamine Salt	Dow IHG	TWA	2 mg/m3
	Dow IHG	TWA	SKIN, DSEN, BEI
Ethanol	ACGIH	STEL	1,000 ppm
	OSHA Z-1	TWA	1,900 mg/m3 1,000 ppm
Alkylphenol alkoxylate	Dow IHG	TWA	2 mg/m3

RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.

Exposure controls

Engineering controls: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use chemical goggles.

Skin protection

Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Examples of preferred glove barrier materials include: Butyl rubber. Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl chloride ("PVC" or "vinyl"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Wear clean, body-covering clothing.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator.

The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	Liquid.
Color	Pink
Odor	Ammoniacal
Odor Threshold	No test data available
pH	9.5 10% *pH Electrode*
Melting point/range	Not applicable
Freezing point	No test data available
Boiling point (760 mmHg)	No test data available
Flash point	**closed cup** 43 °C (109 °F) *Setaflash Closed Cup ASTM D3828*
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammability (solid, gas)	No data available
Lower explosion limit	No test data available
Upper explosion limit	No test data available
Vapor Pressure	Not applicable
Relative Vapor Density (air = 1)	Not applicable
Relative Density (water = 1)	1.1385 at 20 °C (68 °F) *Digital Density Meter (Oscillating Coil)*
Water solubility	Soluble
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	No test data available
Decomposition temperature	No test data available
Dynamic Viscosity	12.5 mPa.s at 25 °C (77 °F)
Kinematic Viscosity	No test data available
Explosive properties	No *Thermal*
Oxidizing properties	No
Liquid Density	1.1385 g/cm3 at 20 °C (68 °F) *Digital density meter*
Molecular weight	No data available
Surface tension	38.5 mN/m at20 °C (68 °F) *EC Method A5*

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: No dangerous reaction known under conditions of normal use.

Chemical stability: Thermally stable at recommended temperatures and pressures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Active ingredient decomposes at elevated temperatures.

Incompatible materials: Avoid contact with: Oxidizers.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Hydrogen chloride. Nitrogen oxides.

11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Acute toxicity

Acute oral toxicity
Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

As product:
LD50, Rat, female, 4,100 mg/kg

Acute dermal toxicity
Prolonged skin contact is unlikely to result in absorption of harmful amounts.

As product:
LD50, Rabbit, male and female, > 5,000 mg/kg

Acute inhalation toxicity
No adverse effects are anticipated from single exposure to mist. Excessive exposure may cause irritation to upper respiratory tract (nose and throat).

As product:
LC50, Rat, male and female, 4 Hour, Mist, > 5.4 mg/l
Maximum attainable concentration.
No deaths occurred at this concentration.

Skin corrosion/irritation
Brief contact is essentially nonirritating to skin.

Serious eye damage/eye irritation
May cause moderate eye irritation.
May cause moderate corneal injury.

Sensitization
Did not demonstrate the potential for contact allergy in mice.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)
Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Specific Target Organ Systemic Toxicity (Repeated Exposure)
For the active ingredient(s):
In animals, effects have been reported on the following organs:
Kidney.

For the minor component(s):
In animals, effects have been reported on the following organs:
Kidney.
Liver.

Carcinogenicity
For similar active ingredient(s). Triclopyr. Did not cause cancer in laboratory animals.

Teratogenicity
For the active ingredient(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.

For the minor component(s): Has caused birth defects in lab animals at high doses.

Reproductive toxicity
For similar active ingredient(s). Triclopyr. In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

Mutagenicity
In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Aspiration Hazard
Based on physical properties, not likely to be an aspiration hazard.

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

Toxicity

Acute toxicity to fish
Based on information for a similar material:
Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested).

LC50, Oncorhynchus mykiss (rainbow trout), 96 Hour, 400 mg/l, OECD Test Guideline 203 or Equivalent

LC50, Lepomis macrochirus (Bluegill sunfish), semi-static test, 96 Hour, > 100 mg/l

Acute toxicity to aquatic invertebrates
EC50, eastern oyster (Crassostrea virginica), static test, 48 Hour, 56 - 87 mg/l, Method Not Specified.

LC50, Daphnia magna (Water flea), static test, 48 Hour, > 1,000 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
ErC50, Pseudokirchneriella subcapitata (green algae), 72 Hour, Growth rate inhibition, 107 mg/l, OECD Test Guideline 201 or Equivalent

ErC50, blue-green alga Anabaena flos-aquae, 72 Hour, Growth inhibition, > 100 mg/l

EC50, Lemna gibba, 7 d, Growth inhibition, > 100 mg/l

Based on information for a similar material:
ErC50, Myriophyllum spicaturn, 14 d, 0.241 mg/l

Based on information for a similar material:
NOEC, Myriophyllum spicaturn, 14 d, 0.0191 mg/l

Persistence and degradability

Triclopyr Triethylamine Salt
Biodegradability: For similar active ingredient(s). Triclopyr. Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%).
For similar active ingredient(s). Triclopyr. Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

Ethanol
Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Pass
Biodegradation: > 70 %
Exposure time: 5 d
Method: OECD Test Guideline 301D or Equivalent

Theoretical Oxygen Demand: 2.08 mg/mg

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 2.99 d
Method: Estimated.

Alkylphenol alkoxylate
Biodegradability: Biodegradation under aerobic laboratory conditions is below detectable limits (BOD20 or BOD28/ThOD < 2.5%).

Theoretical Oxygen Demand: 2.35 mg/mg

Chemical Oxygen Demand: 1.78 mg/mg

Balance
Biodegradability: No relevant data found.

Bioaccumulative potential

Triclopyr Triethylamine Salt

Bioaccumulation: For similar active ingredient(s). Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Ethanol

Bioaccumulation: Bioaccumulation is unlikely. Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): -0.31 Measured

Alkylphenol alkoxylate

Bioaccumulation: No bioconcentration is expected because of the relatively high water solubility. May foam in water.

Balance

Bioaccumulation: No relevant data found.

Mobility in soil

Triclopyr Triethylamine Salt

For similar active ingredient(s).
Potential for mobility in soil is very high (Koc between 0 and 50).

Ethanol

Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient(Koc): 1.0 Estimated.

Alkylphenol alkoxylate

No data available.

Balance

No relevant data found.

13. DISPOSAL CONSIDERATIONS

Disposal methods: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

14. TRANSPORT INFORMATION

DOT

Proper shipping name	Combustible liquid, n.o.s.(Triethylamine, Ethanol)
UN number	NA 1993
Class	CBL
Packing group	III

Classification for SEA transport (IMO-IMDG):

Proper shipping name	FLAMMABLE LIQUID, N.O.S.(Triethylamine, Ethanol)
UN number	UN 1993
Class	3
Packing group	III
Marine pollutant	No
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Proper shipping name	Flammable liquid, n.o.s.(Triethylamine, Ethanol)
UN number	UN 1993
Class	3
Packing group	III

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312
Fire Hazard
Acute Health Hazard

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

Components	**CASRN**
Triclopyr Triethylamine Salt	57213-69-1

Pennsylvania Worker and Community Right-To-Know Act:
The following chemicals are listed because of the additional requirements of Pennsylvania law:

Components	**CASRN**
Ethanol	64-17-5

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)

This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

United States TSCA Inventory (TSCA)
This product contains chemical substance(s) exempt from U.S. EPA TSCA Inventory requirements. It is regulated as a pesticide subject to Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requirements.

Federal Insecticide, Fungicide and Rodenticide Act
EPA Registration Number: 62719-215
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

DANGER

Corrosive
Causes irreversible eye damage
Harmful if swallowed or absorbed through skin
Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

16. OTHER INFORMATION

Hazard Rating System
NFPA

Health	Fire	Reactivity
3	2	0

Revision
Identification Number: 101199615 / A211 / Issue Date: 11/30/2015 / Version: 8.0
DAS Code: XRM-3724
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

ACGIH	USA. ACGIH Threshold Limit Values (TLV)
Dow IHG	Dow Industrial Hygiene Guideline
OSHA Z-1	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
SKIN, DSEN, BEI	Absorbed via Skin, Skin Sensitizer, Biological Exposure Indice
STEL	Short-term exposure limit
TWA	8-hour time weighted average

Information Source and References
This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

DOW AGROSCIENCES LLC urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

Safety Data Sheet

United Phosphorus, Inc.

Preparation Date 01-May-2015 **Revision date** 22-Mar-2016 **Revision Number:** 3

1. Identification of the Substance/Preparation and of the Company/Undertaking

Product identifier

Product Description: Manzate Pro-Stick T&O Fungicide

Other means of identification

Item#: 12-371F
UN-No UN3077
Synonyms Not Available
Registration number(s) 70506-234

Recommended use of the chemical and restrictions on use

Recommended use Fungicide.
Uses advised against Activties contrary to label recomendation

Details of the Supplier of the Safety Data Sheet

Supplier Address
United Phosphorus Inc.
630 Freedom Business Center
Suite 402
King of Prussia, PA 19406

Emergency telephone number

Company Phone Number 1-800-438-6071
Emergency telephone number Chemtrec: (800) 424-9300 (24hrs) or (703) 527-3887
Medical: Rocky Mountain Poison Control Center
(866) 673-6671 (24hrs)

2. Hazards Identification

Classification

OSHA Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute toxicity - Dermal	Category 4
Skin sensitization	Category 1
Reproductive Toxicity	Category 2

Label elements

EMERGENCY OVERVIEW

WARNING

hazard statements
Harmful in contact with skin
May cause an allergic skin reaction
Suspected of damaging fertility or the unborn child

appearance Yellow	**Physical state** solid	**Odor** Slight Rotten egg-like

Precautionary Statements - Prevention
Do not handle until all safety precautions have been read and understood
Do not handle until all safety precautions have been read and understood
Wear cold insulating gloves/face shield/eye protection
Do not get in eyes, on skin, or on clothing
Contaminated work clothing should not be allowed out of the workplace
Wear protective gloves

Precautionary Statements - Response
IF exposed or concerned: Get medical advice/attention
IF ON SKIN: Wash with plenty of soap and water
Call a POISON CENTER or doctor if you feel unwell
Wash contaminated clothing before reuse
If skin irritation or rash occurs: Get medical advice/attention

Precautionary Statements - Storage
Store locked up

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Hazards Not Otherwise Classified (HNOC)
OTHER INFORMATION
- Very toxic to aquatic life
- May be harmful in contact with skin

3. Composition/Information on Ingredients

Chemical name	CAS-No	Weight %	Trade secret
Sucrose	57-50-1	7.3	
Mancozeb	8018-01-7	75	
Ethylene thiourea	96-45-7	0-0.1	

If CAS number is "proprietary", the specific chemical identity and percentage of composition has been withheld as a trade secret.

4. First aid measures

FIRST AID MEASURES

Eye contact Hold eye open and rinse slowly and gently with water for 15 - 20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

Skin contact Wash off immediately with soap and plenty of water for at least 15 minutes. Call poison control center or doctor for treatment advice. Remove contaminated clothing and shoes.

Inhalation Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a physician or poison control center immediately.

Ingestion Never give anything by mouth to an unconscious person. Do not induce vomiting without medical advice. Call a physician or poison control center immediately.

Most Important Symptoms and Effects, Both Acute and Delayed

Most Important Symptoms and MAY CAUSE ALLERGIC SKIN REACTION.

Effects

Indication of Any Immediate Medical Attention and Special Treatment Needed

Notes to physician Treat symptomatically.

5. Fire-fighting measures

Suitable extinguishing media

Use:. Dry chemical. Carbon dioxide (CO2). Water spray. alcohol-resistant foam.

Unsuitable extinguishing media No information available.

Specific hazards arising from the chemical
No information available.

Hazardous combustion products Carbon disulfide, ethylene thiourea (ETU). Sulfur oxides. Oxides of nitrogen. Oxides of carbon.

Explosion data
Protective equipment and precautions for firefighters
Use personal protective equipment. As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal Precautions Avoid contact with the skin and the eyes. Wear protective gloves/clothing and eye/face protection. Wash thoroughly after handling.

Environmental Precautions

Environmental precautions Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinenet environmental permits.

Methods and material for containment and cleaning up

Methods for Clean-Up Sweep up and shovel into suitable containers for disposal.

7. Handling and Storage

Precautions for safe handling

Handling Avoid contact with skin and eyes. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Keep out of reach of children. Wear protective gloves/clothing and eye/face protection.

Conditions for safe storage, including any incompatibilities

Storage Keep containers tightly closed in a cool, well-ventilated place.

incompatible materials Strong oxidizing agents. Acids.

8. Exposure Controls/Personal Protection

Exposure guidelines

Chemical name	ACGIH TLV	OSHA PEL
Sucrose	TWA: 10 mg/m³	TWA: 15 mg/m³ total dust TWA: 5 mg/m³ respirable fraction

		(vacated) TWA: 15 mg/m³ total dust (vacated) TWA: 5 mg/m³ respirable fraction

Engineering controls Investigate engineering techniques to reduce exposures. Local mechanical exhaust ventilation is preferred. Consult ACGIH ventilation manual or NFPA Standard 91 for design of exhaust systems.

Personal protective equipment

Eye/Face Protection Use eye protection to avoid eye contact. Where there is potential for eye contact have eye flushing equipment available. Safety glasses with side-shields. If splashes are likely to occur, wear:. Goggles.

Skin protection Wear protective gloves/clothing. Long sleeved clothing. Socks and footwear.

Respiratory protection Where airborne exposure is likely, use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. Full facepiece equipment is recommended and, if used, replaces need for face shield and/or chemical goggles. If exposures cannot be kept at a minimum with engineering controls, consult respirator manufacturer to determine appropriate type equipment for given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where there may be a potential for significant exposure, use an approved full face positive-pressure, self-contained breathing apparatus. Respiratory protection programs must comply with 29 CFR 1910.134.

General hygiene considerations

Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing before re-use. Wear suitable gloves and eye/face protection. Wash hands before breaks and immediately after handling the product.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Physical state	solid		
appearance	Yellow	**Odor**	Slight Rotten egg-like
color	No information available		

Property	VALUES	Remarks/ • Method
pH	No information available	
Melting point/freezing point	No information available	
Boiling Point/Range	No information available	
Flash Point	No information available	
Evaporation Rate	No information available	
flammability (solid, gas)	No information available	
Flammability limit in air		
Upper Flammability Limit	No information available	
Lower Flammability Limit	No information available	
vapor pressure	No information available	
Vapor Density	No information available	
Specific gravity	No information available	
Water solubility	No information available	
Solubility in Other Solvents	No information available	
Partition coefficient: n-octanol/water	No information available	
Autoignition temperature	205 C / 401 F °C / 401 °F	
decomposition temperature	No information available	
Viscosity, kinematic	No information available	
Dynamic viscosity	No information available	
Explosive properties	No information available	
Oxidizing properties	No information available	

OTHER INFORMATION

Softening point	No information available
molecular weight	No information available
VOC Content	No information available
density	No information available

Bulk density 40-45 lb/cu ft

10. Stability and Reactivity

Reactivity
no data available

Chemical stability
Stable under normal conditions. Hazardous polymerisation does not occur.
Possibility of hazardous reactions
None under normal processing.
Conditions to avoid
To avoid thermal decomposition, do not overheat. Keep away from children.
incompatible materials
Strong oxidizing agents. Acids.
Hazardous decomposition products
Hydrogen sulfide. Ethylenethiourea. Carbon disulfide.

11. Toxicological Information

Information on Likely Routes of Exposure

Product information Manzate Pro Stick :
Oral LD50 (rat) = >5,000 mg/kg
Dermal LD50 (rabbit) = > 2,000 mg/kg
Inhalation LC50 (rat) 4 hr = >5.4 mg/L

Mild to moderate eye irritant. Mild to slight skin irritant. Sensitizer .

Inhalation May be harmful if inhaled.

Eye contact May cause irritation.

Skin contact Slightly irritating.

Ingestion MAY BE HARMFUL IF SWALLOWED.

Information on Toxicological Effects

Symptoms No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

sensitization No information available.
Mutagenic effects No information available.
Carcinogenicity The information below indicates whether any agency has listed any ingredient as a carcinogen.

Chemical name	ACGIH	IARC	NTP	OSHA
Ethylene thiourea 96-45-7	-	Group 3	Reasonably Anticipated	X

IARC: (International Agency for Research on Cancer)
A trace contaminant, Ethylene thiourea (ETU) a breakdown product of Maneb, has been catergorized as a probable human carcinogen by NTP.

Reproductive effects Not Available.
STOT - Single Exposure No information available.
STOT - repeated exposure No information available.
Chronic toxicity Avoid repeated exposure.
Target organ effects Respiratory System, EYES.
Aspiration hazard No information available.

Numerical Measures of Toxicity - Product information

LD50 Oral	> 5000 mg/kg (rat)
LD50 Dermal	> 2000 mg/kg (rat)
LC50 Inhalation:	LC50/inhalation/4h/rat = > 5.4 mg/l 0 ml/m³ (Vapor)

12. Ecological Information

Marine Pollutant.

ecotoxicity

Manzate:
96 hr LC50
Rainbow trout -= 0.73 mg/L
Fathead minnow = 0.57 mg/L
Bluegill sunfish = 0.84 mg/L
72 hr EC50
Freshwater algae = 0.43 mg/L

Persistence/Degradability
No information available.

Bioaccumulation/ Accumulation
No information available.

Other Adverse Effects
No information available

13. Disposal Considerations

Waste Treatment Methods

Waste Disposal Method Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide or rinsate is a violation of Federal law. If the wastes cannot be disposed of by use or according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Contaminated packaging Refer to product label.

Chemical name	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
Ethylene thiourea	U116	Included in waste streams: K123, K124, K125, K126		U116

14. Transport Information

DOT Not regulated when shipped domestically by highway in non-buk containers as per 49 CFR 171.4

UN-No	UN3077
Proper shipping name	Environmentally hazardous substances, solid, n.o.s Mancozeb
Hazard class	9
Packing group	PG III
Marine Pollutant	Marine Pollutant.

IATA

UN-No	UN3077

Proper shipping name	Environmentally hazardous substances, solid, n.o.s Mancozeb
Hazard class	9
Packing group	PG III
Description	Marine Pollutant

IMDG/IMO

UN-No	UN3077
Proper shipping name	Environmentally hazardous substances, solid, n.o.s (Mancozeb)
Hazard class	9
Packing group	PG III
Marine Pollutant	Marine Pollutant

15. Regulatory Information

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

signal word	CAUTION
Ventilation Control	PESTICIDE APPLICATORS & WORKERS THESE WORKERS MUST REFER TO PRODUCT LABELING AND DIRECTIONS FOR USE IN ACCORDANCE WITH EPA WORKER PROTECTION STANDARD 40 CFR PART 170.

Keep out of Reach of Children. Harmful if inhaled or absorbed through skin. Harmful if swallowed. May irritate eyes, nose, throat and skin.

International Inventories

USINV	Not determined
DSL/NDSL	Not determined
EINECS/ ELINCS	Does not comply
ENCS	Does not comply
China	Does not comply
KECL	Does not comply
PICCS	Does not comply
AICS	Does not comply
TSCA	Does not comply

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and and Title 40n of the Code of Federal Regulations, Part 372:

Chemical name	SARA 313 - Threshold Values
Ethylene thiourea - 96-45-7	0.1

SARA 311/312 Hazardous Categorization

Acute health hazard	yes
Chronic health hazard	yes
Fire hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	yes

Chemical name	RQ	CERCLA EHS RQs	RQ
Ethylene thiourea 96-45-7	10 lb		RQ 10 lb final RQ RQ 4.54 kg final RQ

CERCLA

Component	RQ
Ethylene thiourea 96-45-7 (0-0.1)	10 lb

SARA Product RQ 0

RCRA

Component	RCRA - D Series Wastes	RCRA - P Series Wastes	RCRA - U Series Wastes
Ethylene thiourea 96-45-7 (0-0.1)			U116

Pesticide Information

State Regulations

Component	CAS-No	CATEGORY	California Prop. 65	Non-additive, corrosive chemical type
Mancozeb 8018-01-7 (75)	8018-01-7	Carcinogen	Carcinogen	
Ethylene thiourea 96-45-7 (0-0.1)	96-45-7	Carcinogen	Carcinogen Developmental	

State Right-to-Know

Chemical name	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Sucrose	X		X		
Mancozeb				X	
Ethylene thiourea	X	X	X	X	

International regulations

U.S. EPA Label information

EPA Pesticide registration number 70506-234

16. Other Information

NFPA **HEALTH** 1 **flammability** 1 **Instability** 1 **Physical hazard** -

Preparation Date 01-May-2015
Revision date 22-Mar-2016
Revision Summary
Update section 14

Disclaimer

United Phosphorus, Inc. believes that the information and recommendations container herein (including data and statements) are accurate as of the date hereof. NO WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WARRANTY OF MERCHANTABILITY, OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, IS MADE CONCERNING THE INFORMATION PROVIDED HEREIN. The information provided herein relates only to the specific product designated and may not be valid where such product is used in combination with other materials or in any process. Further, since the conditions and methods of use are beyond the control of United Phosphorus , Inc. and United Phosphorus Inc. expressly disclaims any and all liability as to any results obtained or arising from any use of the product or reliance on such information.

End of MSDS

MATERIAL SAFETY DATA SHEET

SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

COMPANY ADDRESS:
Arysta LifeScience NA Corp.
15401 Weston Pkwy, Ste. 150
Cary, NC 27513

EMERGENCY TELEPHONE NUMBERS:
FOR 24 HOUR EMERGENCY MEDICAL ASSISTANCE CALL:
1-866-303-6952
FOR CHEMICAL EMERGENCY: Spill, leak, fire, exposure, or accident call CHEMTREC 1-800-424-9300

PRODUCT NAME : CAPTAN 80 WDG
CHEMICAL NAME : N-(trichloromethylthio)cyclohex-4-ene-1,2-dicarboximide
CHEMICAL FAMILY : phthalimide fungicide
PRODUCT CODE : EPA Reg. No. 66222-58-66330

SECTION 2 - COMPOSITION, INFORMATION OF INGREDIENTS

COMPONENT	PERCENTAGE	CAS NUMBER	OSHA PEL	ACIGH TLV
Captan	78.2	133-06-2	5 mg/m^3	5 mg/m^3
Related Derivatives	1.8	N/A	N/A	N/A
Inert ingredients	20.0	N/A	N/A	N/A

SECTION 3 - HAZARDS IDENTIFICATION SUMMARY

(As defined by OSHA Hazard Communication Standard, 29 CFR 1910.1200)

EMERGENCY OVERVIEW: Beige granule
- May be harmful if swallowed or inhaled.
- Causes severe eye irritation.
- Avoid breathing dusts or spray mist.
- Avoid contact with eyes, skin or clothing.
- Keep out of reach of children.

POTENTIAL HEALTH HAZARDS:
EYE - Causes irreversible eye damage. Do not get in eyes or on clothing
SKIN - Harmful if absorbed through the skin. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.
INHALATION - May be fatal if inhaled
INGESTATION - May be harmful if swallowed.
POTENTIAL PHYSICAL HAZARDS: Can decompose at high temperatures forming toxic gases.
ENVIRONMENTAL HAZARDS: Toxic to fish and other water organisms. Keep out of waterways.

SECTION 4 - FIRST AID MEASURES

IF IN EYES:
- Hold eye open and rinse slowly and gently with water for 15-20 minutes.
- Remove contact lenses, if present after the first 5 minutes, then continue rinsing eye.
- Call a poison control center or doctor for treatment advice

IF SWALLOWED:
- Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow.
- Do not induce vomiting unless told to do so by a poison control center or doctor.
- Do not give anything by mouth to an unconscious or convulsing person.

IF INHALED:
- Move person to fresh air.
- If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.
- Call a poison control center or doctor for further treatment advice.

IF ON SKIN OR CLOTHING:

- Take off contaminated clothing.
- Rinse skin immediately with plenty of water for 15-20 minutes.
- Call a poison control center or doctor for treatment advice.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage.

SECTION 5 - FIRE FIGHTING MEASURES

FLASHPOINT (method): Will not flash.
FLAMMABLE LIMITS (LFL-UFL): unknown
FIRE AND EXPLOSION HAZARD: Can burn in fire, releasing irritating and toxic gases due to thermal decomposition or combustion.
EXTINGUISHING MEDIA: Use foam, dry chemical, carbon dioxide, or water spray when fighting fires involving this material.
FIRE FIGHTING INSTRUCTIONS: Evacuate area and fight fire upwind from a safe distance to avoid hazardous vapors and decomposition products. Dike and collect water used to fight fire to prevent environmental damage due to run off. Foam or dry chemical fire extinguishing systems are preferred to prevent environmental damage from excessive water run off.
FIRE FIGHTING EQUIPMENT: Self-contained breathing apparatus with full facepiece. Full fire fighting turn-out gear (Bunker gear).
HAZARDOUS COMBUSTION PRODUCTS: Hydrogen chloride. Oxides of nitrogen, hydrogen, carbon, sulfur.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Clean up spills immediately, observing precautions described in Section 8 of this document. Isolate hazard area. Keep unnecessary and unprotected personnel from entering.
SMALL SPILL: Vacuum or sweep up material and place in a container for reuse or disposal.
LARGE SPILL: Vacuum or sweep up material and place in appropriate container for reuse or disposal. After removal, flush contaminated area thoroughly with water. Pick up wash liquid with inert absorbent and place in a chemical waste container for disposal. This material is a water pollutant and should be prevented from contaminating soil or from entering sewage and drainage systems and bodies of water.

SECTION 7 - HANDLING AND STORAGE

KEEP OUT OF REACH OF CHILDREN!

HANDLING: Use only in a well-ventilated area. Minimize dust generation and accumulation. Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Use only as directed on the label.
STORAGE: Keep pesticide in original container. Keep container tightly closed when not in use. Protect from excessive heat. Store in a cool dry place.

SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION

Causes irreversible eye damage. Inform workers orally or by posting warning signs at entrances to treated areas.
ENGINEERING CONTROLS: Proper ventilation is required when handling or using this product to keep exposure to airborne contaminants below the exposure limit.
Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
PERSONAL PROTECTIVE EQUIPMENT:
EYE PROTECTION - Safety goggles.
CLOTHING - Long-sleeved shirt and long pants, Shoes plus socks, Chemical resistant apron when participating in dip treatments
GLOVES - Chemical-resistant gloves made of any waterproof material (except

applicators driving motorized equipment) such as barrier laminate, butyl rubber, natural rubber, neoprene rubber, or nitrile rubber.
RESPIRATOR - A NIOSH-approved respirator with any N, R, P, or HE filter must be worn by all handlers except (1) applicators driving motorized equipment, and (2) mixers/loaders/applicators participating in backpack, low pressure hand-wand/handgun, and dip treatments, and 93) mixers/loaders participating in aerial application operations must wear an air-purifying NIOSH-approved respirator with any N100, R100, or P100 filter.

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning and maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

USER SAFETY RECOMMENDATIONS:
1. Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
2. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
3. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DESCRIPTION: beige granule.
ODOR: organic.
MOLECULAR WEIGHT (technical): 300.6
MOLECULAR FORMULA (technical): $C_9H_8Cl_3NO_2S$
BULK DENSITY: .70 g/mL @ 20 degrees C
pH: 5.0
VAPOR PRESSURE: 2.01×10^{-4} Pa at 50 degrees C
% VOLATILE: < 1%
WATER SOLUBILITY: insoluble

SECTION 10 - STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable, however may decompose if heated.
CONDITIONS TO AVOID: Avoid exposure to excessive heat and high moisture conditions for prolonged periods.
INCOMPATIBILITY WITH OTHER MATERIALS: Alkaline and acidic conditions and materials
HAZARDOUS DECOMPOSITION PRODUCTS: Hydrogen chloride. Oxides of hydrogen, nitrogen, sulfur, carbon.
HAZARDOUS POLYMERIZATION: Product will not undergo polymerization.

SECTION 11 - TOXICOLOGICAL INFORMATION

ACUTE TOXICITY:

Oral LD_{50} (rat)	-	> 2,000 mg/Kg
Dermal LD_{50} (rat)	-	> 5,000 mg/Kg
Inhalation LC_{50} (rat)	-	> 1.0 mg/L
Eye Irritation (rabbit)	-	Corrosive
Skin Irritation (rabbit)	-	mild
Sensitization (guinea pig)	-	Slight

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Acute asthma and/or other chronic pulmonary diseases due to inhalation of vapors or spray mists.

CARCINOGEN STATUS:
OSHA - Not listed.
NTP - Not listed.
IARC - Group 3.
The EPA has classified captan as a probable human carcinogen due to evidence of intestinal tumors in lab studies and captan's chemical similarity to other known carcinogens.
MUTAGENIC DATA: Mutagenic studies indicate that captan is either non-mutagenic or has very low mutagenicity in test animals.
ADDITIONAL DATA: Teratogenicity studies have been inconclusive and the EPA has concluded that captan does not produce birth defects.

SECTION 12 - ECOLOGICAL INFORMATION

ENVIRONMENTAL SUMMARY: This pesticide is toxic to fish. Do not apply directly to water. Drift and runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not clean equipment or dispose of equipment washwaters in a manner that will contaminate water resources.
FISH TOXICITY: (Technical)
96 hour LC_{50}, Rainbow trout - unknown ug/L
96 hour LC_{50}, Bluegill - 0.07 ug/L
AVIAN TOXICITY: (Technical)
Oral LD_{50}, Bobwhite quail - > 2,000 mg/Kg
Oral LD_{50}, Mallard duck - > 2,000 mg/Kg
BEE TOXICITY: Non-toxic.

SECTION 13 - DISPOSAL CONSIDERATIONS

WASTE: Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency or Hazardous Waste representative at the nearest EPA Regional Office for guidance
CONTAINER: Refer to product label.

SECTION 14 - TRANSPORT INFORMATION

DOT SHIPPING DESCRIPTION: Environmentally Hazardous Substance, Solid, N.O.S., (Captan 80%), 9, UN 3077, PG III, RQ
DOT HAZARD CLASS: 9
UN NUMBER: UN 3077
DOT PACKING GROUP: III
DOT PRIMARY/SECONDARY LABEL: Class 9
DOT PRIMARY/SECONDARY PLACARD: Class 9
DOT EMERGENCY RESPONSE GUIDE#: 171

SECTION 15 - REGULATORY INFORMATION

FIFRA: All pesticides are governed under the Federal Insecticide, Fungicide, and Rodenticide Act. The regulatory information presented below is pertinent only when this product is handled outside of the normal use and application as a pesticide.
OSHA HAZARD COMMUNICATION STANDARD STATUS: Regulated.
CERCLA REPORTABLE QUANTITY: 10 pounds
SARA TITLE III STATUS:
302 Extremely Hazardous Substance - NO
311/312 Hazard Categories - Immediate
313 Toxic Chemicals - Yes (Captan)
CALIFORNIA PROP 65 STATUS: Listed

SECTION 16 - OTHER INFORMATION

DISCLAIMER: The information presented herein is based on available data from reliable sources and is correct to the best of Arysta LifeScience North America (ALSNA) Corporation's knowledge. ALSNA makes no warranty, express or implied, regarding the accuracy of the data or the results obtained from the use of this product. Nothing herein may be construed as recommending any practice or any product in violation of any law or regulations. The user is solely responsible for determining the suitability of any material or product for a specific purpose and for adopting any appropriate safety precautions. To the extent permitted by law, we disclaim all liability for injury or damage stemming from any improper use of the material or product described herein.

REVISED DATE: November 1, 2006
REVISED FOR: Add new Company name, address, registration number and Emergency telephone numbers
REVISED BY: A. Brown
APPROVED BY: S. Seckinger

Captan 80 WDG Fungicide

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 05/29/2015 Revision date: 11/17/2015 Version: 2.0

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Mixture

Product name : Captan 80 WDG Fungicide

Other means of identification : EPA Reg. No. 66330-29

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Fungicide.

1.3. Details of the supplier of the safety data sheet

Arysta LifeScience North America LLC
15401 Weston Parkway, Suite 150
Cary, NC 27513 - USA

1.4. Emergency telephone number

Emergency number : Exposure Calls (PROSAR): +1-866-303-6952 or +1-651-603-3432 (international)
Spill Calls (CHEMTREC) (Contract # CCN1779): +1-800-424-9300 or +1-703-527-3887 (international)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS-US classification

Acute Tox. 4 (Inhalation:dust,mist)	H332
Eye Dam. 1	H318
Skin Sens. 1	H317
Carc. 2	H351

Full text of H-statements: see section 16

2.2. Label elements

GHS-US labelling

Hazard pictograms (GHS-US) :

GHS05 GHS07 GHS08

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) : H317 - May cause an allergic skin reaction
H318 - Causes serious eye damage
H332 - Harmful if inhaled
H351 - Suspected of causing cancer

Precautionary statements (GHS-US) : P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P261 - Avoid breathing dust
P271 - Use only outdoors or in a well-ventilated area
P272 - Contaminated work clothing must not be allowed out of the workplace
P280 - Wear eye protection, protective clothing, protective gloves
P302+P352 - If on skin: Wash with plenty of water
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a doctor
P321 - Specific treatment (see First aid measures on this label)
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention
P362+P364 - Take off contaminated clothing and wash it before reuse
P405 - Store locked up
P501 - Dispose of contents/container to an authorised waste collection point

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS-US)

0.75 percent of the mixture consists of ingredient(s) of unknown acute toxicity (Oral)

3.25 percent of the mixture consists of ingredient(s) of unknown acute toxicity (Dermal)
0.75 percent of the mixture consists of ingredient(s) of unknown acute toxicity (Inhalation (Dust/Mist))

SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable

3.2. Mixture

Exact concentrations withheld as trade secret.

Name	Product identifier	%	GHS-US classification
Captan: N-[(trichloromethyl)thio]-4-cyclohexene-1, 2-dicarboximide	(CAS No) 133-06-2	70 – 80	Acute Tox. 3 (Inhalation:dust,mist), H331 Eye Dam. 1, H318 Skin Sens. 1, H317 Carc. 2, H351 Aquatic Acute 1, H400
Sodium diisopropyl naphthalene sulfonate	(CAS No) 1322-93-6	1 – 5	Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Inhalation), H332 Eye Irrit. 2A, H319
Citric acid	(CAS No) 77-92-9	0.1 – 2	Eye Irrit. 2A, H319
disodium maleate	(CAS No) 371-47-1	0.1 – 1	Skin Irrit. 2, H315 Eye Irrit. 2A, H319 STOT SE 3, H335
folpet (ISO)|N-(trichloromethylthio)phthalimide	(CAS No) 133-07-3	<= 0.1	Acute Tox. 4 (Inhalation:dust,mist), H332 Eye Irrit. 2A, H319 Skin Sens. 1, H317 Carc. 2, H351 Aquatic Acute 1, H400

Full text of H-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : Never give anything by mouth to an unconscious person. If medical advice is needed, have product container or label at hand.

First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

First-aid measures after skin contact : Wash with plenty of soap and water. Wash contaminated clothing before reuse. If skin irritation or rash occurs: Get medical advice/attention.

First-aid measures after eye contact : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.

First-aid measures after ingestion : Do NOT induce vomiting. Drink plenty of water. Get medical advice/attention.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries : Suspected of causing cancer.

Symptoms/injuries after inhalation : Danger of serious damage to health by prolonged exposure through inhalation. Harmful if inhaled.

Symptoms/injuries after skin contact : May cause an allergic skin reaction.

Symptoms/injuries after eye contact : Causes serious eye damage.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically and supportively.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Carbon dioxide. Foam. Halons. Dry powder. Water fog.

Unsuitable extinguishing media : None known.

5.2. Special hazards arising from the substance or mixture

Fire hazard : Burning produces irritating, toxic and noxious fumes.

Reactivity : No dangerous reactions known.

5.3. Advice for firefighters

Firefighting instructions : Do not allow run-off from fire fighting to enter drains or water courses. Exercise caution when fighting any chemical fire.

Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection. Use self-contained breathing apparatus. Wear fire/flame resistant/retardant clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Avoid creating or spreading dust. Avoid contact with skin and eyes.

6.1.1. For non-emergency personnel

Protective equipment : Chemical goggles or safety glasses. Dust impervious gloves. Do not breathe dust.

Emergency procedures : Evacuate unnecessary personnel. Stop leak, if possible without risk.

6.1.2. For emergency responders

Protective equipment : Chemical goggles or safety glasses. Dust impervious gloves. Avoid breathing dust.

Emergency procedures : Ventilate area. Stop leak if safe to do so.

6.2. Environmental precautions

Do not discharge into drains or the environment. Prevent dispersion. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

For containment : Avoid generating dust. Stop the flow of material, if this is without risk.

Methods for cleaning up : Sweep spilled substance into containers; if appropriate, moisten first to prevent dusting.

6.4. Reference to other sections

Section 13: disposal information. Section 7: safe handling. Section 8: personal protective equipment.

SECTION 7: Handling and Storage

7.1. Precautions for safe handling

Precautions for safe handling : Use only outdoors or in a well-ventilated area. Avoid breathing dust. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid contact with skin, eyes and clothing.

Hygiene measures : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Do not store near food, foodstuffs, drugs, or potable water supplies. Keep container closed when not in use.

Incompatible products : Alkalis and caustic products.

Heat and ignition sources : Keep away from heat, sparks and flame.

Prohibitions on mixed storage : Incompatible materials.

Storage area : Store in dry, cool, well-ventilated area.

7.3. Specific end use(s)

Fungicide.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Captan 80 WDG Fungicide		
ACGIH	Not applicable	
OSHA	Not applicable	

Captan: N-[(trichloromethyl)thio]-4-cyclohexene-1, 2-dicarboximide (133-06-2)		
ACGIH	ACGIH TWA (mg/m³)	5 mg/m³
ACGIH	Remark (ACGIH)	Skin irr; DSEN; A3
OSHA	Not applicable	

folpet (ISO)|N-(trichloromethylthio)phthalimide (133-07-3)	
ACGIH	Not applicable
OSHA	Not applicable

Sodium diisopropyl naphthalene sulfonate (1322-93-6)	
ACGIH	Not applicable
OSHA	Not applicable

Citric acid (77-92-9)	
ACGIH	Not applicable
OSHA	Not applicable

disodium maleate (371-47-1)	
ACGIH	Not applicable
OSHA	Not applicable

8.2. Exposure controls

Appropriate engineering controls	: Avoid dispersal of dust in the air (ie, clearing dust surfaces with compressed air). Use only outdoors or in a well-ventilated area.
Personal protective equipment	: Avoid all unnecessary exposure.
Hand protection	: Wear dust impervious gloves.
Eye protection	: Chemical goggles or safety glasses. In case of dust production: protective goggles.
Skin and body protection	: Long sleeved protective clothing.
Respiratory protection	: Where exposure through inhalation may occur from use, respiratory protection equipment is recommended. Wear appropriate mask.
Consumer exposure controls	: Keep out of reach of children. Avoid contact during pregnancy/while nursing.
Other information	: Do not eat, drink or smoke when using this product.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Solid
Appearance	: Granules.
Colour	: Beige
Odour	: Organic
Odour threshold	: No data available
pH	: 5
Melting point	: No data available
Freezing point	: No data available
Boiling point	: No data available
Flash point	: No data available
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: No data available
Explosive limits	: No data available
Explosive properties	: No data available
Oxidising properties	: No data available
Vapour pressure	: 0.000201 Pa @ 50 °C
Relative density	: No data available
Relative vapour density at 20 °C	: No data available
Density	: 0.7 g/ml @ 20 °C
Solubility	: No data available
Log Pow	: No data available
Log Kow	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No dangerous reactions known.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Hazardous polymerization will not occur.

10.4. Conditions to avoid

Extremely high or low temperatures.

10.5. Incompatible materials

Caustic products.

10.6. Hazardous decomposition products

Thermal decomposition generates : hydrogen chloride. Carbonyl sulfide. Carbon disulfide. Thiophosgene.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Likely routes of exposure : Inhalation; Skin and eye contact

Acute toxicity : Inhalation:dust,mist: Harmful if inhaled.

Captan 80 WDG Fungicide	
LD50 oral rat	> 5000 mg/kg (similar product)
LD50 dermal rat	> 2000 mg/kg (similar product)
LC50 inhalation rat (mg/l)	> 2.23 mg/l/4h (similar product)

Captan: N-[(trichloromethyl)thio]-4-cyclohexene-1, 2-dicarboximide (133-06-2)	
LD50 oral rat	> 5000 mg/kg
LD50 dermal rat	> 2000 mg/kg
LC50 inhalation rat (mg/l)	0.27 - 0.67 mg/l/4h
ATE US (vapours)	0.270 mg/l/4h
ATE US (dust,mist)	0.270 mg/l/4h

folpet (ISO)[N-(trichloromethylthio)phthalimide (133-07-3)	
ATE US (dust,mist)	1.500 mg/l/4h

Sodium diisopropyl naphthalene sulfonate (1322-93-6)	
ATE US (oral)	500.000 mg/kg bodyweight
ATE US (gases)	4500.000 ppmv/4h
ATE US (vapours)	11.000 mg/l/4h
ATE US (dust,mist)	1.500 mg/l/4h

Citric acid (77-92-9)	
LD50 oral rat	11700 mg/kg
ATE US (oral)	11700.000 mg/kg

Skin corrosion/irritation : Not classified

(Slightly irritating to skin)

Serious eye damage/irritation : Causes serious eye damage.

Respiratory or skin sensitisation : May cause an allergic skin reaction.

Germ cell mutagenicity : Not classified

In vivo, Captan has been examined in many systems and the overall conclusion is of no significant genotoxic activity. Genotoxicity has been shown in vitro primarily for prokaryotic and non-mammalian eukaryotic cells when cellular protective mechanisms (GSH, etc.) are absent.

Carcinogenicity : Suspected of causing cancer.

Likely to be carcinogenic to humans following prolonged, high-level exposures causing cytotoxicity and regenerative cell hyperplasia in the proximal region of the small intestine (oral exposure) or the respiratory tract (inhalation exposure), but not likely to be a human carcinogen at dose levels that do not cause cytotoxicity and regenerative cell hyperplasia.

Captan: N-[(trichloromethyl)thio]-4-cyclohexene-1, 2-dicarboximide (133-06-2)	
IARC group	3 - Not classifiable

Reproductive toxicity : Not classified

In a 3-generation rat study, Captan Technical had no effects on fertility, gestation length or litter size. Pup survival was reduced at doses [illegible] generation study showed decreased pup (rat) weights at 12.5 mg/kg/day.

Specific target organ toxicity (single exposure)	: Not classified
Specific target organ toxicity (repeated exposure)	: May cause damage to organs through prolonged or repeated exposure. Captan Technical is not carcinogenic to rats or dogs following chronic dietary exposure. In mice, chronic dietary exposure to Captan Technical produced increased tumors of the small intestine, but only at high doses. The tumors are a result of chemical irritation of the intestine following repeated high doses, and not a mutagenic effect. The NOEL for tumor formation was 400 ppm Captan technical in diet.
Aspiration hazard	: Not classified
Symptoms/injuries after inhalation	: Danger of serious damage to health by prolonged exposure through inhalation. Harmful if inhaled.
Symptoms/injuries after skin contact	: May cause an allergic skin reaction.
Symptoms/injuries after eye contact	: Causes serious eye damage.

SECTION 12: Ecological Information

12.1. Toxicity

Ecology - water : Very toxic to aquatic life.

Captan: N-[(trichloromethyl)thio]-4-cyclohexene-1, 2-dicarboximide (133-06-2)	
LC50 fish 1	50 µg/l 96 h Rainbow trout
LC50 other aquatic organisms 1	1.6 mg/l green algae
EC50 Daphnia 1	4.7 mg/l 48 h
LC50 fish 2	240 µg/l 96 h Mirror carp

Citric acid (77-92-9)	
LC50 fish 1	1516 g/l Lepomis macrochirus
EC50 Daphnia 1	120

12.2. Persistence and degradability

Captan: N-[(trichloromethyl)thio]-4-cyclohexene-1, 2-dicarboximide (133-06-2)	
Biodegradation	DT50 of < 1 day in aerobic and anaerobic soil

Citric acid (77-92-9)	
Chemical oxygen demand (COD)	0.728 g O_2/g substance
Biodegradation	98 % after 48 hours

12.3. Bioaccumulative potential

Captan: N-[(trichloromethyl)thio]-4-cyclohexene-1, 2-dicarboximide (133-06-2)	
Bioaccumulative potential	Not expected to bioaccumulate.

Citric acid (77-92-9)	
Log Pow	-1.72

12.4. Mobility in soil

Captan: N-[(trichloromethyl)thio]-4-cyclohexene-1, 2-dicarboximide (133-06-2)	
Ecology - soil	Non-mobile.

12.5. Other adverse effects

Effect on the global warming : No known ecological damage caused by this product.

SECTION 13: Disposal Considerations

13.1. Waste treatment methods

Waste treatment methods	: Do not dispose in household garbage.
Sewage disposal recommendations	: Do not dispose of waste into sewer.
Waste disposal recommendations	: Dispose in a safe manner in accordance with local/national regulations.

SECTION 14: Transport Information

Department of Transportation (DOT)

In accordance with DOT

RQ = 12.77 lbs.

Transport document description : RQ UN3077 Environmentally hazardous substances, solid, n.o.s. (captan), 9, III

UN-No.(DOT)	: UN3077
Proper Shipping Name (DOT)	: Environmentally hazardous substances, solid, n.o.s. (captan)
Transport hazard class(es) (DOT)	: 9 - Class 9 - Miscellaneous hazardous material 49 CFR 173.140
Hazard labels (DOT)	: 9 - Class 9 (Miscellaneous dangerous materials)

Packing group (DOT)	: III - Minor Danger

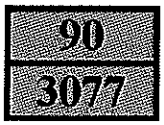
Additional information

Other information	: No supplementary information available.

ADR

Transport document description	: UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (captan), 9, III, (E)
Packing group (ADR)	: III
Class (ADR)	: 9 - Miscellaneous dangerous substances and articles
Hazard identification number (Kemler No.)	: 90
Classification code (ADR)	: M7
Danger labels (ADR)	: 9 - Miscellaneous dangerous substances and articles

Orange plates	:



Tunnel restriction code (ADR)	: E
Limited quantities (ADR)	: 5kg
Excepted quantities (ADR)	: E1

Transport by sea

UN-No. (IMDG)	: 3077
Proper Shipping Name (IMDG)	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (captan)
Class (IMDG)	: 9 - Miscellaneous dangerous substances and articles
Packing group (IMDG)	: III - substances presenting low danger
Marine pollutant	: Yes

Air transport

UN-No. (IATA)	: 3077
Proper Shipping Name (IATA)	: Environmentally hazardous substance, solid, n.o.s. (captan)
Class (IATA)	: 9 - Miscellaneous Dangerous Goods
Packing group (IATA)	: III - Minor Danger
Marine pollutant	: Yes

SECTION 15: Regulatory information

15.1. US Federal regulations

Captan: N-[(trichloromethyl)thio]-4-cyclohexene-1, 2-dicarboximide (133-06-2)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Listed on United States SARA Section 313	
RQ (Reportable quantity, section 304 of EPA's List of Lists)	10 lb

Sodium diisopropyl naphthalene sulfonate (1322-93-6)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

disodium maleate (371-47-1)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

CANADA

Captan: N-[(trichloromethyl)thio]-4-cyclohexene-1, 2-dicarboximide (133-06-2)
Listed on the Canadian DSL (Domestic Substances List) inventory.

disodium maleate (371-47-1)
Listed on the Canadian DSL (Domestic Substances List) inventory.

EU-Regulations

Captan: N-[(trichloromethyl)thio]-4-cyclohexene-1, 2-dicarboximide (133-06-2)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

disodium maleate (371-47-1)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Acute Tox. 4 (Inhalation:dust,mist)	H332
Eye Dam. 1	H318
Skin Sens. 1	H317
Carc. 2	H351
Aquatic Acute 1	H400

Full text of H-statements: see section 16

National regulations

No additional information available

15.3. US State regulations

Captan: N-[(trichloromethyl)thio]-4-cyclohexene-1, 2-dicarboximide (133-06-2)				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significance risk level (NSRL)
Yes	No	No	No	300

Captan: N-[(trichloromethyl)thio]-4-cyclohexene-1, 2-dicarboximide (133-06-2)
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List

15.4. US EPA – FIFRA Regulations

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including directions for use.

Signal word (FIFRA) : DANGER.

Hazard statements (FIFRA)	: Corrosive. Causes irreversible eye damage. Harmful if absorbed through skin. Do not get in eyes or on clothing. Avoid contact with skin. Wear long-sleeved shirt and long pants; socks and shoes, protective eyewear (goggles, face shield or safety glasses), and chemical resistant gloves (such as or made out of any waterproof material, selection category A). Wash thoroughly with soap and water after handling. Prolonged or frequently repeated skin contact may cause allergic reaction in some individuals.
Environmental hazards	: This product is toxic to aquatic organisms. Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Drift and runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when cleaning equipment or disposing of equipment washwaters or rinsate. This product may contaminate water through drift of spray in wind. This product has a potential for runoff for several months or more after application. Poorly draining soils and soils with shallow water tables are more prone to produce runoff that contains this product. A level, well maintained vegetative buffer strip between areas to which this product is applied and surface water features such as ponds, streams, and springs will reduce the potential for contamination of water from rainfall-runoff. Runoff of this product will be reduced by avoiding applications when rainfall is forecasted to occur within 48 hours. Sound erosion control practices will reduce this product's contribution to surface water contamination.

SECTION 16: Other information

Indication of changes	: Product identifier
Data sources	: ACGIH (American Conference of Governement Industrial Hygienists). National Fire Protection Association. Fire Protection Guide to Hazardous Materials; 10th edition. Krister Forsberg and S.Z. Mansdorf, "Quick Selection Guide to Chemical Protective Clothing", Fifth Edition. NIOSH Occupational Health Guide for chemical Substances - Vol. II, September, 1978. OSHA 29CFR 1910.1200 Hazard Communication Standard. TSCA Chemical Substance Inventory. Accessed at http://www.epa.gov/oppt/existingchemicals/pubs/tscainventory/howto.html.
Abbreviations and acronyms	: ATE: Acute Toxicity Estimate. CAS (Chemical Abstracts Service) number. CLP: Classification, Labelling, Packaging. EC50: Environmental Concentration associated with a response by 50% of the test population. LD50: Lethal Dose for 50% of the test population. GHS: Globally Harmonized System (of Classification and Labeling of Chemicals). NOEC: No Observable Effect Concentration. OSHA: Occupational Safety & Health Administration. TSCA: Toxic Substances Control Act.
Other information	: None.

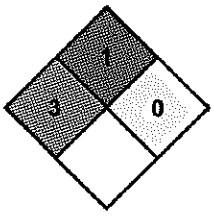
Full text of H-statements:

Acute Tox. 3 (Inhalation:dust,mist)	Acute toxicity (inhalation:dust,mist) Category 3
Acute Tox. 4 (Inhalation)	Acute toxicity (inhal.), Category 4
Acute Tox. 4 (Inhalation:dust,mist)	Acute toxicity (inhalation:dust,mist) Category 4
Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
Aquatic Acute 1	Hazardous to the aquatic environment — Acute Hazard, Category 1
Carc. 2	Carcinogenicity, Category 2
Eye Dam. 1	Serious eye damage/eye irritation, Category 1
Eye Irrit. 2A	Serious eye damage/eye irritation, Category 2A
Skin Irrit. 2	Skin corrosion/irritation, Category 2
Skin Sens. 1	Sensitisation — Skin, category 1
STOT SE 3	Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation
H302	Harmful if swallowed
H315	Causes skin irritation
H317	May cause an allergic skin reaction
H318	Causes serious eye damage
H319	Causes serious eye irritation
H331	Toxic if inhaled
H332	Harmful if inhaled
H335	May cause respiratory irritation
H351	Suspected of causing cancer
H400	Very toxic to aquatic life

NFPA health hazard : 3 - Short exposure could cause serious temporary or residual injury even though prompt medical attention was given.

NFPA fire hazard : 1 - Must be preheated before ignition can occur.

NFPA reactivity : 0 - Normally stable, even under fire exposure conditions, and not reactive with water.



SDS US (GHS HazCom 2012)

SDS Prepared by: The Redstone Group, LLC.
6077 Frantz Rd
Suite 206
Dublin, Ohio, USA 43016
614.923.7472
www.redstonegrp.com

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product

SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

COMPANY ADDRESS:
ALBAUGH, LLC
Ankeny, IA 50021

EMERGENCY TELEPHONE NUMBERS:
(800) 424-9300 (CHEMTREC, transportation and spills)

PRODUCT NAME : **ORCHARD STAR**
CHEMICAL NAME : Dimethylamine Salt of 2,4-Dichlorophenoxyacetic Acid
PRODUCT USE : Herbicide
PRODUCT CODE : EPA Reg. No 42750-19

SECTION 2 - HAZARDS IDENTIFICATION SUMMARY

(As defined by OSHA Hazard Communication Standard, 29 CFR 1910.1200)

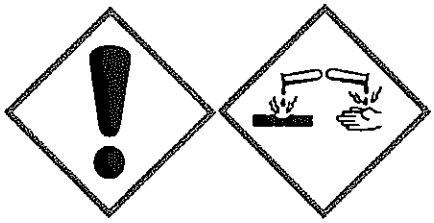
Clear light amber liquid with a pungent odor.

HEALTH HAZARDS: DANGER. Corrosive. Causes irreversible eye damage if not treated promptly.

PHYSICAL HAZARDS: May release toxic fumes if burned.

ENVIRONMENTAL HAZARDS: May be toxic to fish, aquatic invertebrates and non-target plants.

Use of this chemical in areas where soils are permeable, and the water table is shallow, may result in groundwater contamination.



SECTION 3 - COMPOSITION, INFORMATION OF INGREDIENTS

COMPONENT	PERCENTAGE	CAS NUMBER
Dimethylamine Salt of 2,4-Dichlorophenoxyacetic Acid	46.8 %	2008-39-1
Inert Ingredients	53.2%	N/A

SECTION 4 - FIRST MEASURES

First Aid responders should use protective equipment in Section 8 if there is a potential for exposure to product.

IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
IF SWALLOWED: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.
IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
IF INHALED: Move person to fresh air, if person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.
NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-424-9300 for emergency medical treatment.

SECTION 5 - FIRE FIGHTING MEASURES

National Fire Protection Rating (NFPA)

HEALTH	3
FLAMMABILITY	1
REACTIVITY	1
4=Severe 3=Serious 2=Moderate 1=Slight 0=Minimal	

FLASHPOINT: >100°C

EXTINGUISHING MEDIA: Water spray, Foam

FIRE AND EXPLOSION HAZARD: Hydrogen chloride, Oxides of nitrogen from thermal decomposition.

FIRE FIGHTING INSTRUCTIONS: Evacuate area and fight fire upwind from a safe distance to avoid possible hazardous fumes and decomposition products. Dike and collect water used to fight fire to prevent environmental damage due to run off. Foam or dry chemical fire extinguishing systems are preferred to prevent environmental damage from excessive water runoff.

FIRE FIGHTING EQUIPMENT: Self-contained breathing apparatus with full facepiece and protective clothing.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILLS OR LEAKS: Clean up spills immediately, observing precautions in Section 8 of this document. Isolate hazard area. Keep unnecessary and unprotected personnel from entering.

SMALL SPILL: Absorb small spills on sand, vermiculite or other inert absorbent. Place contaminated material in appropriate container for disposal.
LARGE SPILL: Dike large spills using absorbent or impervious material such as clay or sand. Recover and contain as much free liquid as possible for reuse. Allow absorbed material to solidify, and scrape up for disposal.

Do not allow wash waters from clean up to enter waterways.

SECTION 7 - HANDLING AND STORAGE

KEEP OUT OF REACH OF CHILDREN!

HANDLING: Use only in a well-ventilated area. Do not reuse this container. Wear proper safety equipment specified in Section 8 when mixing, loading or otherwise handling concentrate.

STORAGE: Do not store this product near fertilizers, seeds, insecticides, or fungicides. Reclose all partially used containers by thoroughly tightening screw cap. Absorb any spill with a suitable clay absorbent and dispose of as indicated under "Pesticide Disposal." Protect from freezing. If stored below freezing, the product must be warmed to at least 70°F and agitated before using. This does not affect the efficiency of the product.

Refer to product label for additional and complete storage guidance.

SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS (8 hour TWA, ppm):

COMPONENT	OSHA TWA	ACIGH TWA
Dimethylamine Salt of 2,4-dichlorophenoxyacetic Acid	10	10

ENGINEERING CONTROLS: Proper ventilation is required when handling or using this product to keep exposure to airborne contaminants below the exposure limit. Local mechanical exhaust ventilation may be required. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

PERSONAL PROTECTIVE EQUIPMENT: Some materials that are chemical-resistant to this product are butyl rubber, natural rubber, neoprene or nitrile rubber. If you want more options, follow the instructions for Category A on an EPA chemical-resistance category selection chart.

All mixers, loaders, applicators, flaggers, and other handlers must wear:
1. Long-sleeved shirt and long pants.
2. Shoes and socks.
3. Chemical resistant gloves when applying with any handheld nozzle or equipment, mixing or loading, cleaning up spills or equipment, or otherwise exposed to the concentrate.
4. Chemical resistant apron when, mixing or loading, cleaning up spills or equipment, or otherwise exposed to the concentrate.
5. Wear protective eyewear (goggles or face shield).

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry. After each day of use, clothing or PPE must not be reused until it has been cleaned.

USER SAFETY RECOMMENDATIONS: Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash outside of gloves before removing. As soon as possible wash thoroughly and change into clean clothing.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear light amber liquid
Odor:	Pungent odor
pH:	7.0 - 8.0
Melting Point:	Not applicable
Boiling Point:	No data
Flash Point:	>100°C
Evaporation Rate:	No data
Flammability:	Not flammable
Flammability Limits:	Not applicable
Vapor Pressure:	16.5 mm Hg at 20C
Vapor Density:	< 1 (water vapor)
Density:	1.12 – 1.19 g/ml (9.40 – 9.95 lb/gal.)*
Solubility:	Soluble
Partition Coefficient:	log Pow - < 3.2 @ 25 C (glyphosate)
Auto-Ignition Temperature:	No data
Decomposition Temperature:	No data
Viscosity:	9.925 cSt @ 20°C, 4.875 cSt @40°C

*Listed density is an approximate value and does not necessarily represent that of a specific batch.

SECTION 10 - STABILITY AND REACTIVITY

PRODUCT REACTIVITY: Non-reactive

CHEMICAL STABILITY: Stable under normal conditions

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: Avoid excessive heat.

INCOMPATIBLE MATERIALS: Oxidizing agents and acids

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition may release toxic gases such as HCl

SECTION 11 - TOXICOLOGICAL INFORMATION

ACUTE TOXICITY:

Oral LD_{50} (rat)	-	> 1,000 mg/Kg
Dermal LD_{50} (rat)	-	> 5,000 mg/Kg
Inhalation LC_{50} (rat)	-	> 2.08 mg/L
Eye Irritation (rabbit)	-	Severe
Skin Irritation (rabbit)	-	Moderate
Sensitization (guinea pig)	-	Contact sensitizer

CARCINOGEN STATUS:

OSHA	-	No
NTP	-	No
IARC	-	2B

TERATOGENICITY: Laboratory tests have shown decreased fetal body weights at doses toxic to mother animals

MUTAGENICITY: Weight of evidence indicates that 2,4-D acid is not mutagenic

SECTION 12 - ECOLOGICAL INFORMATION

ENVIRONMENTAL SUMMARY: This pesticide may be toxic to fish and aquatic invertebrates. For terrestrial uses: Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas. Do not contaminate water when disposing of equipment washwaters or rinsate. Apply this product only as directed on label.

This chemical has properties and characteristics associated with chemicals detected in groundwater. The use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination. Application around a cistern or well may result in contamination of drinking water or groundwater.

Refer to product label for additional guidance on environmental hazards.

FATE: 2,4-D DMA salt rapidly disassociates to the parent acid in the environment. Typical half-life of the 2,4-D acid is from a few days to a few weeks.

FISH TOXICITY: (2,4-D Acid Technical)

96 hour LC_{50}, Bluegill –	524 mg/L
96 hour LC_{50}, Rainbow trout –	250 mg/L

AVIAN TOXICITY: (2,4-D Acid Technical)

Oral LD_{50}, Quail –	500 mg/Kg
Oral Dietary LC_{50}, Mallard Duck -	> 5,500 ppm

BEE TOXICITY: Unknown.

SECTION 13 - DISPOSAL CONSIDERATIONS

Do not contaminate water, food, or feed by storage or disposal.

WASTE: Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of federal law and may contaminate groundwater. If these wastes cannot be disposed of by use according to label instructions, contact your state Pesticide or Environmental Control Agency or the Hazardous Waste Representative at the nearest EPA Regional Office for guidance.
CONTAINER: Non-refillable containers: Do not reuse or refill this container. Triple rinse or pressure rinse container (or equivalent) promptly after emptying. Offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke. Refillable containers: Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose.

Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the re-filler.

Refer to the product label for additional and complete Container Handling instructions

SECTION 14 - TRANSPORT INFORMATION

SHIPPING DESCRIPTION: (US Ground transport)	Containers ≤ 26 gallons - Not regulated Containers > 26 gallons - UN3082, Environmentally Hazardous Substances, Liquid, N.O.S., (2,4-D dimethylamine), 9, PG III, RQ (2,4-D salt)
TRANSPORT HAZARD CLASS:	Class 9
UN NUMBER:	UN3082
DOT PACKING GROUP:	III

SECTION 15 - REGULATORY INFORMATION

CERCLA REPORTABLE QUANTITY:	100 lbs 2,4-D acid (approximately 26 gallons of 2,4-D Amine 4)
SARA TITLE III STATUS:	
311/312 Hazard Categories –	Immediate & Delayed Health
313 Toxic Chemicals –	Not listed
CALIFORNIA PROP 65:	Not listed
TSCA:	This product is exempted from TSCA because it is solely for FIFRA regulated use

SECTION 16 - OTHER INFORMATION

HMIS HAZARD RATINGS	HEALTH	3
	FLAMMABILITY	1
	PHYSICAL HAZARD	1
	4=Severe 3=Serious 2=Moderate 1=Slight 0=Minimal	

DISCLAIMER: The information presented herein is based on available data from reliable sources and is correct to the best of Albaugh's knowledge. Albaugh makes no warranty, express or implied, regarding the accuracy of the data or the results obtained from the use of this product. Nothing herein may be construed as recommending any practice or any product in violation of any law or regulations. The user is solely responsible for determining the suitability of any material or product for a specific purpose and for adopting any appropriate safety precautions.

This Safety Data Sheet (SDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA APPROVED PRODUCT LABELING (attached to and accompanying the product container). This SDS provides important health, safety, and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course. Use, storage and disposal of pesticide products are regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling, and all necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling.

It is a violation of federal law to use a pesticide product in any manner not prescribed on the EPA-approved label.

REVISED DATE: August, 2014

REFERENCE: Revised for GHS compliance

ETHEPHON 2SL 2X2.5GA	GA	ADAMA	ETHEPHON	900	X		
WARHAWK 2X2.5GA	GA	LOVELAND PRODUCTS INC	CHLORPYRIFOS	1,800	X	X	
STEALTH 2X2.5GA	GA	LOVELAND PRODUCTS INC	PENDIMETHALIN	1,800			
STEALTH BULK	GA	LOVELAND PRODUCTS INC	PENDIMETHALIN	5,000			X
MILSTOP 25LB	LB	BIOWORKS INC	CARBONIC ACID	1,000			
CLINCHER CA 2X2.5GA	GA	DOW AGROSCIENCES	CYHALOFOP	1,800	X	X	
CAPAROL 4L 2X2.5GA	GA	SYNGENTA	PROMETRYN	180	X		
SONALAN HFP 2X2.5GA	GA	DOW AGROSCIENCES	ETHALFLURALIN	1,800	X	X	
SONALAN HFP BULK	GA	DOW AGROSCIENCES	ETHALFLURALIN	5,000	X	X	X
ABOLISH 8EC 15GA	GA	VALENT USA CORPORATION	THIOBENCARB	2,400	X		
CUPROFIX ULTRA 40 DISPERSS 30LB	LB	UNITED PHOSPHORUS, INC	BASIC COPPER SULFATE	10,000			
PURSUIT 2X1GA	GA	BASF CORPORATION	IMAZETHAPYR	80			
GOAL 2XL 2X2.5GA	GA	DOW AGROSCIENCES	OXYFLUORFEN	3,600	X		
CLINCH 25LB	LB	SYNGENTA	ABAMECTIN	5,000			
RIFLE 2X2.5GA	GA	LOVELAND PRODUCTS INC	DICAMBA	900	X		
PROTOCOL 2X2.5GA	GA	LOVELAND PRODUCTS INC	THIOPHANATE-METHYL	1,800			
ASANA XL 4X1GA	GA	VALENT USA CORPORATION	ESFENVALERATE	288			
STATUS 4X125OZ	OZ	BASF CORPORATION	DICAMBA	3,600			
SUPER WHAM! CA 30GA	GA	RICE CO	PROPANIL	12,000			
FORFEIT 280 30GA	GA	LOVELAND PRODUCTS INC	GLUFOSINATE-AMMONIUM	3,600			
MALICE 2F 4X1GA	GA	LOVELAND PRODUCTS INC	IMIDACLOPRID	288			
ROUNDUP POWERMAX 30GA	GA	MONSANTO	GLYPHOSATE	3,000			
POAST 2X2.5GA	GA	BASF CORPORATION	SETHOXYDIM	900			
PROGIBB 40% (WSG) 12X1EA (EA=320GM)	EA	VALENT USA CORPORATION	GIBBERELLIC ACID	200		X	
LIQUI-STIK CONCENTRATE 4X1GA	GA	LOVELAND PRODUCTS INC	NAPHTHALENE	144			
DITHANE F-45 RAINSHIELD 2X2.5GA	GA	DOW AGROSCIENCES	MANCOZEB	900			
FUGITIVE 2X2.5GA	GA	ADAMA	ORYZALIN	900			
PERMETHRIN 3.2 4X1GA	GA	LOVELAND PRODUCTS INC	PERMETHRIN	288			
ZIRAM 76DF UPI 40LB	LB	UNITED PHOSPHORUS, INC	ZIRAM	12,000	X		
GAVICIDE SUPER 90 30GA RPK	GA	LOVELAND PRODUCTS INC	MINERAL OIL	539			
ZEAL 4X4X3OZ	OZ	VALENT USA CORPORATION	ETOXAZOLE	9,800			
DIP'N GROW 4X1GA	GA	DIP'N GROW, INC	INDOLE 3-BUTYRIC ACID	100			
REAPER CLEARFORM 4X1GA	GA	LOVELAND PRODUCTS INC	ABAMECTIN	900			
SEDUCE INSECT BAIT 50LB	LB	CERTIS USA LLC	SPINOSAD	5,000			
LUNA SENSATION 8X32OZ	OZ	BAYER CROPSCIENCE LP	FLUOPYRAM	4,000			
CAPTAN 50WP 30LB	LB	ARYSTA LIFESCIENCE NA CORP	CAPTAN	1,000			
GRANDEVO 6X5LB	LB	MARRONE BIO INNOVATIONS INC	CHROMOBACTERIUM SUBTS	600			
VENUE 8X1QT	QT	NICHINO AMERICA INC	PYRAFLUFEN ETHYL	240			
INTENSITY 2X2.5GA	GA	LOVELAND PRODUCTS INC	CLETHODIM	900	X		
MICRO BLAST 30GA	GA	MERAS ENGINEERING, INC	HYDROGEN PEROXIDE	900			
KOCIDE 2000 15LB	LB	DUPONT	COPPER HYDROXIDE	12,000	X		
LUNA EXPERIENCE 8X32OZ	OZ	BAYER CROPSCIENCE LP	FLUOPYRAM	4,000			
FLINT 6X200Z	OZ	BAYER CROPSCIENCE LP	TRIFLOXYSTROBIN	4,000	X		
SUBDUE MAXX 12X1QT	QT	SYNGENTA	MEFENOXAM	8			
GOALTENDER 4X1GA	GA	DOW AGROSCIENCES	OXYFLUORFEN	1,800			
AXXE 2.5GA	GA	BIOSAFE SYSTEMS LLC	AMMONIUM NONANOATE	180			
RANMAN 6X1QT	QT	FMC CORP	CYAZOFAMID	360			
TRELLIS SC 4X1GA	GA	DOW AGROSCIENCES	ISOXABEN	900		X	
BRAVO WEATHERSTIK 2X2.5GA	GA	SYNGENTA	CHLOROTHALONIL	1,800	X		
GAVICIDE SUPER 90 275GA RPK	GA	LOVELAND PRODUCTS INC	MINERAL OIL	5,000			
PARAZONE 3SL 2X2.5GA	GA	ADAMA	PARAQUAT DICHLORIDE	900	X		
VENOM 10X1LB	LB	VALENT USA CORPORATION	DINOTEFURAN	400	X	X	
BIFENTURE 10DF 4X5LB	LB	UNITED PHOSPHORUS, INC	BIFENTHRIN	900	X		
MICRO BLAST 300GA	GA	MERAS ENGINEERING, INC	HYDROGEN PEROXIDE	600			
LEVERAGE 360 4X1GA	GA	BAYER CROPSCIENCE LP	IMIDACLOPRID	144			
ENTRUST SC 4X4X1QT	QT	DOW AGROSCIENCES	SPINOSYN	60			
CAPTAN 80WDG 30LB	LB	LOVELAND PRODUCTS INC	CAPTAN	18,000	X		
MICROTHIOL DISPERSS 30LB	LB	UNITED PHOSPHORUS, INC	SULFUR	12,000	X		
WATERMAXX 2 5GA RPK	GA	LOVELAND PRODUCTS INC		288	X		
QUASH 4X12.5OZ	OZ	VALENT USA CORPORATION	METCONAZOLE	24,000			
GRANITE GR 750LB (CA)	LB	DOW AGROSCIENCES	PENOXSULAM	27,000			
BOLERO ULTRAMAX 1200LB	LB	VALENT USA CORPORATION	THIOBENCARB	54,000			
PYGANIC EC 5.0 II 2X1GA	GA	MCLAUGHLIN GORMLEY KING CO	PYRETHRINS	144	X		
ALION 8X32OZ	OZ	BAYER CROPSCIENCE LP	INDAZIFLAM	12,000	X		
BELAY 2X1.5GA	GA	VALENT USA CORPORATION	CLOTHIANIDIN	160			
BELEAF 50 SG 6X1.5LB	LB	FMC CORP	FLONICAMID	160			
EXPRESS W/TOTAL SOL 12X15OZ	OZ	DUPONT	TRIBENURON METHYL	300			
CARBARYL CRUMBLES 50LB	LB	LOVELAND PRODUCTS INC	CARBARYL	5,000			
RIDOMIL GOLD SL 4X1GA	GA	SYNGENTA	MEFENOXAM	288		X	
LORSBAN ADVANCED 2X2.5GA	GA	DOW AGROSCIENCES	CHLORPYRIFOS	900	X		
ACRAMITE 50WS 10X1LB	LB	CHEMTURA CORPORATION	BIFENAZATE	800			
MICRO BLAST 53.5GA	GA	MERAS ENGINEERING, INC	HYDROGEN PEROXIDE	550			
MAKAZE 30GA	GA	LOVELAND PRODUCTS INC	GLYPHOSATE	6,000			
MAKAZE BULK	GA	LOVELAND PRODUCTS INC	GLYPHOSATE	5,000			X
ROUNDUP POWERMAX 2X2.5GA	GA	MONSANTO	GLYPHOSATE	1,800			
INCOGNITO 4.5 F 2X2.5GA	GA	ADAMA	THIOPHANATE-METHYL	2,000	X		

Safety Data Sheet

Issue Date: 06-Aug-2008 **Revision Date:** 09--Oct-2015 **Version** 2

1. IDENTIFICATION

Product Identifier

Product Name **Ethephon 2SL**

Other means of identification

SDS # MANA-004

Registration Number(s) EPA Reg. No. 66222-151

UN/ID No UN3265

Recommended use of the chemical and restrictions on use

Recommended Use EPA registered pesticide.

Details of the supplier of the safety data sheet

Manufacturer Address
Makhteshim Agan of North America, Inc.
3120 Highwoods Blvd., Suite 100
Raleigh, NC 27604
1-919-256-9300

Emergency Telephone Number

Emergency Telephone (24 hr) For fire, spill and/or leak contact INFOTRAC:
1-800-535-5053 (North America) 1-352-323-3500 (International)
For medical emergencies and health/safety inquiries, contact PROSAR:
1-877-250-9291

2. HAZARDS IDENTIFICATION

This chemical is a product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-EPA registered chemicals. Please see Section 15 for additional EPA information.

Appearance Translucent yellow liquid **Physical State** Liquid **Odor** Odorless

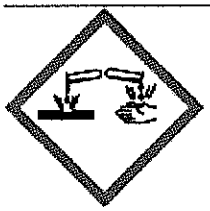
Classification

Skin corrosion/irritation	Category 1 Sub-category C
Serious eye damage/eye irritation	Category 1

Hazards Not Otherwise Classified (HNOC)
May be harmful in contact with skin

Signal Word
Danger

Hazard Statements
Causes severe skin burns and eye damage



Precautionary Statements - Prevention
Do not breathe dust/fume/gas/mist/vapors/spray
Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves/protective clothing/eye protection/face protection

Precautionary Statements - Response
Immediately call a poison center or doctor/physician
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Immediately call a poison center or doctor/physician
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Immediately call a poison center or doctor/physician
IF SWALLOWED: rinse mouth. Do NOT induce vomiting

Precautionary Statements - Storage
Store locked up

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No	Weight-%
2-Chloroethylphosphonic acid	16672-87-0	21.0 - 22.4

If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. FIRST-AID MEASURES

First Aid Measures

General Advice — When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.

Eye Contact — Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor/physician.

Skin Contact — IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. Get medical attention if necessary.

Inhalation — If inhaled remove to fresh air. Give oxygen if breathing is difficult. If breathing has stopped, call 911, give artificial respiration. Immediately call a physician.

Ingestion — Immediately call a poison center or doctor/physician. DO NOT induce vomiting. If conscious, drink 8-10 oz. of water promptly. Never give anything by mouth to an unconscious person. Obtain medical attention. Do not induce vomiting unless directed by medical personnel.

Most important symptoms and effects

Symptoms Causes severe skin burns and eye damage. Will irritate mucous membranes. May cause skin redness, irritation or swelling. Ingestion may cause severe burns to mouth, throat or stomach.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically. If the product is ingested, probable mucosal damage may contraindicate the use of gastric lavage.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Water spray (fog). Dry chemical. Foam. Carbon dioxide (CO_2).

Unsuitable Extinguishing Media Not determined.

Specific Hazards Arising from the Chemical
Not determined.

Hazardous Combustion Products May include and are not limited to oxides of carbon and phosphorous. Hydrogen chloride.

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Evacuate area of unprotected personnel. Remain upwind of fire to avoid hazardous vapors and decomposition products. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Wear protective clothing as described in Section 8 of this safety data sheet. Isolate hazard area. Keep unnecessary and unprotected personnel from entering.

Environmental Precautions Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. See Section 13: DISPOSAL CONSIDERATIONS.

Methods and material for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for Clean-Up For small spills, absorb with sand, clay, or other inert absorbent. Place in appropriate containers for disposal. For large spills: recover free product. Dike for later disposal. Absorb with inert material, and then place in suitable container for chemical waste.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Use personal protection recommended in Section 8. Do not breathe dust/fume/gas/mist/vapors/spray. Wash face, hands, and any exposed skin thoroughly after handling. Do not contaminate water, food or feed by storage, disposal or by cleaning equipment.

Conditions for safe storage, including any incompatibilities

Storage Conditions	Keep container tightly closed and store in a cool, dry and well-ventilated place. Keep out of the reach of children. Store away from incompatible materials. Protect from excessive heat. Store locked up.
Incompatible Materials	Strong bases. Strong oxidizing agents. Metals such as aluminum, tin, and zinc.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Appropriate engineering controls

Engineering Controls	Please refer to the product label. Use only with adequate ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures, such as personal protective equipment

Eye/Face Protection	Use splash goggles or face shield when contact may occur.
Skin and Body Protection	Wear chemical-resistant gloves, footwear, and protective clothing appropriate for the risk of exposure. Viton or other impervious gloves are required. Long sleeve shirt, trousers, and safety shoes.
Respiratory Protection	Ensure adequate ventilation, especially in confined areas. Wear an appropriate NIOSH/MSHA approved respirator if ventilation is inadequate.
General Hygiene Considerations	Wash hands before eating, drinking, smoking and using the toilet. Remove contaminated clothing promptly and wash thoroughly before reused.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Liquid		
Appearance	Translucent yellow liquid	**Odor**	Odorless
Color	Translucent Yellow	**Odor Threshold**	Not determined

Property	Values	Remarks • Method
pH	1.65 @ ~25°C	
Melting Point/Freezing Point	Not applicable	
Boiling Point/Boiling Range	100 °C / 212 °F	
Flash Point	Not applicable	
Evaporation Rate	Not determined	
Flammability (Solid, Gas)	Liquid-not applicable	
Upper Flammability Limits	Not applicable	
Lower Flammability Limit	Not applicable	
Vapor Pressure	Not established	
Vapor Density	Not determined	
Specific Gravity	1.11	
Water Solubility	Miscible in water	
Solubility in other solvents	Not determined	
Partition Coefficient	Not determined	
Auto-ignition Temperature	Not determined	
Decomposition Temperature	Not determined	
Kinematic Viscosity	Not determined	

Dynamic Viscosity	Not determined
Explosive Properties	Not determined
Oxidizing Properties	Not determined
Bulk Density	11 lb/gal @~25°C

10. STABILITY AND REACTIVITY

Reactivity
Not reactive under normal conditions.

Chemical Stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous Polymerization Not known to occur.

Conditions to Avoid
Elevated temperatures.

Incompatible Materials
Strong bases. Strong oxidizing agents. Metals such as aluminum, tin, and zinc.

Hazardous Decomposition Products
May include but are not limited to: oxides of carbon, oxides of phosphorous. Hydrogen chloride.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Eye Contact	Causes severe eye damage.
Skin Contact	Causes severe skin burns.
Inhalation	Avoid breathing vapors or mists.
Ingestion	Do not taste or swallow.

Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
2-Chloroethylphosphonic acid 16672-87-0	= 3400 mg/kg (Rat)	= 5730 mg/kg (Rabbit)	= 90 mg/m^3 (Rat) 4 h

Information on physical, chemical and toxicological effects

Symptoms Please see section 4 of this SDS for symptoms.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Carcinogenicity Not classifiable as a human carcinogen.

Product Information (Numerical measures of toxicity)
Acute Oral LD50 (Rat): >5,000 mg/kg
Acute Dermal LD50 (Rabbit): >2,000 mg/kg
Acute Inhalation LC50 (Rat): No data available.
Eye Irritation: Moderately irritating.
Dermal Irritation: Minimally irritating.
Dermal Sensitization: Not available.

12. ECOLOGICAL INFORMATION

Ecotoxicity
Do not contaminate water used for irrigation or domestic purposes. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment wash waters. Avoid spray drift to nearby crops, as this product will cause modifications in plant growth. Plant injury or reduced yields may result.

Persistence/Degradability
Not determined.

Bioaccumulation
Not determined.

Mobility
Not determined

Other Adverse Effects
Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes	END USERS MUST DISPOSE OF ANY UNUSED PRODUCT AS PER THE LABEL RECOMMENDATIONS. Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinse is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency or Hazardous Waste representative at the nearest EPA regional office. Never place any unused product down an indoor or outdoor drain. Do not contaminate water, food or feed by disposal.
Contaminated Packaging	Disposal should be in accordance with applicable regional, national and local laws and regulations.

14. TRANSPORT INFORMATION

DOT

UN/ID No	UN3265
Proper Shipping Name	Corrosive liquid, acidic, organic, n.o.s. (ethephon)
Hazard Class	8
Packing Group	III

IATA

UN/ID No	UN3265
Proper Shipping Name	Corrosive liquid, acidic, organic, n.o.s. (ethephon)
Hazard Class	8
Packing Group	III

IMDG

UN/ID No	UN3265
Proper Shipping Name	Corrosive liquid, acidic, organic, n.o.s. (ethephon)
Hazard Class	8
Packing Group	III

15. REGULATORY INFORMATION

International Inventories

TSCA	All ingredients are listed or exempt from listing on Chemical Substance Inventory

Legend:
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

US Federal Regulations

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

SARA 313
Not determined

US State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations
This product does not contain any substances regulated under applicable state right-to-know regulations

EPA Pesticide Registration Number 66222-151

EPA Statement
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

EPA Pesticide Label
Signal Word: DANGER

Corrosive: Causes irreversible eye damage. Wear safety goggles when handling. Harmful if swallowed or absorbed through skin. Do not get in eyes or on clothing. Avoid contact with skin. Do not inhale vapors, as this product will irritate mucous membranes.

Difference between SDS and EPA pesticide label

	EPA	OSHA
Signal Word	Danger	Danger
Acute toxicity - Oral	Harmful if swallowed	N/A
Acute toxicity - Dermal	Harmful if absorbed through the skin	May be harmful in contact with skin
Skin corrosion/irritation	N/A	Causes severe skin burns
Serious eye damage/eye irritation	Causes irreversible eye damage	Causes severe eye damage
STOT - single exposure	Will irritate mucous membranes	N/A

16. OTHER INFORMATION

NFPA	**Health Hazards**	**Flammability**	**Instability**	**Special Hazards**
	3	1	0	None
HMIS	**Health Hazards**	**Flammability**	**Physical Hazards**	**Personal Protection**
	3	1	0	See section 8

Issue Date: 06-Aug-2008
Revision Date: 9-Oct-2015
Revision Note: Updated format from 02-Jun-2014

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 PRODUCT IDENTIFIER: **EPA REGISTRATION NO. 34704-857**
TRADE NAME: **WARHAWK®**
1.2 RECOMMENDED USE: CONTROL OF INSECTS IN CERTAIN FIELD, FRUIT, NUT AND VEGETABLE CROPS
1.3 SUPPLIER DETAILS:
LOVELAND PRODUCTS, INC.
P.O. Box 1286 • Greeley, CO 80632-1286
1.4 24 Hour Emergency Phone: 1-800-424-9300 - **Medical Emergencies:** 1-866-944-8565 – **Product Information:** 1-888-574-2878 (LPI-CUST)
U.S. Coast Guard National Response Center: 1-800-424-8802

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to 29 CFR 1910.1200

Flammable Liquids	Category 3	H226
Acute Toxicity – Oral	Category 3	H301
Acute Toxicity – Inhalation	Category 4	H332
Acute Toxicity – Dermal	Category 4	H312
Specific Target Organ Toxicity (Single Exposure)	Category 3	H335
Aspiration Hazard	Category 1	H304
Eye Damage/Irritation	Category 2B	H320
Sensitization – Skin	Category 1	H317

2.2 Label elements

Signal word: DANGER
Hazard Statement:
H226 – Flammable liquid and vapor.
H301 – Toxic if swallowed.
H332 – Harmful if inhaled.
H312 – Harmful in contact with skin.
H335 – May cause respiratory irritation.
H304 – May be fatal if swallowed and enters airways.
H320 – Causes eye irritation.
H317 – May cause an allergic skin reaction.

Precautionary Statement: (Prevention):
P210 – Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
P233 – Keep container tightly closed.
P240 – Ground/bond container and receiving equipment.
P241 – Use explosion-proof electrical/ventilating/lighting/equipment.
P242 – Use only non-sparking tools.
P243 – Take precautionary measures against static discharge.
P280 – Wear protective gloves/protective clothing/eye protection/face protection.
P264 – Wash hands, face and skin thoroughly after handling.
P270 – Do not eat, drink or smoke when using this product.
P261 – Avoid breathing dust/fume/gas/mist/vapors/spray.
P271 – Use only outdoors or in a well-ventilated area.
P272 – Contaminated work clothing must not be allowed out of the workplace.

Precautionary Statement: (Response):	P301+P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. P321 – Specific treatment (see First Aid and Notes to Physician on the product label). P330 – Rinse mouth. P331 – Do NOT induce vomiting. P302+P352: IF ON SKIN: Wash with plenty of soap and water. P333+P313 – If skin irritation or rash occurs: Get medical advice/attention. P304+P340: IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing. P312 – Call a POISON CENTER or doctor/physician if you feel unwell. P362 – Take off contaminated clothing and wash it before reuse. P305+P351+P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. P337+P313 – If eye irritation persists: Get medical advice/attention. P303+P361+P353 – IF ON SKIN (OR HAIR): Take off immediately all contaminated clothing. Rinse skin with water/shower. P370+P378 – In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
Precautionary Statement: (Storage):	P403+P235 – Store in a well-ventilated place. Keep cool. P403+P233 – Store in a well-ventilated place. Keep container tightly closed. P405 – Store locked up.
Precautionary Statement: (Disposal)	P501 – Dispose of contents/container to an approved waste disposal to an approved waste disposal facility.

2.3 Other hazards
None known.

3. COMPOSITION, INFORMATION ON INGREDIENTS

3.1 Substances

3.2 Mixtures

Classification according to 29 CFR 1910.1200

Chemical Name:	CAS No.	Concentration [%]
Chlorpyrifos	2921-88-2	44.90
2-Ethylhexanol	104-76-7	1.00
Solvent naphtha (petroleum), light aromatic consists of:	64742-95-6	48.60
1,2,4-Trimethylbenzene	95-63-6	14.40
1,3,5-Trimethylbenzene	108-67-8	3.80
Cumene	98-82-2	1.90
Xylene	1330-20-7	0.40

4. FIRST AID MEASURES

4.1 Description of First Aid Measures

General Advice: Get medical attention if symptoms occur.

If swallowed: Immediately call a poison control center or doctor. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give any liquid to the person. Do not give anything by mouth to an unconscious person.

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

4.2 Most Important Symptoms and Effects, Acute and Delayed

Symptoms: Central nervous system effects.

4.3 Immediate Medical Attention and Special Treatment

Treatment: This product contains petroleum distillates.
FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: 1-866-944-8565
Take container, label or product name with you when seeking medical attention.

NOTES TO PHYSICIAN: Chlorpyrifos is a cholinesterase inhibitor. Treat symptomatically. If exposed, plasma and red blood cell cholinesterase tests may indicate significance of exposure (baseline data are useful). Atropine, only by injection, is the preferable antidote. Oximes, such as 2-PAM/protopam, may be therapeutic if used early; however, use only in conjunction with atropine. In case of severe acute poisoning, use antidote immediately after establishing an open airway and respiration.
This product is contains petroleum distillates. Vomiting may cause aspiration pneumonia.

5. FIRE FIGHTING MEASURES

5.1 EXTINGUISHING MEDIA:

Suitable Extinguishing Media: Use medium appropriate to surrounding fire. Foam, carbon dioxide (CO_2), dry chemical, soft stream or water fog.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE:

Specific Hazards During Firefighting: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include but are not limited to: Oxides of sulfur. Phosphorous compounds. Oxides of nitrogen. Hydrogen chloride. Oxides of carbon.

5.3 SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS

Special Protective Equipment for Firefighters: Self-contained breathing apparatus and full protective gear should be worn in fighting large fires involving chemicals. Use water spray to keep fire exposed containers cool. Keep people away. Isolate fire and deny unnecessary entry.

6. ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Personal Precautions: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Keep personnel out of low areas. Keep upwind of spill. Ventilate area of leak or spill. No smoking in area. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Vapor explosion hazard. Keep out of sewers. Refer to section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

6.2 ENVIRONMENTAL PRECAUTIONS

Environmental Precautions: This pesticide is toxic to fish, aquatic invertebrates, small mammals and birds. Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark except as noted on appropriate labels. Drift and runoff from treated areas may be hazardous to aquatic organisms in water adjacent to treated areas. Do not contaminate water when disposing of equipment wash waters or rinsate. This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are actively visiting the treatment area.

6.3 METHODS AND MATERIALS FOR CONTAINMENT AND CLEAN-UP

Methods for Clean-Up: Large Spills: Contain spilled material if possible. Pump with explosion-proof equipment. If available, use foam to smother or suppress.
Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Collect in suitable and properly labeled containers.
Remove residual contamination.
Never return spills to original containers for re-use.

7. HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING:

Advice on Safe Handling: Keep out of reach of children. Keep away from heat, sparks and flame. Do not swallow. Avoid contact with eyes, skin, and clothing. Avoid prolonged contact with eyes, skin and clothing. Avoid breathing vapor or mist. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. No smoking, open flames or sources of ignition in handling and storage area. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. Electrically ground and bond all equipment. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Use of non-sparking or explosion-proof equipment may be necessary, depending upon the type of operation.

7.2 CONDITIONS FOR SAFE STORAGE:

Requirements for Storage Areas and Containers: Store in original container in secured dry storage area. Prevent cross-contamination with other pesticides and fertilizers. Do not store above 100 °F for extended periods of time. Storage below 20 ° F may result in formation of crystals. If product crystallizes, store at 50 °F to 70 °F and agitate to redissolve crystals. Do not contaminate water, food or feed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 CONTROL PARAMETERS:

OCCUPATIONAL EXPOSURE LIMITS

U.S. Workplace Exposure Level (ACGIH) TLVs

Components	Type	Value
Chlorpyrifos	TLV	0.1 mg/m^3 (Skin) Measured as inhalable fraction and vapor
1,2,4-Trimethylbenzene	TLV	25 ppm / 123 mg/m^3
1,3,5-Trimethylbenzene	TLV	25 ppm / 123 mg/m^3
Cumene	TLV	50 ppm / 245 mg/m^3
Xylene	TLV	100 ppm / 434 mg/m^3

U.S. Workplace Exposure Level (OSHA) PELs

Components	Type	Value
Cumene	TWA	50 ppm / 245 mg/m^3 (Skin)
Xylene	TWA	100 ppm / 435 mg/m^3

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Specimen
Acetylcholinesterase inhibiting pesticides	70% of individual's baseline	Cholinesterase activity in red blood cells
Xylene		URT & eye irritant; CNS impair

8.2 EXPOSURE CONTROLS:

Engineering Measures

Mixers and loaders supporting aerial applications must use a mechanical transfer system that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4)] for dermal protection, and must: Wear the personal protective equipment required above for mixers/loaders, wear protective eyewear if the system operates under pressure, and be provided and have immediately available for use in an emergency, such as broken package, spill, or equipment breakdown: coveralls, chemical resistant footwear and chemical-resistant headgear if overhead exposure. Pilots must use an enclosed cockpit in a manner that meets the requirements listed in the WPS for agricultural pesticides [40 CFR 170.240(d)(6).

Individual Protection Measures:

Eye / Face Protection:	Goggles or shielded safety glasses are recommended.
Skin Protection:	Long-sleeved shirt and long pants. Shoes plus socks. Chemical-resistant gloves, except for pilots. Chemical-resistant apron for mixing or loading, cleaning up spills or equipment, or otherwise exposed to the concentrate.
Respiratory Protection:	Not normally required. If respirators are used, a program should be in place to assure compliance with 29 CFR 1910.134, the OSHA Respiratory Protection standard.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 APPEARANCE : Liquid
ODOR: Aromatic.
ODOR THRESHOLD: No data available.
COLOR: Red.
pH: 4.3
MELTING POINT / FREEZING POINT: No data available
BOILING POINT: 143°C / 289°F
FLASH POINT: 106°F / 41°C (TCC).
FLAMMABILILITY (solid, gas): No data available.
UPPER / LOWER FLAMMABILITY OR EXPLOSIVE LIMITS: Upper explosion limit: 6% vol. Lower explosion limit: 1% vol.
VAPOR PRESSURE: No data available.
SOLUBILITY: Emulsifies.
PARTITION CO-EFFICIENT, n-OCTANOL / WATER: No data available.
AUTO-IGNITION TEMPERATURE: No data available.
DECOMPOSITION TEMPERATURE: No data available.
VISCOSITY [Dynamic]: 3.2 mPa @ 20°C / 68°F.
SPECIFIC GRAVITY (Water = 1): 1.07 g/ml
DENSITY: 8.96 lbs./gal / 1.07 kg/L

Note: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.

10. STABILITY AND REACTIVITY

10.1 REACTIVITY
Stable

10.2 CHEMICAL STABILITY
Unstable at elevated temperatures.

10.3 POSSIBILITY OF HAZARDOUS REACTIONS
Will not polymerize.

10.4 CONDITIONS TO AVOID
Avoid temperatures above 70°C (158°F). Chlorpyrifos decomposes at elevated temperatures. Generation of gas during decomposition can cause pressure buildup in closed systems.

10.5 INCOMPATIBILE MATERIALS
Strong oxidizers. Avoid contact with bases and strong acids.

10.6 HAZARDOUS DECOMPOSITION PRODUCTS
Decomposition products may be formed in a fire situation: hydrogen chloride, organic sulfides, sulfur dioxide. Incomplete combustion may lead to formation of oxides of carbon and/or other asphyxiants.

11 TOXICOLOGICAL INFORMATION

11.3 LIKELY ROUTES OF EXPOSURE

Ingestion. Eye contact. Skin absorption. Skin contact.
LC_{50} (rat): >2.00 mg/L (4 HR) estimated.
LD_{50} Oral (rat): Estimated: 300 mg/kg
LD_{50} Dermal (rabbit): > 1,000 mg/kg
Acute Toxicity Estimates: No data available
Skin Irritation (rabbit): May cause moderate irritation.
Eye Irritation (rabbit): Moderate eye irritation.
Specific Target Organ Toxicity: Skin, Central Nervous System, Liver, Kidneys.
Aspiration: Vomiting may cause aspiration pneumonia.
Skin Sensitization (guinea pig): Sensitizer
Carcinogenicity: ACGIH TLV-A4 (Not Classifiable as a Human Carcinogen)
Germ Cell Mutagenicity: Minimal genetic toxicity potential.
Interactive Effects: None known.

12 ECOLOGICAL INFORMATION

12.3 ECOTOXICITY

The product is toxic to fish, aquatic invertebrates, small mammals and birds. Information below is based on the active ingredient Chlorpyrifos.
Ecotoxicological Data

	Species	Test Results
Chlorpyrifos	Rainbow trout	0.003 mg/L – 96-hour LC_{50}
	Daphnia magna	0.00068 mg/L – 48-hour EC_{50}

Drift or runoff may adversely affect non-target plants.
Do not apply directly to water.
Do not contaminate water when disposing of equipment wash water.
Do not apply when weather conditions favor drift from target area.

12.2 PERSISTENCE AND DEGRADABILITY

Biodegradability: Below detectable levels under aerobic aquatic conditions.

12.3 BIOACCUMULATIVE POTENTIAL

Bioaccumulation: Bioconcentration potential is moderate (BCF Log Pow between 3 and 5).

12.4 MOBILITY IN SOIL

No data available.

12.5 OTHER ADVERSE EFFECTS

Assessment: No data available.

13 DISPOSAL CONSIDERATIONS

13.1 WASTE TREATMENT METHODS

PESTICIDE DISPOSAL: Open dumping is prohibited. Pesticides wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation ofFederal law. If these wastes cannot be disposed of by the use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste Representative at the nearest EPA Regional Office for guidance.

CONTAINER DISPOSAL: Nonrefillable container. Do not reuse this container to hold materials other than pesticides or dilute pesticides (rinsate). After emptying and cleaning, it may be allowable to temporarily hold rinsate or other pesticide-related materials in the container. Contact your state regulatory agency to determine allowable practices in your sate. Once cleaned, some agricultural plastic pesticide containers can be taken to a container collection site of picked up for recycling. To find the nearest site, contact you chemical dealer or manufacturer, or contact The Agricultural Container Recycling Council (ACRC) at http://www.acrecycle.org/. If not recycled, then puncture and dispose of in a sanitary landfill, or incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke. Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **For packages up to 5 gallons: Triple rinse as follows:** Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. **Pressure rinse as follows:** Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip. **For packages greater than 5 gallons and less than 56 gallons: Triple rinse as follows:** Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. **Pressure rinse as follows:** Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip. **For packages greater than 56 gallons:** To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. **For refillable containers:** Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. Do not contaminate water, food or feed by storage or disposal.

14 TRANSPORT INFORMATION

14.3 LAND TRANSPORT

DOT Shipping Description: RQ UN3017, ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC, FLAMMABLE (CHLORPYRIFOS), 6.1(3), III MARINE POLLUTANT ERG GUIDE 131

U.S. Surface Freight Classification: INSECTICIDES OR FUNGICIDES, INSECT OR ANIMAL REPELLENTS, NOI, OR VERMIN EXTERMINATORS, ANIMAL OR POULTRY, NOI; POISON (NMFC 102100; CLASS: 77.5)

15 REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS

NFPA & HMIS Hazard Ratings:

NFPA			HMIS	
2	Health	0 Least	2	Health
2	Flammability	1 Slight	2	Flammability
1	Instability	2 Moderate	1	Reactivity
		3 High	G	PPE
		4 Severe		

SARA Hazard Notification/Reporting
SARA Title III Hazard Category:

Immediate	Y	Fire	Y	Sudden Release of Pressure	N
Delayed	Y	Reactive	N		

Reportable Quantity (RQ) under U.S. CERCLA: Chlorpyrifos (CAS: 2921-88-2) 1 pound; Xylene (mixed isomers) (CAS: 1330-20-7) 100 pounds; Cumene (CAS: 98-82-8) 5000 pounds
SARA, Title III, Section 313: 1,2,4-Trimethylbenzene (CAS: 95-63-6) 14.4%; Xylene (mixed isomers) (CAS: 1330-20-7) <1.5% maximum; Cumene (CAS: 98-82-8) 1.9% maximum.
RCRA Waste Code: U239 (Xylene [mixed isomers]); U055 (Cumene).
CA Proposition 65: WARNING: This product contains chemicals known to the State of California to cause cancer or birth defects or other reproductive harm.

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

WARNING
May be fatal if swallowed.
Harmful if absorbed through skin.
Causes moderate eye irritation.
Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.
Avoid contact with skin, eyes, or clothing.

16 OTHER INFORMATION

SDS STATUS: Sections 2, 7, and 13 revised.

PREPARED BY: Registrations and Regulatory Affairs

REVIEWED BY: Environmental Health and Safety

EPA REG. NO.: 34704-857

®Warhawk is a registered trademark of Loveland Products, Inc.

This is a Restricted Use Pesticide (for retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification)

Disclaimer and Limitation of Liability: This data sheet was developed from information on the constituent materials identified herein and does not relate to the use of such materials in combination with any other material or process. No warranty is expressed or implied with respect to the completeness or ongoing accuracy of the information contained in this data sheet, and LOVELAND PRODUCTS, INC. disclaims all liability for reliance on such information. This data sheet is not a guarantee of safety. Users are responsible for ensuring that they have all current information necessary to safely use the product described by this data sheet for their specific purpose.

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 PRODUCT IDENTIFIER:
TRADE NAME: **STEALTH® HERBICIDE**
1.2 RECOMMENDED USE: HERBICIDE FOR USE IN SELECTED CROPS
1.3 SUPPLIER DETAILS:
LOVELAND PRODUCTS, INC.
P.O. Box 1286 • Greeley, CO 80632-1286
1.4 24 Hour Emergency Phone: 1-800-424-9300 - **Medical Emergencies:** 1-866-944-8565 – **Product Information:** 1-888-574-2878 (LPI-CUST)
U.S. Coast Guard National Response Center: 1-800-424-8802

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to 29 CFR 1910.1200

Aspiration Hazard	Category 1	H304
Carcinogenicity	Category 2	H351
Aquatic Toxicity - Acute	Category 1	H400
Aquatic Toxicity – Long term	Category 1	H410

2.2 Label elements

Signal word:	DANGER
Hazard Statement:	H304 – May be fatal if swallowed and enters airways. H351 – Suspected of causing cancer. H400 – Very toxic to aquatic life. H410 – Very toxic to aquatic life with long lasting effects.
Precautionary Statement:	
(Prevention):	P280 – Wear protective gloves/protective clothing/eye protection/face protection. P273 – Avoid release to the environment. P261 – Avoid breathing dust/fume/gas/mist/vapors/spray. P201 – Obtain special instructions before use. P202 – Do not handle until all safety precautions have been read and understood. P272 – Contaminated work clothing should not be allowed out of the workplace.
Precautionary Statement:	
(Response):	P308+P311: IF exposed or concerned: Call a POISON CENTER or doctor/physician. P301+P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. P303+P352 – IF ON SKIN (or hair): Wash with plenty of soap and water. P333+P311 – If skin irritation or rash occurs: Call a POISON CENTER or doctor/physician. P391 – Collect spillage. P362 – Take off contaminated clothing and wash before reuse. P331 – Do NOT induce vomiting.
Precautionary Statement:	
(Storage):	P405 – Store locked up.
(Disposal):	P501 – Dispose of contents/container to hazardous or special waste collection point.

2.3 Other hazards

Hazards not otherwise classified

The following percentage of the mixture consists of component(s) with unknown hazards regarding the acute toxicity: 1% dermal.
The following percentage of the mixture consists of component(s) with unknown hazards regarding the acute toxicity: 1% oral.
The following percentage of the mixture consists of component(s) with unknown hazards regarding the acute toxicity: 1% inhalation - vapor.
The following percentage of the mixture consists of component(s) with unknown hazards regarding the acute toxicity: 1% inhalation - mist.

Potential Health effects

Routes of exposure	Eye contact. Ingestion.
Eyes	Causes eye irritation.
Skin	Harmful if absorbed through skin.
Inhalation	No data available.
Ingestion	Harmful if swallowed.
Target organs	Eyes. Ingestion.
Signs and symptoms	Causes eye irritation. Harmful if swallowed. Harmful is absorbed through skin.

Potential environmental effects This product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have harmful or damaging effect on the environment.

3. COMPOSITION, INFORMATION ON INGREDIENTS

3.1 Substances

3.2 Mixtures

Classification according to 29 CFR 1910.1200

Chemical Name:	CAS No.	Classification	Concentration [%]
Pendimethalin	40487-42-1	Asp.tox. 1; H304	37.4
Solvent Naphtha, Heavy Aromatic	64742-94-5	Carc. 2; H351	< 75.0
Naphthalene	91-20-3	Aquatic Acute. 1; H400	< 10.0
1-Methylnaphthalene	90-12-0	Aquatic Acute. 1; H410	< 6.0
2-Methylnaphthalene	91-57-6		< 12.0
Solvent Naphtha, Light Aromatic	64742-95-6		< 0.2

*Ingredients not specifically listed are non-hazardous or are to be considered proprietary or confidential business information per 29 CFR 1910.1200(i)

4. FIRST AID MEASURES

4.1 Description of First Aid Measures

General Advice: Get medical attention if symptoms occur.

If swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

If on skin or clothing: Take of contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

4.2 Most Important Symptoms and Effects, Acute and Delayed

Symptoms: Eyes: Causes eye irritation.
Oral: Harmful if swallowed.

4.3 Immediate Medical Attention and Special Treatment

Treatment: Treat symptomatically. Symptoms may be delayed.
FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: 1-866-944-8565
Take container, label or product name with you when seeking medical attention.

NOTES TO PHYSICIAN: Because increased risk of chemical pneumonia or pulmonary edema caused by aspiration of the hydrocarbon solvent, vomiting should be induced only under professional supervision.

5. FIRE FIGHTING MEASURES

5.1 EXTINGUISHING MEDIA:

Suitable Extinguishing Media: Use medium appropriate to surrounding fire. Dry chemical, carbon dioxide (CO_2), alcohol foam, foam, water spray or fog.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE:

Specific Hazards During Firefighting: Oxides of carbon, oxides of nitrogen, hydrocarbons and other unknown materials may be formed in a fire situation.

5.3 SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS

Special Protective Equipment for Firefighters: Self-contained breathing apparatus and full protective gear should be worn in fighting large fires involving chemicals. Use water spray to keep fire exposed containers cool. Keep people away. Isolate fire and deny unnecessary entry.

6. ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Personal Precautions: Avoid inhalation of vapors and spray mist and contact with skin and eyes. Ensure adequate ventilation. Wear suitable protective clothing.

6.2 ENVIRONMENTAL PRECAUTIONS

Environmental Precautions: Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters or rinsate.

6.3 METHODS AND MATERIALS FOR CONTAINMENT AND CLEAN-UP

Methods for Clean-Up: Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. After removal flush contaminated area thoroughly with water.
Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to Remove residual contamination.
Never return spills to original containers for re-use.

7. HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING:

Advice on Safe Handling: Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

7.2 CONDITIONS FOR SAFE STORAGE:

Requirements for Storage Areas and Containers: Do not store below temperature of 40°F. Extended storage at temperatures below 40°F can results in the formation of crystals on the bottom of the container. If crystallization does occur, store the container on its side at room temperature (70°F) and rock occasionally until crystals redissolve. Do not contaminate water, food or feed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 CONTROL PARAMETERS:

OCCUPATIONAL EXPOSURE LIMITS

U.S. Workplace Exposure Level (ACGIH) TLVs

Components	Type	Value
Naphthalene	TWA	10 ppm (skin)
1-Methylnaphthalene	TWA	0.5 ppm (skin)
2-Methylnaphthalene	TWA	0.5 ppm (skin)

U.S. Workplace Exposure Level (OSHA) PELs

Components	Type	Value
Naphthalene	TWA	10 ppm (skin)

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Specimen
No listings		

8.2 EXPOSURE CONTROLS:

Engineering Measures

Provide adequate general and local exhaust ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of vapors and spray mists. Provide eyewash station and safety shower.

Individual Protection Measures:

Eye / Face Protection:	Goggles or shielded safety glasses are recommended.
Skin Protection:	Long-sleeved shirt and long pants. Chemical-resistant gloves, such as polyethylene or polyvinylchloride. Shoes plus socks.
Respiratory Protection:	In case of inadequate ventilation or risk of inhalation of mists or vapors, use suitable respiratory equipment such as MSHA/NIOSH TC-23C with NIOSH equipped N, R, or P class filter media. Wear respiratory protection during operations where spraying or misting occurs. If respirators are used, a program should be in place to assure compliance with 29 CFR 1910.134, the OSHA Respiratory Protection standard. Wear air supplied respiratory protection if exposure concentrations are unknown.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 APPEARANCE : Liquid
ODOR: Aromatic.
ODOR THRESHOLD: No data available.
COLOR: Dark amber.
pH: 6 - 7
MELTING POINT / FREEZING POINT: Freezing point: -19°C (-2.2°F) (based on the solvent).
BOILING POINT: ± 250°C (± 482°F) (based on the solvent).
FLASH POINT: 219.2°F (104°C).
FLAMMABILILITY (solid, gas): Not highly flammable.
UPPER / LOWER FLAMMABILITY OR EXPLOSIVE LIMITS: Upper limit ± 5.6% - Lower limit ± 0.7%.
VAPOR PRESSURE: 0.05 hPa @ 20°C.
SOLUBILITY: Emulsifiable.
PARTITION CO-EFFICIENT, n-OCTANOL / WATER: No data available.
AUTO-IGNITION TEMPERATURE: ± 491°C (± 915.8°F).
DECOMPOSITION TEMPERATURE: No data available.
VISCOSITY: (kinematic): No data available
SPECIFIC GRAVITY (Water = 1): 1.07 g/ml
DENSITY: 8.93 lbs./gal / 1.07 kg/L

Note: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.

10. STABILITY AND REACTIVITY

10.1 REACTIVITY
Stable

10.2 CHEMICAL STABILITY
Stable under normal temperature conditions

10.3 POSSIBILITY OF HAZARDOUS REACTIONS
No data available. Will not polymerize.

10.4 CONDITIONS TO AVOID
Heat, sparks, open flame, prolonged storage, electro-static discharge, prolonged exposure to extreme heat, extreme temperatures.

10.5 INCOMPATIBILE MATERIALS
Nitric acid, sulfuric acid, oxidizing agents, strong alkalis.

10.6 HAZARDOUS DECOMPOSITION PRODUCTS
Oxides of carbon, oxides of nitrogen, hydrocarbons and other unknown hazardous material may be formed in a fire situation.

11 TOXICOLOGICAL INFORMATION

11.3 LIKELY ROUTES OF EXPOSURE

Ingestion. Inhalation. Eye contact. Skin contact.
LC_{50} (rat): >5.35 mg/L (4 HR)
LD_{50} Oral (rat): 3,956 mg/kg
LD_{50} Dermal (rat): > 2,000 mg/kg
Acute Toxicity Estimates: No data available
Skin Irritation (rabbit): Slight imitant.
Eye Irritation (rabbit): Moderate but temporary eye imitant.
Specific Target Organ Toxicity: No data available.
Aspiration: May damage lungs at swallowing (aspiration hazard)
Skin Sensitization (guinea pig): Not a sensitizer
Carcinogenicity: Product has not been tested. Statement is based on properties of the individual product components.
Germ Cell Mutagenicity: No data available
Interactive Effects: None known

12 ECOLOGICAL INFORMATION

12.3 ECOTOXICITY

The product may be toxic to fish and aquatic invertebrates. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. Information below is based on the technical ingredient Pendimethalin.

Ecotoxicological Data

	Species	Test Results
Pendimethalin	Rainbow trout	0.89 mg/L – 96-hour LC_{50}
	Daphnia magna	0.4 mg/L – 96-hour EC_{50}

Drift or runoff may adversely affect non-target plants.
Do not apply directly to water.
Do not contaminate water when disposing of equipment wash water.
Do not apply when weather conditions favor drift from target area.

12.2 PERSISTENCE AND DEGRADABILITY

Biodegradability: Not readily biodegradable.

12.3 BIOACCUMULATIVE POTENTIAL

Bioaccumulation: No data available.

12.4 MOBILITY IN SOIL

Will slowly evaporate from the water surface. Following exposure to soil, adsorption to solid soil particles is probable, therefore groundwater contamination is not expected.

12.5 OTHER ADVERSE EFFECTS

Assessment: No data available.

13 DISPOSAL CONSIDERATIONS

13.1 WASTE TREATMENT METHODS

Wastes may be disposed of on site or at an approved waste disposal facility. Triple rinse (or equivalent), adding rinse water to spray tank. Offer container for recycling or dispose of in a sanitary landfill or by other procedures approved by appropriate authorities. Recycling decontaminated containers is the best option of container disposal. The Agricultural Container Recycling Council (ACRC) operates the national recycling program. To contact your state and local ACRC recycler visit the ACRC web page at http://www.acrecycle.org/. Do not contaminate water, food or feed by storage or disposal.

14 TRANSPORT INFORMATION

14.3 LAND TRANSPORT

DOT Shipping Description: 155 gallons and less: NOT REGULATED BY USDOT
DOT Shipping Description: 155 gallons and more: RQ UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (NAPHTHALENE), 9, III ERG GUIDE 171
U.S. Surface Freight Classification: COMPOUND, TREE OR WEED KILLING, NOI (NMFC 50320, SUB 2: CLASS 60)

15 REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS

NFPA & HMIS Hazard Ratings:

NFPA		HMIS	
1 Health	0 Least	1 Health	
1 Flammability	1 Slight	1 Flammability	
0 Instability	2 Moderate	0 Reactivity	
	3 High	J PPE	
	4 Severe		

SARA Hazard Notification/Reporting
SARA Title III Hazard Category:

Immediate	Y	Fire	N	Sudden Release of Pressure	N
Delayed	Y	Reactive	N		

Reportable Quantity (RQ) under U.S. CERCLA: Naphthalene (CAS: 91-20-3) 100 pounds.
SARA, Title III, Section 313: Pendimethalin (CAS: 40487-42-1); Naphthalene (CAS: 91-20-3)
RCRA Waste Code: U165 (Naphthalene); D028 (Pendimethalin)
CA Proposition 65: WARNING: This product contains chemicals known to the State of California to cause cancer or birth defects or other reproductive harm.

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

CAUTION
Causes moderate eye irritation.
Harmful if swallowed or absorbed through the skin.
Avoid contact with skin, eyes, or clothing.

16 OTHER INFORMATION

SDS STATUS: Format revised.

PREPARED BY: Registrations and Regulatory Affairs **REVIEWED BY:** Environmental Health and Safety

EPA REG. NO.: 34704-868

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Dow AgroSciences

SAFETY DATA SHEET
DOW AGROSCIENCES LLC

Product name: CLINCHER™ CA Herbicide

Issue Date: 05/04/2015
Print Date: 05/07/2015

DOW AGROSCIENCES LLC encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: CLINCHER™ CA Herbicide

Recommended use of the chemical and restrictions on use
Identified uses: End use herbicide product

COMPANY IDENTIFICATION
DOW AGROSCIENCES LLC
9330 ZIONSVILLE RD
INDIANAPOLIS IN 46268-1053
UNITED STATES

Customer Information Number: 800-992-5994
info@dow.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 800-992-5994
Local Emergency Contact: 352-323-3500

2. HAZARDS IDENTIFICATION

Hazard classification
This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.
Flammable liquids - Category 3
Acute toxicity - Category 4 - Oral
Skin irritation - Category 2
Eye irritation - Category 2A
Carcinogenicity - Category 2
Specific target organ toxicity - single exposure - Category 3
Aspiration hazard - Category 1

Label elements
Hazard pictograms

Signal word: **DANGER!**

Hazards
Flammable liquid and vapour.
Harmful if swallowed.
May be fatal if swallowed and enters airways.
Causes skin irritation.
Causes serious eye irritation.
May cause respiratory irritation.
May cause drowsiness or dizziness.
Suspected of causing cancer.

Precautionary statements

Prevention
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ ventilating/ lighting/ equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/ eye protection/ face protection.
Use personal protective equipment as required.

Response
IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical advice/ attention.
Do NOT induce vomiting.
If skin irritation occurs: Get medical advice/ attention.
If eye irritation persists: Get medical advice/ attention.
Take off contaminated clothing and wash before reuse.
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

Storage
Store in a well-ventilated place. Keep container tightly closed.

Store in a well-ventilated place. Keep cool.
Store locked up.

Disposal
Dispose of contents/ container to an approved waste disposal plant.

Other hazards
no data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature: Mixture
This product is a mixture.

Component	CASRN	Concentration
Cyhalofop-butyl	122008-85-9	29.6%
Heavy aromatic naphtha	64742-94-5	>= 1.0 - <= 2.6 %
Hexanol	111-27-3	>= 1.0 - <= 2.6 %
Solvent naphtha (petroleum), light aromatic consists of:	64742-95-6	58.9%
1,2,4-Trimethylbenzene	95-63-6	17.7%
1,3,5-Trimethylbenzene	108-67-8	4.8%
Cumene	98-82-8	2.4%
Xylene	1330-20-7	0.6%
Naphthalene	91-20-3	0.2%

4. FIRST AID MEASURES

Description of first aid measures
Inhalation: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice. If breathing is difficult, oxygen should be administered by qualified personnel.

Skin contact: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Eye contact: Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice.

Ingestion: Immediately call a poison control center or doctor. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give any liquid to the person. Do not give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed: Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed
Notes to physician: Maintain adequate ventilation and oxygenation of the patient. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. The decision of whether to induce vomiting or not should be made by a physician. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

Unsuitable extinguishing media: no data available

Special hazards arising from the substance or mixture
Hazardous combustion products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Nitrogen oxides. Hydrogen fluoride. Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

Advice for firefighters
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Consider feasibility of a controlled burn to minimize environment damage. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Eliminate ignition sources. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to section 7, Handling, for additional precautionary measures. Ventilate area of leak or spill. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. No smoking in area. Vapor explosion hazard. Keep out of sewers. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. Spills or discharge to natural waterways is likely to kill aquatic organisms.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling: Keep away from heat, sparks and flame. No smoking, open flames or sources of ignition in handling and storage area. Electrically ground and bond all equipment. Keep out of reach of children. Do not swallow. Avoid contact with eyes, skin, and clothing. Avoid breathing vapor or mist. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Use of non-sparking or explosion-proof equipment may be necessary, depending upon the type of operation. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage: Store in a dry place. Store in original container. Keep container tightly closed when not in use. Do not store near food, foodstuffs, drugs or potable water supplies.

Storage stability
1 year
Other data: Ambient

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Hexanol	US WEEL	TWA	40 ppm
Solvent naphtha (petroleum), light aromatic consists of:	OSHA Z-1	TWA	2,000 mg/m3 500 ppm
	ACGIH	TWA	200 mg/m3 , as total hydrocarbon vapor
1,2,4-Trimethylbenzene	ACGIH	TWA	25 ppm
1,3,5-Trimethylbenzene	ACGIH	TWA	25 ppm
Cumene	ACGIH	TWA	50 ppm

	OSHA Z-1	TWA	245 mg/m3 50 ppm
	OSHA Z-1	TWA	Absorbed via skin
	OSHA P0	TWA	245 mg/m3 50 ppm
Xylene	ACGIH	TWA	BEI
	ACGIH	STEL	BEI
	OSHA Z-1	TWA	435 mg/m3 100 ppm
	ACGIH	TWA	100 ppm
	ACGIH	STEL	150 ppm
Naphthalene	Dow IHG	TWA	10 ppm
	Dow IHG	TWA	Absorbed via skin
	Dow IHG	STEL	15 ppm
	Dow IHG	STEL	Absorbed via skin
	ACGIH	TWA	10 ppm
	ACGIH	TWA	Absorbed via skin
	OSHA Z-1	TWA	50 mg/m3 10 ppm

RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.

Exposure controls

Engineering controls: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use chemical goggles.

Skin protection

Hand protection: Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Chlorinated polyethylene. Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Viton. Examples of acceptable glove barrier materials include: Butyl rubber. Natural rubber ("latex"). Polyvinyl chloride ("PVC" or "vinyl"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Use gloves chemically resistant to this material.Examples of preferred glove barrier materials include:Chlorinated polyethylene.Neoprene.Nitrile/butadiene rubber ("nitrile" or "NBR").Polyethylene.Ethyl vinyl alcohol laminate ("EVAL").Viton.Examples of acceptable glove barrier materials include:Butyl rubber.Natural rubber ("latex").Polyvinyl chloride ("PVC" or "vinyl").NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator.
The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	Liquid.
Color	Yellow to brown
Odor	Aromatic
Odor Threshold	No test data available
pH	6.73 1% *pH Electrode* (1% aqueous suspension)
Melting point/range	Not applicable
Freezing point	No test data available
Boiling point (760 mmHg)	No test data available
Flash point	**closed cup** 44.8 °C (112.6 °F) *Setaflash Closed Cup ASTM D3828*
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammability (solid, gas)	Not Applicable
Lower explosion limit	No test data available
Upper explosion limit	No test data available
Vapor Pressure	No test data available
Relative Vapor Density (air = 1)	No test data available
Relative Density (water = 1)	no data available
Water solubility	emulsifiable
Partition coefficient: n-octanol/water	no data available
Auto-ignition temperature	No test data available
Decomposition temperature	no data available
Dynamic Viscosity	3.93 mPa.s at 25 °C (77 °F)
Kinematic Viscosity	no data available
Explosive properties	no data available
Oxidizing properties	no data available
Liquid Density	0.9615 g/cm3 at 20 °C (68 °F) *Digital density meter*
Molecular weight	no data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: no data available

Chemical stability: Thermally stable at recommended temperatures and pressures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Exposure to elevated temperatures can cause product to decompose.

Incompatible materials: Avoid contact with: Oxidizers.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Carbon monoxide. Carbon dioxide. Hydrogen fluoride. Nitrogen oxides.

11. TOXICOLOGICAL INFORMATION

Toxicological information on this product or its components appear in this section when such data is available.

Acute toxicity

Acute oral toxicity
Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

As product:
LD50, Rat, male, 1,612 mg/kg
As product:
LD50, Rat, female, > 2,000 - 5,000 mg/kg

Acute dermal toxicity
Prolonged skin contact is unlikely to result in absorption of harmful amounts.

As product:
LD50, Rabbit, > 5,000 mg/kg

Acute inhalation toxicity
No adverse effects are anticipated from single exposure to mist. Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs. Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed.

As product:
LC50, Rat, 4 Hour, dust/mist, > 5.19 mg/l No deaths occurred at this concentration.

Skin corrosion/irritation
Brief contact may cause slight skin irritation with local redness.
May cause drying and flaking of the skin.
Effects may be slow to heal.

Serious eye damage/eye irritation
May cause moderate eye irritation which may be slow to heal.
May cause slight corneal injury.

Sensitization
Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)
May cause respiratory irritation.

May cause drowsiness or dizziness.

Specific Target Organ Systemic Toxicity (Repeated Exposure)
For the active ingredient(s):
In animals, effects have been reported on the following organs:
Kidney.
Liver.
Gall bladder.

For the solvent(s):
In animals, effects have been reported on the following organs:
Blood.
Kidney.
Liver.
Respiratory tract.
Cataracts were observed in rats exposed to cumene vapors.

Carcinogenicity
For the active ingredient(s): Did not cause cancer in laboratory animals. For the minor component(s): Has caused cancer in laboratory animals. However, the relevance of this to humans is unknown.

Teratogenicity
For the active ingredient(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.

For the solvent(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Has caused birth defects in lab animals only at doses producing severe toxicity in the mother.

Reproductive toxicity
For the active ingredient(s): In animal studies, did not interfere with reproduction. For the solvent(s): In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

Mutagenicity
For the active ingredient(s): For the solvent(s): In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Aspiration Hazard
May be fatal if swallowed and enters airways.

Carcinogenicity

Component	List	Classification
Solvent naphtha (petroleum), light aromatic consists of:	ACGIH	A3: Confirmed animal carcinogen with unknown relevance to humans.
Cumene	IARC	Group 2B: Possibly carcinogenic to humans
Naphthalene	IARC	Group 2B: Possibly carcinogenic to humans
	US NTP	Reasonably anticipated to be a human carcinogen
	ACGIH	A3: Confirmed animal carcinogen with unknown relevance to humans.

12. ECOLOGICAL INFORMATION

Ecotoxicological information on this product or its components appear in this section when such data is available.

Toxicity

Cyhalofop-butyl

Acute toxicity to fish
Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested).
LC50, Lepomis macrochirus (Bluegill sunfish), flow-through test, 96 Hour, 0.76 mg/l, OECD Test Guideline 203

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), 48 Hour, > 2.7 mg/l, OECD Test Guideline 202
EC50, eastern oyster (Crassostrea virginica), flow-through test, 96 Hour, 0.52 mg/l

Acute toxicity to algae/aquatic plants
EbC50, Pseudokirchneriella subcapitata (green algae), 96 Hour, Biomass, > 1 mg/l

Toxicity to bacteria
EC50, activated sludge, > 100 mg/l

Chronic toxicity to fish
NOEC, Pimephales promelas (fathead minnow), flow-through test, 28 d, survival, 0.134 mg/l
LOEC, Pimephales promelas (fathead minnow), flow-through test, 28 d, survival, 0.287 mg/l
MATC (Maximum Acceptable Toxicant Level), Pimephales promelas (fathead minnow), flow-through test, 28 d, survival, 0.196 mg/l

Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), flow-through test, 21 d, growth, 0.0474 mg/l

Toxicity to Above Ground Organisms
Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).
Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).
oral LD50, Anas platyrhynchos (Mallard duck), > 2250mg/kg bodyweight.
dietary LC50, Anas platyrhynchos (Mallard duck), 8 d, > 5620mg/kg diet.

oral LD50, Apis mellifera (bees), 48 Hour, > 100µg/bee
contact LD50, Apis mellifera (bees), > 100µg/bee

Toxicity to soil-dwelling organisms
LC50, Eisenia fetida (earthworms), 7 d, > 1,120 mg/kg

Heavy aromatic naphtha

Acute toxicity to fish
Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/L in the most sensitive species tested).
LC50, Gambusia affinis (Mosquito fish), 96 Hour, 811 mg/l

Acute toxicity to algae/aquatic plants
EC50, Algae, 72 Hour, 21 - 165 mg/l

Hexanol

Acute toxicity to fish
Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/L in the most sensitive species tested).
LC50, Pimephales promelas (fathead minnow), flow-through test, 96 Hour, 97.2 mg/l, Other guidelines

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), static test, 24 Hour, 201 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
ErC50, Pseudokirchneriella subcapitata (microalgae), static test, 72 Hour, Growth rate inhibition, 79.7 mg/l, OECD Test Guideline 201 or Equivalent

Toxicity to bacteria
EC50, Protozoa, 48 Hour, 300.4 mg/l

Solvent naphtha (petroleum), light aromatic consists of:

Acute toxicity to fish
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).
LC50, Oncorhynchus mykiss (rainbow trout), static test, 96 Hour, 9.22 mg/l, OECD Test Guideline 203 or Equivalent

Toxicity to Above Ground Organisms
Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).
Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).
dietary LC50, Colinus virginianus (Bobwhite quail), 8 d, > 6500mg/kg diet.
oral LD50, Colinus virginianus (Bobwhite quail), 21 d, > 2150mg/kg bodyweight.

1,2,4-Trimethylbenzene

Acute toxicity to fish
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).
LC50, Pimephales promelas (fathead minnow), flow-through test, 96 Hour, 7.7 mg/l

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), 48 Hour, 3.6 mg/l

1,3,5-Trimethylbenzene

Acute toxicity to fish
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).
LC50, Carassius auratus (goldfish), flow-through test, 96 Hour, 12.5 mg/l, Method Not Specified.

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), Static, 48 Hour, 6 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
EbC50, Desmodesmus subspicatus (green algae), 48 Hour, Biomass, 25 mg/l, OECD Test Guideline 201 or Equivalent

Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), semi-static test, 21 d, number of offspring, 0.4 mg/l

Cumene

Acute toxicity to fish
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).
LC50, Oncorhynchus mykiss (rainbow trout), semi-static test, 96 Hour, 2.7 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), static test, 48 Hour, 4.0 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
EbC50, Pseudokirchneriella subcapitata (green algae), static test, 72 Hour, Biomass, 2.6 mg/l, OECD Test Guideline 201 or Equivalent

Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), semi-static test, 21 d, number of offspring, 0.35 mg/l

Toxicity to Above Ground Organisms
oral LD50, redwing blackbird (Agelaius phoeniceus), > 98 mg/kg

Xylene

Acute toxicity to fish
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).
LC50, Oncorhynchus mykiss (rainbow trout), semi-static test, 96 Hour, 2.6 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates
IC50, Daphnia magna (Water flea), 24 Hour, 1 - 4.7 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
ErC50, Pseudokirchneriella subcapitata (algae), Static, 73 Hour, Growth rate, 4.36 mg/l, OECD Test Guideline 201 or Equivalent

NOEC, Pseudokirchneriella subcapitata (green algae), 73 Hour, Growth rate, 0.44 mg/l, OECD Test Guideline 201 or Equivalent

Chronic toxicity to fish
NOEC, Oncorhynchus mykiss (rainbow trout), flow-through, 56 d, mortality, > 1.3 mg/l

Naphthalene

Acute toxicity to fish
Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested).
LC50, Oncorhynchus mykiss (rainbow trout), 96 Hour, 0.11 mg/l

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), static test, 48 Hour, 1.6 - 24.1 mg/l

Chronic toxicity to fish
NOEC, Other, flow-through, 40 d, mortality, 0.37 mg/l

Persistence and degradability

Cyhalofop-butyl

Biodegradability: Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.
10-day Window: Fail
Biodegradation: 40 %
Exposure time: 29 d
Method: OECD Test Guideline 301B or Equivalent

Theoretical Oxygen Demand: 1.93 mg/mg

Stability in Water (1/2-life)
, 7 d

Photodegradation
Atmospheric half-life: 5.88 Hour
Method: Measured

Heavy aromatic naphtha

Biodegradability: Material is not readily biodegradable according to OECD/EEC guidelines.

Hexanol

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Pass
Biodegradation: 61 %
Exposure time: 30 d
Method: OECD Test Guideline 301D or Equivalent
10-day Window: Pass
Biodegradation: 77 %
Exposure time: 30 d
Method: OECD Test Guideline 301D or Equivalent

Solvent naphtha (petroleum), light aromatic consists of:

Biodegradability: For the major component(s): Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%). For some component(s): Biodegradation under aerobic static laboratory conditions is low (BOD20 or BOD28/ThOD between 2.5 and 10%).

1,2,4-Trimethylbenzene

Biodegradability: Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.
10-day Window: Not applicable
Biodegradation: 4 - 18 %
Exposure time: 28 d
Method: OECD Test Guideline 301C or Equivalent

Theoretical Oxygen Demand: 3.19 mg/mg

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 0.641 d
Method: Estimated.

1,3,5-Trimethylbenzene

Biodegradability: Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.
10-day Window: Not applicable
Biodegradation: 0 %
Exposure time: 28 d
Method: OECD Test Guideline 301C or Equivalent
10-day Window: Not applicable
Biodegradation: 50 %
Exposure time: 4.4 d
Method: Calculated.

Theoretical Oxygen Demand: 3.19 mg/mg

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 3.7 Hour
Method: Estimated.

Cumene

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Pass
Biodegradation: 86 %
Exposure time: 28 d
Method: OECD Test Guideline 301D or Equivalent

Theoretical Oxygen Demand: 3.20 mg/mg

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	40.000 %
10 d	62.000 %
20 d	70.000 %

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 1.55 d
Method: Estimated.

Xylene

Biodegradability: Material is expected to be readily biodegradable.
10-day Window: Pass
Biodegradation: > 60 %
Exposure time: 10 d
Method: OECD Test Guideline 301F or Equivalent

Theoretical Oxygen Demand: 3.17 mg/mg

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	37.000 %
10 d	58.000 %
20 d	72.000 %

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 19.7 Hour
Method: Estimated.

Naphthalene

Biodegradability: Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%).

Theoretical Oxygen Demand: 3.00 mg/mg

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	57.000 %
10 d	71.000 %
20 d	71.000 %

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals

Atmospheric half-life: 5.9 Hour
Method: Estimated.

Bioaccumulative potential

Cyhalofop-butyl
Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): 3.32 Measured
Bioconcentration factor (BCF): < 7 Fish. 28 d Measured

Heavy aromatic naphtha
Bioaccumulation: For similar material(s): Bioconcentration potential is high (BCF > 3000 or Log Pow between 5 and 7).

Hexanol
Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): 1.8 Measured

Solvent naphtha (petroleum), light aromatic consists of:
Bioaccumulation: For the major component(s): Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5). For the minor component(s): Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

1,2,4-Trimethylbenzene
Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water(log Pow): 3.63 Measured
Bioconcentration factor (BCF): 33 - 275 Cyprinus carpio (Carp) 56 d Measured

1,3,5-Trimethylbenzene
Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water(log Pow): 3.42 Measured
Bioconcentration factor (BCF): 161 Pimephales promelas (fathead minnow) Measured

Cumene
Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): 3.4 - 3.7 Measured
Bioconcentration factor (BCF): 35.5 Fish. Measured

Xylene
Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): 3.12 Measured
Bioconcentration factor (BCF): 25.9 Rainbow trout (Salmo gairdneri) Measured

Naphthalene
Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water(log Pow): 3.3 Measured
Bioconcentration factor (BCF): 40 - 300 Fish. 28 d Measured

Mobility in soil

Cyhalofop-butyl

Expected to be relatively immobile in soil (Koc > 5000).
Partition coefficient(Koc): 5247 Measured

Heavy aromatic naphtha
No relevant data found.

Hexanol
Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient(Koc): 8.3

Solvent naphtha (petroleum), light aromatic consists of:
For the major component(s):
Potential for mobility in soil is low (Koc between 500 and 2000).

1,2,4-Trimethylbenzene
Potential for mobility in soil is low (Koc between 500 and 2000).
Partition coefficient(Koc): 720 Estimated.

1,3,5-Trimethylbenzene
Potential for mobility in soil is low (Koc between 500 and 2000).
Partition coefficient(Koc): 741.65 Estimated.

Cumene
Potential for mobility in soil is low (Koc between 500 and 2000).
Partition coefficient(Koc): 800 - 2800 Estimated.

Xylene
Potential for mobility in soil is medium (Koc between 150 and 500).
Partition coefficient(Koc): 443 Estimated.

Naphthalene
Potential for mobility in soil is medium (Koc between 150 and 500).
Partition coefficient(Koc): 240 - 1300 Measured

13. DISPOSAL CONSIDERATIONS

Disposal methods: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

14. TRANSPORT INFORMATION

DOT

Proper shipping name	Flammable liquids, n.o.s.(Aromatic hydrocarbons)
UN number	UN 1993

Class	3
Packing group	III
Reportable Quantity	Xylene

Classification for SEA transport (IMO-IMDG):

Proper shipping name	FLAMMABLE LIQUID, N.O.S.(Aromatic hydrocarbons)
UN number	UN 1993
Class	3
Packing group	III
Marine pollutant	No
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Proper shipping name	Flammable liquid, n.o.s.(Aromatic hydrocarbons)
UN number	UN 1993
Class	3
Packing group	III

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312
Acute Health Hazard
Chronic Health Hazard
Fire Hazard

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

Components	**CASRN**
Cumene	98-82-8
1,2,4-Trimethylbenzene	95-63-6

Pennsylvania Worker and Community Right-To-Know Act:
The following chemicals are listed because of the additional requirements of Pennsylvania law:

Components	CASRN
Hexanol	111-27-3
1,2,4-Trimethylbenzene	95-63-6
1,3,5-Trimethylbenzene	108-67-8
Cumene	98-82-8

United States TSCA Inventory (TSCA)
This product contains chemical substance(s) exempt from U.S. EPA TSCA Inventory requirements. It is regulated as a pesticide subject to Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requirements.

Federal Insecticide, Fungicide and Rodenticide Act
EPA Registration Number: 62719-356
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

WARNING

Causes substantial but temporary eye injury
Causes skin irritation
Harmful if swallowed

16. OTHER INFORMATION

Hazard Rating System
NFPA

Health	Fire	Reactivity
1	2	0

Revision
Identification Number: 101194575 / A211 / Issue Date: 05/04/2015 / Version: 3.0
DAS Code: NAF-541
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

Absorbed via skin	Absorbed via skin
ACGIH	USA. ACGIH Threshold Limit Values (TLV)
BEI	Biological Exposure Indices
Dow IHG	Dow Industrial Hygiene Guideline
OSHA P0	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
OSHA Z-1	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
STEL	Short term exposure limit
TWA	Time weighted average

US WEEL	USA. Workplace Environmental Exposure Levels (WEEL)

Information Source and References
This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

DOW AGROSCIENCES LLC urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

Safety Data Sheet

syngenta®

CAPAROL® 4L

Date: 7/9/2015

;places: 2/3/2015

1. PRODUCT IDENTIFICATION

Product identifier on label: **CAPAROL® 4L**

Product No.: A8564A

Use: Herbicide

Manufacturer: Syngenta Crop Protection, LLC
Post Office Box 18300
Greensboro NC 27419

Manufacturer Phone: 1-800-334-9481

Emergency Phone: 1-800-888-8372

2. HAZARDS IDENTIFICATION

Classifications: Not Applicable

Signal Word (OSHA): Not Applicable

Hazard Statements: Not Applicable

Hazard Symbols:

Precautionary Statements: Not Applicable

Other Hazard Statements: None

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Common Name	CAS Number	Concentration
Ethylene Glycol	Ethylene Glycol	107-21-1	<10.0%
Glycerin	Glycerin	56-81-5	Trade Secret
Other ingredients	Other ingredients	Trade Secret	>45.6%
2,4-bis(isopropylamino)-6-(methylthio)-s-triazine	Prometryn	7287-19-6	44.4%

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.

4. FIRST AID MEASURES

Have the product container, label or Safety Data Sheet with you when calling Syngenta (800-888-8372), a poison contol center or doctor, or going for treatment.

Ingestion: If swallowed: Call Syngenta (800-888-8372), a poison control center or doctor immediately for treatment advice. Do not give any liquid to the person. Do not induce vomiting unless told to do so after calling 800-888-8372 or by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

Eye Contact: If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.

Skin Contact: If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.

Inhalation: If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call Syngenta (800-888-8372), a poison control center or doctor for further treatment advice.

Most important symptoms/effects:

Not Applicable

Indication of immediate medical attention and special treatment needed:

There is no specific antidote if this product is ingested.

Treat symptomatically.

5. FIRE FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media:

Use dry chemical, foam or CO2 extinguishing media. If water is used to fight fire, dike and collect runoff.

Specific Hazards:

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

Special protective equipment and precautions for firefighters:

Wear full protective clothing and self-contained breathing apparatus. Evacuate nonessential personnel from the area to prevent human exposure to fire, smoke, fumes or products of combustion.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures:

Follow exposure controls/personal protection outlined in Section 8.

Methods and materials for containment and cleaning up:

Control the spill at its source. Contain the spill to prevent from spreading or contaminating soil or from entering sewage and drainage systems or any body of water. Clean up spills immediately, observing precautions outlined in Section 8. Cover entire spill with absorbing material and place into compatible disposal container. Scrub area with hard water detergent (e.g. commercial products such as Tide, Joy, Spic and Span). Pick up wash liquid with additional absorbent and place into compatible disposal container. Once all material is cleaned up and placed in a disposal container, seal container and arrange for disposition.

7. HANDLING AND STORAGE

Precautions for safe handling:

Store the material in a well-ventilated, secure area out of reach of children and domestic animals. Do not store food, beverages or tobacco products in the storage area. Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

Conditions for safe storage, including any incompatibilities:

Not Applicable

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION AND PACKAGING OF THIS PRODUCT.

FOR COMMERCIAL APPLICATIONS AND/OR ON-FARM APPLICATIONS CONSULT THE PRODUCT LABEL.

Occupational Exposure Limits:

Chemical Name	OSHA PEL	ACGIH TLV	Other	Source
Ethylene Glycol	Not Established	100 mg/m³ (ceiling) [aerosol]	Not Established	Not Applicable
Glycerin	15 mg/m³ TWA (total); 5 mg/m³ TWA (respirable)	Not Established	Not Established	Not Applicable
Other ingredients	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Prometryn	Not Established	Not Established	5 mg/m³ TWA	Syngenta

Appropriate engineering controls:

Use effective engineering controls to comply with occupational exposure limits (if applicable).

Individual protection measures:

Ingestion:

Prevent eating, drinking, tobacco usage and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

Eye Contact:

Where eye contact is likely, use chemical splash goggles.

Skin Contact:

Where contact is likely, wear chemical-resistant gloves (such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, polyvinyl chloride [PVC] or Viton), coveralls, socks and chemical-resistant footwear.

Inhalation:

A respirator is not normally required when handling this substance. Use effective engineering controls to comply with occupational exposure limits.

In case of emergency spills, use a NIOSH approved respirator with any N, R, P or HE filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: White liquid

Odor: Paint

Odor Threshold: Not Available

pH: 7.5 (1% solution in H2O @ 68°F (20°C)

Melting point/freezing point: Not Applicable

Initial boiling point and boiling range: 212 - 230 °F

Flash Point (Test Method): > 200°F

Flammable Limits (% in Air): Not Available

Flammability: Not Applicable

Vapor Pressure: Prometryn 1.24 x 10(-6) mmHg @ 77°F (25°C)

Vapor Density: Not Available

Relative Density: 1.08 g/cm³ @ 68°F (20°C)

Solubility (ies): Prometryn 33 mg/l @ 72°F (22°C)

Partition coefficient: n-octanol/water: Not Available

Autoignition Temperature: Not Available

Decomposition Temperature: Not Available

Viscosity: Not Available

Other: None

10. STABILITY AND REACTIVITY

Reactivity: Not reactive.

Chemical stability: Stable under normal use and storage conditions.

Possibility of hazardous reactions: Will not occur.

Conditions to Avoid: None known.

Incompatible materials: None known.

Hazardous Decomposition Products: None known.

11. TOXICOLOGICAL INFORMATION

Health effects information

Likely routes of exposure: Dermal, Inhalation

Symptoms of exposure: Not Applicable

Delayed, immediate and chronic effects of exposure: Not Applicable

Numerical measures of toxicity (acute toxicity/irritation studies (finished product))

Ingestion: Oral (LD50 Rabbit) : > 5000 mg/kg body weight

Dermal:	Dermal (LD50 Rat) :	> 5000 mg/kg body weight
Inhalation:	Inhalation (LC50 Rat) :	> 2.2 mg/l air - 4 hours
Eye Contact:	Mildly Irritating (Rabbit)	
Skin Contact:	Slightly Irritating (Rabbit)	
Skin Sensitization:	Not a Sensitizer (Guinea Pig)	

Reproductive/Developmental Effects

Prometryn: None observed.

Chronic/Subchronic Toxicity Studies

Prometryn: Liver, kidney and bone marrow changes at highest dose (dogs); Kidney effects (rats).

Carcinogenicity

Prometryn: None observed.

Chemical Name	NTP/IARC/OSHA Carcinogen
Ethylene Glycol	No
Glycerin	No
Other ingredients	No
2,4-bis(isopropylamino)-6-(methylthio)-s-triazine	No

Other Toxicity Information

None

Toxicity of Other Components

Ethylene Glycol

Ethylene glycol has been shown to produce dose-related teratogenic effects in rats and mice. Exposure to high concentrations of mists or aerosols may result in effects on the hematopoietic system and central nervous system with headache, dizziness and drowsiness. Severe kidney damage results from swallowing large amounts of ethylene glycol.

Glycerin

Repeated or prolonged exposure to concentrated solutions may result in dermatitis.

Other ingredients

Not Applicable

Target Organs

Active Ingredients

Prometryn:	Liver, kidney, bone marrow

Inert Ingredients

Ethylene Glycol:	Blood, kidney, CNS
Glycerin:	Skin
Other ingredients:	Not Applicable

12. ECOLOGICAL INFORMATION

Eco-Acute Toxicity

Prometryn:

Fish (Rainbow Trout) 96-hour LC50 2.9 ppb

Invertebrate (Water Flea) Daphnia Magna 48-hour EC50 18.59 ppm

Bird (Bobwhite Quail) 8-day LD50 > 4640 mg/kg

Green Algae 4-day EC50 12 ppb

Environmental Fate

Prometryn:

The information presented here is for the active ingredient, prometryn.
Low bioaccumulation potential. Persistent in soil. Stable in water. Moderate mobility in soil. Sinks in water (after 24 h).

13. DISPOSAL CONSIDERATIONS

Disposal:

Do not reuse product containers. Dispose of product containers, waste containers, and residues according to local, state, and federal health and environmental regulations.

Characteristic Waste: Not Applicable

Listed Waste: Not Applicable

14. TRANSPORT INFORMATION

DOT Classification

Ground Transport - NAFTA
Not regulated

Comments

Water Transport - International
Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S. (Prometryn), Marine Pollutant
Hazard Class: Class 9
Identification Number: UN 3082
Packing Group: PG III

Air Transport
Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S. (Prometryn)
Hazard Class: Class 9
Identification Number: UN 3082
Packing Group: PG III
Note: This product is currently not regulated for airfreight within the NAFTA region. However, effective 01/01/2011 the classification above must be used.

15. REGULATORY INFORMATION

Pesticide Registration:

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

Caution: Keep out of reach of children.

EPA Registration Number(s):
100-620

EPCRA SARA Title III Classification:

Section 311/312 Hazard Classes: Acute Health Hazard

Section 313 Toxic Chemicals: Prometryn 44.4% (CAS No. 7287-19-6)
Ethylene Glycol <10.0% (CAS No. 107-21-1)

CERCLA/SARA 304 Reportable Quantity (RQ):
Report product spills > 8,300 gal. (based on ethylene glycol [RQ = 5,000 lbs.] content in the formulation)

RCRA Hazardous Waste Classification (40 CFR 261):
Not Applicable

TSCA Status:
Exempt from TSCA, subject to FIFRA

16. OTHER INFORMATION

NFPA Hazard Ratings		HMIS Hazard Ratings	
Health:	2	Health:	1
Flammability:	1	Flammability:	1
Instability:	0	Reactivity:	0

Syngenta Hazard Category: A

0	Minimal
1	Slight
2	Moderate
3	Serious
4	Extreme
*	Chronic

For non-emergency questions about this product call:

1-800-334-9481

Original Issued Date: 11/25/1985
Revision Date: 7/9/2015 Replaces: 2/3/2015
Section(s) Revised: 2, 4, 11, 16

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.

Dow AgroSciences

SAFETY DATA SHEET
DOW AGROSCIENCES LLC

Product name: SONALAN™ HFP Herbicide

Issue Date: 05/04/2015
Print Date: 10/13/2015

DOW AGROSCIENCES LLC encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: SONALAN™ HFP Herbicide

Recommended use of the chemical and restrictions on use
Identified uses: End use herbicide product

COMPANY IDENTIFICATION
DOW AGROSCIENCES LLC
9330 ZIONSVILLE RD
INDIANAPOLIS IN 46268-1053
UNITED STATES

Customer Information Number: 800-992-5994
info@dow.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 800-992-5994
Local Emergency Contact: 352-323-3500

2. HAZARDS IDENTIFICATION

Hazard classification
This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.
Flammable liquids - Category 3
Skin irritation - Category 2
Serious eye damage - Category 1
Skin sensitisation - Category 1
Carcinogenicity - Category 2
Specific target organ toxicity - single exposure - Category 3
Aspiration hazard - Category 1

Label elements
Hazard pictograms

Signal word: **DANGER!**

Hazards
Flammable liquid and vapour.
May be fatal if swallowed and enters airways.
Causes skin irritation.
May cause an allergic skin reaction.
Causes serious eye damage.
May cause respiratory irritation.
May cause drowsiness or dizziness.
Suspected of causing cancer.

Precautionary statements

Prevention
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ ventilating/ lighting/ equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves/ eye protection/ face protection.
Use personal protective equipment as required.

Response
IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/ physician.
IF exposed or concerned: Get medical advice/ attention.
Do NOT induce vomiting.
If skin irritation or rash occurs: Get medical advice/ attention.
Take off contaminated clothing and wash before reuse.
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

Storage
Store in a well-ventilated place. Keep container tightly closed.

Store in a well-ventilated place. Keep cool.
Store locked up.

Disposal
Dispose of contents/ container to an approved waste disposal plant.

Other hazards
no data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a mixture.

Component	CASRN	Concentration
Ethalfluralin	55283-68-6	35.4%
Cyclohexanone	108-94-1	14.8%
Trifluralin	1582-09-8	0.1%
Solvent naphtha (petroleum), light aromatic consists of:	64742-95-6	44.9% Not measured
1,2,4-Trimethylbenzene	95-63-6	13.3%
1,3,5-Trimethylbenzene	108-67-8	3.6%
Cumene	98-82-8	1.8%
Xylene	1330-20-7	0.4%

4. FIRST AID MEASURES

Description of first aid measures
General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice. If breathing is difficult, oxygen should be administered by qualified personnel.

Skin contact: Take off contaminated clothing. Wash skin with soap and plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. Wash clothing before reuse. Shoes and other leather items which cannot be decontaminated should be disposed of properly.

Eye contact: Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice. Suitable emergency eye wash facility should be immediately available.

Ingestion: Immediately call a poison control center or doctor. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give any liquid to the person. Do not give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed: Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed
Notes to physician: Skin contact may aggravate preexisting dermatitis. Repeated excessive exposure may aggravate preexisting lung disease. Maintain adequate ventilation and oxygenation of the patient. May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants, antitussives and corticosteroids may be of help. Due to irritant properties, swallowing may result in burns/ulceration of mouth, stomach and lower gastrointestinal tract with subsequent stricture. Aspiration of vomitus may cause lung injury. Suggest endotracheal/esophageal control if lavage is done. Probable mucosal damage may contraindicate the use of gastric lavage. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

Unsuitable extinguishing media: no data available

Special hazards arising from the substance or mixture
Hazardous combustion products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Nitrogen oxides. Hydrogen fluoride. Hydrogen chloride. Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. Dense smoke is produced when product burns.

Advice for firefighters
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Consider feasibility of a controlled burn to minimize environment damage. Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or

discoloration of the container. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Eliminate ignition sources. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to section 7, Handling, for additional precautionary measures. Keep personnel out of low areas. Keep upwind of spill. Ventilate area of leak or spill. No smoking in area. Vapor explosion hazard. Keep out of sewers. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Ground and bond all containers and handling equipment. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. Spills or discharge to natural waterways is likely to kill aquatic organisms.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Pump with explosion-proof equipment. If available, use foam to smother or supress. Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling: Keep away from heat, sparks and flame. Keep out of reach of children. Do not swallow. Avoid breathing vapor or mist. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated contact with skin. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. No smoking, open flames or sources of ignition in handling and storage area. Electrically ground and bond all equipment. Use of non-sparking or explosion-proof equipment may be necessary, depending upon the type of operation. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage: Minimize sources of ignition, such as static build-up, heat, spark or flame. Store in a dry place. Store in original container. Keep container tightly closed when not in use. Do not store near food, foodstuffs, drugs or potable water supplies.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Ethalfluralin	Dow IHG	TWA	3 mg/m3
Cyclohexanone	ACGIH	TWA	20 ppm
	ACGIH	STEL	50 ppm
	OSHA Z-1	TWA	200 mg/m3 50 ppm
	ACGIH	TWA	OEL Notation
	ACGIH	STEL	Absorbed via skin
Solvent naphtha (petroleum), light aromatic consists of:	OSHA Z-1	TWA	2,000 mg/m3 500 ppm
	ACGIH	TWA	200 mg/m3 , as total hydrocarbon vapor
1,2,4-Trimethylbenzene	ACGIH	TWA	25 ppm
1,3,5-Trimethylbenzene	ACGIH	TWA	25 ppm
Cumene	ACGIH	TWA	50 ppm
	OSHA Z-1	TWA	245 mg/m3 50 ppm
	OSHA Z-1	TWA	Absorbed via skin
	OSHA P0	TWA	245 mg/m3 50 ppm
Xylene	ACGIH	TWA	BEI
	ACGIH	STEL	BEI
	OSHA Z-1	TWA	435 mg/m3 100 ppm
	ACGIH	TWA	100 ppm
	ACGIH	STEL	150 ppm

RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.

Exposure controls

Engineering controls: Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use chemical goggles. If exposure causes eye discomfort, use a full-face respirator.

Skin protection

Hand protection: Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Chlorinated polyethylene. Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Viton. Examples of acceptable glove barrier materials include: Butyl rubber. Natural rubber ("latex"). Polyvinyl chloride ("PVC" or "vinyl"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to

glove materials, as well as the instructions/specifications provided by the glove supplier.
Other protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use an approved respirator. Selection of air-purifying or positive-pressure supplied-air will depend on the specific operation and the potential airborne concentration of the material. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus. In confined or poorly ventilated areas, use an approved self-contained breathing apparatus or positive pressure air line with auxiliary self-contained air supply.
The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	Liquid.
Color	Orange
Odor	Aromatic
Odor Threshold	no data available
pH	5.0 *Literature* (aqueous 50/50)
Melting point/range	No test data available, Not applicable to liquids
Freezing point	No test data available
Boiling point (760 mmHg)	156 °C (313 °F) *Literature* (solvent)
Flash point	**closed cup** 48 °C (118 °F) *Pensky-Martens Closed Cup ASTM D 93*
Evaporation Rate (Butyl Acetate = 1)	no data available
Flammability (solid, gas)	Not Applicable
Lower explosion limit	1.5 % vol *Literature* (in air)
Upper explosion limit	8.5 % vol *Literature* (in air)
Vapor Pressure	10 mmHg *Literature* (solvent)
Relative Vapor Density (air = 1)	1.030 *Literature* (relative to air at 25°C)
Relative Density (water = 1)	1.02 at 20 °C (68 °F) *Literature*
Water solubility	emulsifies in water
Partition coefficient: n-octanol/water	no data available
Auto-ignition temperature	No test data available
Decomposition temperature	No test data available
Kinematic Viscosity	no data available
Explosive properties	no data available
Oxidizing properties	no data available
Liquid Density	1.017 g/cm3*NAPM 2A.00*

Molecular weight no data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: no data available

Chemical stability: Stable under recommended storage conditions. See Storage, Section 7. Thermally stable at typical use temperatures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Avoid temperatures above 70 °C
Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible materials: Avoid contact with oxidizing materials.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Hydrogen chloride. Hydrogen fluoride. Nitrogen oxides. Toxic gases are released during decomposition.

11. TOXICOLOGICAL INFORMATION

Toxicological information on this product or its components appear in this section when such data is available.

Acute toxicity

Acute oral toxicity
Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. Swallowing may result in gastrointestinal irritation or ulceration.

As product: Single dose oral LD50 has not been determined.

Based on information for component(s):
LD50, Rat, > 4,000 mg/kg Estimated.

Acute dermal toxicity
Prolonged skin contact is unlikely to result in absorption of harmful amounts.

As product: The dermal LD50 has not been determined.

Based on information for component(s):
LD50, Rabbit, > 5,000 mg/kg Estimated.

Acute inhalation toxicity

Vapor concentrations are attainable which could be hazardous on single exposure. Prolonged excessive exposure to mist may cause adverse effects. Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs. May cause central nervous system effects. Symptoms may include headache, dizziness and drowsiness, progressing to incoordination and unconsciousness.
As product: The LC50 has not been determined.

Skin corrosion/irritation
Brief contact may cause moderate skin irritation with local redness.
Prolonged contact may cause skin irritation, even a burn.
May cause drying and flaking of the skin.

Serious eye damage/eye irritation
May cause severe eye irritation.
May cause moderate corneal injury.
Vapor may cause eye irritation experienced as mild discomfort and redness.
In humans, eye irritation resulted from brief (minutes) exposure to cyclohexanone vapor concentration of 50 ppm and above.

Sensitization
For the active ingredient(s):
Skin contact may cause an allergic skin reaction.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)
May cause respiratory irritation.

May cause drowsiness or dizziness.

Specific Target Organ Systemic Toxicity (Repeated Exposure)
For the active ingredient(s):
In animals, effects have been reported on the following organs:
Liver.

Based on information for component(s):
In animals, effects have been reported on the following organs:
Kidney.
Liver.
Central nervous system.
Blood.
Eye.
Respiratory tract.
Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed.
Mist may cause irritation of upper respiratory tract (nose and throat) and lungs.
Exposure to high concentrations of mist/aerosol may be associated with delayed lung damage.

Carcinogenicity
For the minor component(s): Has caused cancer in laboratory animals. However, the relevance of this to humans is unknown.

For the active ingredient(s): A low incidence of urinary tract tumors was seen in only 1 of 5 chronic studies in rats with trifluralin. Trifluralin is not anticipated to be a carcinogenic risk to man. An increase in benign mammary fibroadenomas was observed in female rats dosed with Ethalfluralin. Did not cause cancer in laboratory animals.

Teratogenicity
For the active ingredient(s): Has caused birth defects in laboratory animals only at doses toxic to the mother. Based on information for component(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Has caused birth defects in lab animals only at doses producing severe toxicity in the mother.

Reproductive toxicity
In animal studies, active ingredient did not interfere with reproduction.

Based on information for component(s): In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals. Cyclohexanone caused reduced growth and survival of offspring in an animal reproduction study. Dose levels producing this effect also caused central nervous system effects in parental animals. In animal studies, has been shown to interfere with reproduction in males. Effects have been seen only at doses that produced significant toxicity to the parent animals.

Mutagenicity
For the active ingredient(s): In vitro genetic toxicity studies were negative in some cases and positive in other cases. Animal genetic toxicity studies were negative.

Based on information for component(s): In vitro genetic toxicity studies were negative in some cases and positive in other cases. Animal genetic toxicity studies were inconclusive

Aspiration Hazard
May be fatal if swallowed and enters airways.

COMPONENTS INFLUENCING TOXICOLOGY:

Ethalfluralin

Acute inhalation toxicity
Prolonged excessive exposure may cause adverse effects. Observations in animals include: Incoordination.

As product: LC50, Rat, 1 Hour, Dust, > 0.028 mg/l No deaths occurred at this concentration.

As product: LC50, Rat, male and female, 4 Hour, dust/mist, > 0.94 mg/l No deaths occurred at this concentration.

Cyclohexanone

Acute inhalation toxicity
Vapor concentrations are attainable which could be hazardous on single exposure. May cause central nervous system effects. Excessive exposure may cause severe irritation to upper respiratory tract (nose and throat) and lungs.

LC50, Rat, 4 Hour, vapour, > 6.2 mg/l No deaths occurred at this concentration.

Trifluralin

Acute inhalation toxicity

Vapors are unlikely due to physical properties. No adverse effects are anticipated from single exposure to dust. Based on the available data, respiratory irritation was not observed.

LC50, Rat, 4 Hour, dust/mist, > 4.8 mg/l

Solvent naphtha (petroleum), light aromatic consists of:

Acute inhalation toxicity

Vapor concentrations are attainable which could be hazardous on single exposure. May cause respiratory irritation and central nervous system depression. Symptoms may include headache, dizziness and drowsiness, progressing to incoordination and unconsciousness.

LC50, Rat, 4 Hour, > 10.2 mg/l

1,2,4-Trimethylbenzene

Acute inhalation toxicity

Prolonged excessive exposure may cause serious adverse effects, even death. Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs. May cause central nervous system effects. Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed.

LC50, Rat, 4 Hour, vapour, 18 mg/l

1,3,5-Trimethylbenzene

Acute inhalation toxicity

LC50, Rat, male and female, 4 Hour, vapour, > 10.2 mg/l No deaths occurred following exposure to a saturated atmosphere.

Cumene

Acute inhalation toxicity

Brief exposure (minutes) is not likely to cause adverse effects. Excessive exposure may cause severe irritation to the upper respiratory tract (nose and throat). May cause central nervous system effects. Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed. Effects may be delayed. Effects may be slow to heal. Exposure to 200 ppm cumene vapors is irritating to the nose and eyes; at around 400 ppm, vapors are painfully irritating but otherwise not injurious. Higher vapor levels may produce serious adverse effects.

LC50, Rat, 4 Hour, vapour, > 17.6 mg/l No deaths occurred at this concentration.

Xylene

Acute inhalation toxicity

LC50, Rat, 4 Hour, vapour, 27.5 mg/l

Carcinogenicity

Component	List	Classification
Cyclohexanone	ACGIH	A3: Confirmed animal carcinogen with unknown relevance to humans.
Solvent naphtha (petroleum), light aromatic consists of:	ACGIH	A3: Confirmed animal carcinogen with unknown relevance to humans.
Cumene	IARC	Group 2B: Possibly carcinogenic to humans

12. ECOLOGICAL INFORMATION

Ecotoxicological information on this product or its components appear in this section when such data is available.

Toxicity

Ethalfluralin

Acute toxicity to fish
Material is very highly toxic to aquatic organisms on an acute basis (LC50/EC50 <0.1 mg/L in the most sensitive species).
LC50, Lepomis macrochirus (Bluegill sunfish), static test, 96 Hour, 0.054 - 0.102 mg/l, OECD Test Guideline 203 or Equivalent
LC50, Oncorhynchus mykiss (rainbow trout), flow-through test, 96 Hour, 0.136 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates
EC50, eastern oyster (Crassostrea virginica), flow-through test, 96 Hour, 0.100 - 0.172 mg/l, OECD Test Guideline 202 or Equivalent
EC50, Daphnia magna (Water flea), static test, 48 Hour, > 0.365 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
ErC50, Pseudokirchneriella subcapitata (green algae), static test, 7 d, Growth rate inhibition, 0.004 - 0.0091 mg/l, OECD Test Guideline 201 or Equivalent

Chronic toxicity to fish
NOEC, Oncorhynchus mykiss (rainbow trout), 50 d, 0.0004 mg/l

Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), 21 d, 0.0237 mg/l

Toxicity to Above Ground Organisms
Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).
Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).
oral LD50, Colinus virginianus (Bobwhite quail), 14 d, > 2000mg/kg bodyweight.
dietary LC50, Colinus virginianus (Bobwhite quail), > 5000mg/kg diet.
oral LD50, Apis mellifera (bees), > 109.9micrograms/bee
contact LD50, Apis mellifera (bees), 46 - 100micrograms/bee

Toxicity to soil-dwelling organisms
LC50, Eisenia fetida (earthworms), 14 d, > 1,000 mg/kg

Cyclohexanone

Acute toxicity to fish
Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).
LC50, Leuciscus idus (Golden orfe), static test, 48 Hour, 630 mg/l
LC50, Pimephales promelas (fathead minnow), static test, 96 Hour, 527 - 732 mg/l

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), 24 Hour, 820 mg/l

Acute toxicity to algae/aquatic plants
LOEC, Scenedesmus quadricauda (Green algae), 192 Hour, 370 mg/l, Method Not Specified.

Toxicity to bacteria
EC50, activated sludge, > 1,000 mg/l, OECD 209 Test

Trifluralin

Acute toxicity to fish
Material is very highly toxic to aquatic organisms on an acute basis (LC50/EC50 <0.1 mg/L in the most sensitive species).
LC50, Oncorhynchus mykiss (rainbow trout), flow-through test, 96 Hour, 0.088 mg/l
LC50, Lepomis macrochirus (Bluegill sunfish), flow-through test, 96 Hour, 0.089 mg/l

Acute toxicity to aquatic invertebrates
EC50, water flea Daphnia magna, static test, 48 Hour, 0.245 mg/l
EC50, mussel Mytilus edulis, static test, 48 Hour, 0.096 mg/l

Acute toxicity to algae/aquatic plants
ErC50, Pseudokirchneriella subcapitata (green algae), 72 Hour, 0.0532 mg/l
EC50, Lemna gibba, Growth inhibition, 7 d, 0.043 mg/l
EbC50, diatom Navicula sp., 5 d, Biomass, 0.015 mg/l

Toxicity to bacteria
EC50, activated sludge, 3 Hour, > 100 mg/l

Chronic toxicity to fish
NOEC, Oncorhynchus mykiss (rainbow trout), static test, 48 d, growth, 0.00114 mg/l

Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), semi-static test, 21 d, growth, 0.0507 mg/l

Toxicity to Above Ground Organisms
Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).
Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).
oral LD50, Colinus virginianus (Bobwhite quail), > 2250mg/kg bodyweight.
dietary LC50, Colinus virginianus (Bobwhite quail), 5 d, > 5000mg/kg diet.
oral LD50, Apis mellifera (bees), > 100micrograms/bee
contact LD50, Apis mellifera (bees), > 100micrograms/bee

Toxicity to soil-dwelling organisms
LC50, Eisenia fetida (earthworms), 14 d, > 1,000 mg/kg

Solvent naphtha (petroleum), light aromatic consists of:

Acute toxicity to fish
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).
LC50, Oncorhynchus mykiss (rainbow trout), static test, 96 Hour, 9.22 mg/l, OECD Test Guideline 203 or Equivalent

Toxicity to Above Ground Organisms
Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).
Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).
dietary LC50, Colinus virginianus (Bobwhite quail), 8 d, > 6500mg/kg diet.

oral LD50, Colinus virginianus (Bobwhite quail), 21 d, > 2150mg/kg bodyweight.

1,2,4-Trimethylbenzene

Acute toxicity to fish
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).
LC50, Pimephales promelas (fathead minnow), flow-through test, 96 Hour, 7.7 mg/l

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), 48 Hour, 3.6 mg/l

1,3,5-Trimethylbenzene

Acute toxicity to fish
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).
LC50, Carassius auratus (goldfish), flow-through test, 96 Hour, 12.5 mg/l, Method Not Specified.

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), Static, 48 Hour, 6 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
EbC50, Desmodesmus subspicatus (green algae), 48 Hour, Biomass, 25 mg/l, OECD Test Guideline 201 or Equivalent

Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), semi-static test, 21 d, number of offspring, 0.4 mg/l

Cumene

Acute toxicity to fish
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).
LC50, Oncorhynchus mykiss (rainbow trout), semi-static test, 96 Hour, 2.7 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), static test, 48 Hour, 4.0 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
EbC50, Pseudokirchneriella subcapitata (green algae), static test, 72 Hour, Biomass, 2.6 mg/l, OECD Test Guideline 201 or Equivalent

Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), semi-static test, 21 d, number of offspring, 0.35 mg/l

Toxicity to Above Ground Organisms
oral LD50, redwing blackbird (Agelaius phoeniceus), > 98 mg/kg

Xylene

Acute toxicity to fish
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).

LC50, Oncorhynchus mykiss (rainbow trout), semi-static test, 96 Hour, 2.6 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates
IC50, Daphnia magna (Water flea), 24 Hour, 1 - 4.7 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
ErC50, Pseudokirchneriella subcapitata (algae), Static, 73 Hour, Growth rate, 4.36 mg/l, OECD Test Guideline 201 or Equivalent
NOEC, Pseudokirchneriella subcapitata (green algae), 73 Hour, Growth rate, 0.44 mg/l, OECD Test Guideline 201 or Equivalent

Chronic toxicity to fish
NOEC, Oncorhynchus mykiss (rainbow trout), flow-through, 56 d, mortality, > 1.3 mg/l

Persistence and degradability

Ethalfluralin

Biodegradability: Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.
10-day Window: Fail
Biodegradation: 2 - 15 %
Exposure time: 28 d
Method: OECD Test Guideline 301F or Equivalent

Stability in Water (1/2-life)
Hydrolysis, pH 3, Stable
Hydrolysis, pH 6, Stable
Hydrolysis, pH 9, Stable

Photodegradation
Atmospheric half-life: 1.8 Hour
Method: Estimated.

Cyclohexanone

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Not applicable
Biodegradation: 87 %
Exposure time: 14 d
Method: OECD Test Guideline 301C or Equivalent

Theoretical Oxygen Demand: 2.61 mg/mg

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 10.6 Hour
Method: Estimated.

Trifluralin

Biodegradability: Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.
10-day Window: Fail
Biodegradation: 5 %
Exposure time: 28 d
Method: OECD Test Guideline 301B or Equivalent

Chemical Oxygen Demand: 1.37 mg/mg

Stability in Water (1/2-life)
Hydrolysis, half-life, > 1 year, pH 3 - 9, Measured
Photolysis, half-life, 0.19 - 3.08 Hour, Measured

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 5.347 Hour
Method: Estimated.

Solvent naphtha (petroleum), light aromatic consists of:

Biodegradability: For the major component(s): Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%). For some component(s): Biodegradation under aerobic static laboratory conditions is low (BOD20 or BOD28/ThOD between 2.5 and 10%).

1,2,4-Trimethylbenzene

Biodegradability: Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.
10-day Window: Not applicable
Biodegradation: 4 - 18 %
Exposure time: 28 d
Method: OECD Test Guideline 301C or Equivalent

Theoretical Oxygen Demand: 3.19 mg/mg

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 0.641 d
Method: Estimated.

1,3,5-Trimethylbenzene

Biodegradability: Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.
10-day Window: Not applicable
Biodegradation: 0 %
Exposure time: 28 d
Method: OECD Test Guideline 301C or Equivalent
10-day Window: Not applicable
Biodegradation: 50 %
Exposure time: 4.4 d
Method: Calculated.

Theoretical Oxygen Demand: 3.19 mg/mg

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 3.7 Hour
Method: Estimated.

Cumene

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Pass
Biodegradation: 86 %
Exposure time: 28 d
Method: OECD Test Guideline 301D or Equivalent

Theoretical Oxygen Demand: 3.20 mg/mg

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	40.000 %
10 d	62.000 %
20 d	70.000 %

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 1.55 d
Method: Estimated.

Xylene

Biodegradability: Material is expected to be readily biodegradable.
10-day Window: Pass
Biodegradation: > 60 %
Exposure time: 10 d
Method: OECD Test Guideline 301F or Equivalent

Theoretical Oxygen Demand: 3.17 mg/mg

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	37.000 %
10 d	58.000 %
20 d	72.000 %

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 19.7 Hour
Method: Estimated.

Bioaccumulative potential

Ethalfluralin

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water(log Pow): 5.11 Measured
Bioconcentration factor (BCF): 1,330 Fish. Measured

Cyclohexanone

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): 0.81 Measured

Trifluralin

Bioaccumulation: Bioconcentration potential is high (BCF > 3000 or Log Pow between 5 and 7).
Partition coefficient: n-octanol/water(log Pow): 5.27
Bioconcentration factor (BCF): 1,060 - 6,000 Pimephales promelas (fathead minnow) Estimated.

Solvent naphtha (petroleum), light aromatic consists of:

Bioaccumulation: For the major component(s): Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5). For the minor component(s): Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

1,2,4-Trimethylbenzene

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water(log Pow): 3.63 Measured
Bioconcentration factor (BCF): 33 - 275 Cyprinus carpio (Carp) 56 d Measured

1,3,5-Trimethylbenzene

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water(log Pow): 3.42 Measured
Bioconcentration factor (BCF): 161 Pimephales promelas (fathead minnow) Measured

Cumene

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): 3.4 - 3.7 Measured
Bioconcentration factor (BCF): 35.5 Fish. Measured

Xylene

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): 3.12 Measured
Bioconcentration factor (BCF): 25.9 Rainbow trout (Salmo gairdneri) Measured

Mobility in soil

Ethalfluralin

Expected to be relatively immobile in soil (Koc > 5000).
Partition coefficient(Koc): 4100 - 8400 Measured

Cyclohexanone

Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient(Koc): 15 Estimated.

Solvent naphtha (petroleum), light aromatic consists of:
For the major component(s):
Potential for mobility in soil is low (Koc between 500 and 2000).

1,2,4-Trimethylbenzene
Potential for mobility in soil is low (Koc between 500 and 2000).
Partition coefficient(Koc): 720 Estimated.

1,3,5-Trimethylbenzene
Potential for mobility in soil is low (Koc between 500 and 2000).
Partition coefficient(Koc): 741.65 Estimated.

Cumene
Potential for mobility in soil is low (Koc between 500 and 2000).
Partition coefficient(Koc): 800 - 2800 Estimated.

Xylene
Potential for mobility in soil is medium (Koc between 150 and 500).
Partition coefficient(Koc): 443 Estimated.

13. DISPOSAL CONSIDERATIONS

Disposal methods: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

14. TRANSPORT INFORMATION

DOT

Proper shipping name	Flammable liquids, n.o.s.(cyclohexanone, 1,2,4-Trimethylbenzene)
UN number	UN 1993
Class	3
Packing group	III
Reportable Quantity	Xylene, Trifluralin

Classification for SEA transport (IMO-IMDG):

Proper shipping name	FLAMMABLE LIQUID, N.O.S.
UN number	UN 1993
Class	3
Packing group	III

Marine pollutant	, Ethalfluralin
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Proper shipping name	Flammable liquid, n.o.s.(cyclohexanone, 1,2,4-Trimethylbenzene)
UN number	UN 1993
Class	3
Packing group	III

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312
Fire Hazard
Acute Health Hazard
Chronic Health Hazard

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

Components	**CASRN**
Cumene	98-82-8
1,2,4-Trimethylbenzene	95-63-6

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

Pennsylvania (Worker and Community Right-To-KnowAct): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:
The following product components are cited in the Pennsylvania Hazardous Substance List and/or the Pennsylvania Environmental Substance List, and are present at levels which require reporting.

Components	**CASRN**
Cyclohexanone	108-94-1
1,2,4-Trimethylbenzene	95-63-6

1,3,5-Trimethylbenzene	108-67-8
Cumene	98-82-8

Pennsylvania (Worker and Community Right-To-KnowAct): Pennsylvania Special Hazardous Substances List:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

United States TSCA Inventory (TSCA)
This product contains chemical substance(s) exempt from U.S. EPA TSCA Inventory requirements. It is regulated as a pesticide subject to Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requirements.

Federal Insecticide, Fungicide and Rodenticide Act
EPA Registration Number: 62719-188
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

DANGER

Corrosive

16. OTHER INFORMATION

Hazard Rating System
NFPA

Health	Fire	Reactivity
2	2	0

Revision
Identification Number: 101203532 / A211 / Issue Date: 05/04/2015 / Version: 5.0
DAS Code: GF-1742
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

Absorbed via skin	Absorbed via skin
ACGIH	USA. ACGIH Threshold Limit Values (TLV)
BEI	Biological Exposure Indices
Dow IHG	Dow Industrial Hygiene Guideline
OEL Notation	Absorbed via Skin*
OSHA P0	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
OSHA Z-1	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
STEL	Short-term exposure limit
TWA	8-hour, time-weighted average

Information Source and References
This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

DOW AGROSCIENCES LLC urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

ABOLISH® 8 EC (high flash)

Safety Data Sheet - GHS

1. IDENTIFICATION: CHEMICAL PRODUCT AND COMPANY

PRODUCT NAME: ABOLISH® 8 EC (high flash)
EPA REGISTRATION NUMBER: 59639-79
VC NUMBER(S): 1109
SYNONYM(S): None
PRODUCT DESCRIPTION: Rice herbicide

MANUFACTURER/DISTRIBUTOR
VALENT U.S.A. CORPORATION
P.O. Box 8025
1600 Riviera Avenue, Suite 200
Walnut Creek, CA 94596-8025

EMERGENCY TELEPHONE NUMBERS
HEALTH EMERGENCY OR SPILL (24 hr):
(800) 892-0099
TRANSPORTATION (24 hr.): CHEMTREC
(800) 424-9300 or (202) 483-7616

PRODUCT INFORMATION
AGRICULTURAL PRODUCTS: (800) 682-5368

The current SDS is available through our website (www.valent.com), or by calling the product information numbers listed above.

2. HAZARDS IDENTIFICATION

This product is an EPA FIFRA registered pesticide. Some classifications on this SDS are not the same as the FIFRA-required classifications on the product label. Certain sections of this SDS are superseded by federal law under EPA FIFRA for a registered pesticide. Please see Section 15, REGULATORY INFORMATION for an explanation.

Classification - (per U.S. OSHA 29 CFR 1910.1200 (Hazcom 2012))

Acute toxicity - Oral	Category 4
Germ cell mutagenicity	Category 1B
Carcinogenicity	Category 1B

Label elements

EMERGENCY OVERVIEW

Danger

Hazard statements
Harmful if swallowed
May be harmful in contact with skin
May cause genetic defects
May cause cancer

Precautionary statements

Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product

Response
IF exposed or concerned: Get medical advice/attention
Eyes None.
Skin None.
Inhalation None.
Ingestion IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth.
FIRE None.
Spill None.

Storage
Store locked up

Disposal
Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)
Other Information
• Very toxic to aquatic life
• Very toxic to aquatic life with long lasting effects

For information on Transportation requirements see Section 14.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	Weight/ Percent	TRADE SECRET
Thiobencarb	28249-77-6	81 - 87	
Total hydrocarbons	64742-94-5	4 - 7	
Naphthalene	91-20-3	<0.5	
Others	No CAS#	12 - 19	

Other ingredients, which may be maintained as trade secrets, are any substances other than an active ingredient contained in this product. Some of these may be hazardous, but their identities are withheld because they are considered trade secrets. The hazards associated with the other ingredients are addressed in this document. Specific information on other ingredients for the management of exposures, spills, or safety assessments can be obtained by a treating physician or nurse by calling **(800) 892-0099** at any time.

4. FIRST AID MEASURES

EMERGENCY NUMBER (800) 892-0099

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact **1-800-892-0099** for emergency medical treatment information.

EYE CONTACT:
Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

SKIN CONTACT:
Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

INGESTION:
Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. DO NOT induce vomiting unless told to do so by the poison control center or doctor. Do not give anything to an unconscious person.

INHALATION:
Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

NOTES TO PHYSICIAN:
Thiobencarb is a cholinesterase inhibitor. If signs of cholinesterase inhibition appear, atropine is antidotal.

5. FIRE FIGHTING MEASURES

Flash point °F	197 °F
FLASH POINT METHOD:	SetaFlash Closed Cup
EXTINGUISHING MEDIA:	Water fog, carbon dioxide, foam, dry chemical
FLAMMABLE LIMITS IN AIR - LOWER (%):	Not applicable
FLAMMABLE LIMITS IN AIR - UPPER (%):	Not applicable

NFPA RATING:

Health:	1
Flammability:	2
Reactivity:	1
Special:	None

(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using professional judgement. Values were not available in the guidelines or published evaluations prepared by the National Fire Protection Association, NFPA.

FIRE FIGHTING INSTRUCTIONS: Liquid evaporates and forms vapor (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Fire hazard is greater as liquid temperature rises above 85 degrees F.

Products of combustion from fires involving this material may be toxic. Avoid breathing smoke and mists. Avoid personnel and equipment contact with fallout and runoff. Minimize the amount of water used for fire fighting. Do not enter any enclosed area without full protective equipment, including self-contained breathing equipment. Contain and isolate runoff and debris for proper disposal. Decontaminate personal protective equipment and fire fighting equipment before reuse.

HAZARDOUS DECOMPOSITION PRODUCTS: Normal combustion forms carbon dioxide, water vapor and may produce: oxides of sulfur and nitrogen compounds. Combustion may produce toxic compounds of chlorine. Incomplete combustion can produce carbon monoxide.

6. ACCIDENTAL RELEASE MEASURES

VALENT EMERGENCY PHONE NUMBER: (800) 892-0099
CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300
OBSERVE PRECAUTIONS IN SECTION 8: PERSONAL PROTECTION
Stop the source of the spill if safe to do so. Contain the spill to prevent further contamination of the soil, surface water, or ground water. For additional spill response information refer to the North American Emergency Response Guidebook.

UN/NA NUMBER: Not applicable **EMERGENCY RESPONSE GUIDEBOOK NO.:** Not applicable

FOR SPILLS ON LAND:

CONTAINMENT: Avoid runoff into storm sewers and ditches which lead to waterways. Contain spilled liquids with dry sorbents.

CLEANUP: Clean up spill immediately. Absorb spill with inert material (such as dry sand or earth), then place in a chemical waste container. Wash area with soap and water. Pick up wash liquid with additional absorbent and place in a chemical waste container.

FOR SPILLS IN WATER:

CONTAINMENT: This material forms an emulsion in water. Stop or reduce contamination of any water. Isolate contaminated water.

CLEANUP: Remove contaminated water for treatment or disposal.

7. HANDLING AND STORAGE

END USER MUST READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.

HANDLING:

DO NOT USE OR STORE near flame, sparks or hot surfaces. Use only in well ventilated area. Keep container closed.

DO NOT weld, heat or drill container. Replace cap or bung. Emptied container still contains hazardous or explosive vapor or liquid.

Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash the outside of the gloves before removing. As soon as possible, wash thoroughtly and change into clean clothing.

STORAGE:

Do not contaminate water, food or feed by storage or disposal. Keep pesticide in original container. Do not store or transport near food or feed. Do not contaminate food or feed. Do not put concentrate into food or drink containers. Do not dilute concentrate in food or drink containers. Store in a cool, dry place, out of direct sunlight. Protect from excessive heat. Do not store at temperatures below 32° F (0° C). If the product is exposed to temperatures below 32° F (0° C), thaw at room temperature to 50° F (10° C) or warmer and shake gently to unify the product.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

END USER MUST READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.

EYES & FACE: Do not get this material in your eyes. Eye contact can be avoided by wearing protective eyewear.

RESPIRATORY PROTECTION: Use this material only in well ventilated areas. If operating conditions result in airborne concentrations of this material, the use of an approved respirator is recommended.

ENGINEERING CONTROLS: Use in a well ventilated area.

SKIN & HAND PROTECTION: Avoid contact with skin or clothing. Skin contact can be minimized by wearing protective clothing including gloves. Applicators and other handlers must wear: long-sleeved shirt and long pants, chemical-resistant gloves, such as Barrier Laminate, Butyl Rubber, Nitrile Rubber or Viton >= to 14 mils; a chemical resistant apron when loading formulation into equipment or cleaning equipment, and socks plus shoes.

Discard clothing or other absorbent material that have been heavily contaminated with this product. Do not reuse them.

Follow manufacturer's instructions for cleaning/maintaining PPE. If there are no such instructions for washables, use detergent and hot water. Keep and was PPE separately from other laundry.

All workers must wear: waterproof boots plus socks when entering flooded fields following treatment.

EXPOSURE LIMITS

Chemical Name	ACGIH Exposure Limits	OSHA Exposure Limits	Manufacturer's Exposure Limits
Thiobencarb	None	None	None
Total hydrocarbons	100 mg/m³ TWA (17 ppm) TWA	None	None
Naphthalene	10 ppm TWA, 15 ppm STEL skin - potential for absorption	10 ppm TWA,15 ppm STEL 50 mg/m³ TWA, 75 mg/m³ STEL	None
Others	Not known	Not known	Not known

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	Liquid		
Appearance	Clear	**Odor**	Moderately Pungent
Color	Amber	**Odor threshold**	No information available

PROPERTIES	Values	Remarks • Method
pH	6.1	@ 27°C (1% w/v emulsion)
Melting point/freezing point	No information available	
Boiling point/boiling range	No information available	
Flash point	197 °F	SetaFlash Closed Cup
Evaporation rate	No information available	
Flammability (solid, gas)	No information available	
Flammability Limits in Air		
Upper flammability limits	Not applicable	
Lower flammability limit	Not applicable	
Vapor pressure	2×10^{-5} mm Hg @ 23°C	Thiobencarb
Vapor density	No information available	
Specific Gravity	No information available	
Water solubility	Emulsifiable	
Solubility in other solvents	No information available	
Partition coefficient	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Viscosity	46.1 cps @ 22°C, 28.1 cps @ 41°C (159 SUS @ 100°F)	
Explosive properties	No information available	
Oxidizing properties	No information available	
Density	1.14 g/mL	
Bulk density	No information available	

10. STABILITY AND REACTIVITY

Reactivity
No data available

Chemical stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

Conditions to avoid
Extremes of temperature and direct sunlight.

Incompatible materials
None known based on information supplied.

Hazardous Decomposition Products
None known based on information supplied.

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY:

Oral Toxicity LD_{50} (rats)	2810 mg/kg	EPA Tox Category	III
Dermal Toxicity LD_{50} (rabbits)	>5 g/kg	EPA Tox Category	IV
Inhalation Toxicity LC_{50} (rats)	>11.4 mg/L	EPA Tox Category	IV
Eye Irritation (rabbits)	Eye irritation reversible within 7 days.	EPA Tox Category	III
Skin Irritation (rabbits)	Slight to moderate	EPA Tox Category	IV
Skin Sensitization (guinea pigs)	Non-sensitizer	EPA Tox Category	Not applicable

CARCINOGEN CLASSIFICATION

Chemical Name	IARC	OSHA - Select Carcinogens	NTP Carcinogen List
Thiobencarb	Not listed	Not listed	Not listed
Total hydrocarbons	Not listed	Not listed	Not listed
Naphthalene	Monograph 82 [2002] Group 2B Reasonably Anticipated To Be A Human Carcinogen	Carcinogen	Suspect Carcinogen
Others	Not Known	Not listed	Not known

TOXICITY OF THIOBENCARB TECHNICAL

SUBCHRONIC: The dermal administration of Bolero 8 EC to rats, six hours per day, five days per week for three weeks, at doses up to 500 mg/kg/day caused reduced body weight gains, body weight and food efficiency. Slight increases in red, dry and flaky skin were observed. The LOEL was 40 mg/kg/day. An eight week dietary range-finding study in rats with thiobencarb technical at doses up to 450 mg/kg/day produced effects consistent with poor palatability (taste) such as weight loss, decreased food consumption, etc. In a 4-week oral toxicity study with thiobencarb technical in dogs with doses of 1, 4, 16 and 64 mg/kg/day, the primary observation was decreased plasma cholinesterase values in the 16 and 64 mg/kg/day dose groups

CHRONIC/CARCINOGENICITY: Prolonged administration of the active ingredient thiobencarb technical to rats, mice and dogs did not increase their incidence of cancer over that of untreated animals. The primary significant findings were generally attributable to the poor palatability of the diet (e.g. weight loss). The 2 year mouse oncogenicity study demonstrated no oncogenic potential. The systemic NOEL was 3 mg/kg/day for males and 5 mg/kg/day for females based on histopathological changes in the liver. The 2-year rat oncogenicity study showed no carcinogenicity at 25 mg/kg/day and a systemic NOEL of 1 mg/kg/day based on decreased body weight gain, food consumption and efficiency and increased blood urea nitrogen. A 1-year dog study showed a systemic NOEL of 8 mg/kg/day based on decreased body weight gain, increased liver and kidney weights, and hematological and clinical chemistry changes, and a plasma cholinesterase NOEL of 1 mg/kg/day.

NEUROTOXICITY: Based on acute and subchronic (13-week) studies in rats, thiobencarb technical is not expected to be neurotoxic. The systemic and neurobehavioral NOEL in the rat acute study was 100 mg/kg based on increased clinical signs and gait abnormalities, decreased sensory responses, decreased body temperature and decreased motor activity. In the subchronic study, the systemic NOEL was 2 mg/kg/day based on increased clinical signs, decreased body weights, and increased liver and kidney weights. The neurotoxicity NOEL was > 100 mg/kg/day, the highest dose tested.

DEVELOPMENTAL TOXICITY: Thiobencarb technical did not cause birth defects when tested in experimental animals. Teratology studies conducted in rats with 5, 25 and 150 mg/kg for gestation days 6 to 19 show no teratogenic effects at any dose level. Treatment with 150 mg/kg did, however, result in reduced maternal body weight gain and in reduced fetal weights. The maternal and developmental NOELs are 25 mg/kg/day. A teratology study was also conducted in rabbits at dose levels of 2, 20 and 100 mg/kg/day for the day 7-29 gestation period. Maternal body weight gain and mean fetal weights were reduced at 20 and 100 mg/kg/day dose levels, but there were no teratogenic effects. Shortening the treatment period in rabbits to gestation day 6 - 18 reduced maternal and fetal toxicity. Treatment with 20, 100 and 200 mg/kg/day produced no fetal toxicity, teratogenicity or significant maternal effects. Therefore, the maternal NOEL is 100 mg/kg/day and the developmental NOEL is 200 mg/kg/day (the highest dose tested).

REPRODUCTION: Two generation reproduction studies conducted with thiobencarb technical in rats at dose levels ranging from 2 to 100 mg/kg/day did not impair reproductive performance. Relative and absolute liver and kidney weights were increased in both F0 and F1 generations at 20 and 100 mg/kg/day. Decreased body weight gain was observed at 100 mg/kg/day in both generations of the male and in the F1 female generation. The reproductive toxicity NOEL was 100 mg/kg/day.

MUTAGENICITY: Thiobencarb technical is not expected to pose a genetic hazard. It has been studied in in vitro assays for gene mutation, structural chromosome aberrations and DNA damage/repair as well as in vivo assays measuring micronucleus formation and in the dominant lethal assay. The results for all tests except the in vivo micronucleus test were negative. This single report of a positive response is not cause for concern when evaluated in the context of the oncogenicity, teratogenicity and reproductive toxicity studies.

TOXICITY OF OTHER INGREDIENTS:

This product contains a solvent. Solvents, when inhaled, can cause nasal and respiratory irritation and central nervous system effects including dizziness, weakness, fatigue, nausea, headache and possibly unconsciousness and even death. Ingestion of solvents can cause gastrointestinal irritation, nausea, vomiting and diarrhea. Prolonged or repeated dermal exposures may cause drying, scaling and even blistering of the skin. Aspiration of low viscosity products can cause chemical pneumonitis which can be fatal. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Symptoms include fatigue, concentration difficulties, anxiety, depression, rapid mood swings and short-term memory loss. The reports are not clear with regard to the types of solvents that may cause these symptoms, and there is controversy amoung scientists to whether the condition exists or is caused by this type of product. Since many other diseases cause some or all of these conditions, a doctor should be consulted if any appear. Chronic (long-term) exposure of workers and rodents to naphthalene has been reported to cause cataracts and damage to the retina. Lesions in the kidneys and thymus, signs of anemia, and reduced spleen weights have been observed in rats and mice chronically exposed via gavage. A National Toxicology Program (NTP) report states that lifetime inhalation exposure to naphthalene resulted in increases in tumors of the nose in rats. In another NTP study, lifetime inhalation exposure to naphthalene increased lung tumors in female mice. The relevance of the rodent findings to humans is unknown. Naphthalene has been listed by the International Agency for Research on Cancer (IARC) as possibly carcinogenic to humans (Group 2B).

For a summary of the potential for adverse health effects from exposure to this product, refer to Section 2. For information regarding regulations pertaining to this product, refer to Section 15.

12. ECOLOGICAL INFORMATION

AVIAN TOXICITY: Thiobencarb technical is practically nontoxic to birds. Test results include:

Oral LD_{50} Northern bobwhite: >1938 mg/kg
Oral LC_{50} (feeding for 8 weeks) Northern bobwhite: >5620 ppm
Oral LC_{50} (feeding for 5 days) Mallard duck: >5000 ppm
Reproduction (Northern bobwhite): NOEC: 267 ppm, LOEC: 930 ppm
Reproduction (Mallard duck): NOEC: 100 ppm, LOEC: 300 ppm

AQUATIC ORGANISM TOXICITY: Freshwater species: Thiobencarb technical is moderately to highly toxic to freshwater fish and invertebrates. Studies with the technical material and the formulated product show that the LC50's were generally greater than 1 ppm. The following LC_{50} values summarize the acute toxicity findings for the Bolero 8 EC:

Bluegill sunfish: 1.7 ppm
Rainbow trout:: 1.1 ppm
Channel catfish: 2.3 ppm
Daphnid: 0.17 ppm
Scud Gammarus: 1.0 ppm
Apple snail: 1.85 ppm

Thiobencarb technical can inhibit the reproduction in freshwater invertebrates (Daphnid) at concentrations as low as 3.0 µg/L. Marine/estuarine species: Thiobencarb technical and Bolero 8 EC are moderately to highly acutely toxic to marine/estuarine fish and invertebrates.

OTHER NON-TARGET ORGANISM TOXICITY: Exposure of non-target organisms such as honey bees is not expected under normal use conditions of products containing Thiobencarb Technical.

OTHER ENVIRONMENTAL INFORMATION:
This pesticide is toxic to shrimp. For terrestrial uses, do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater or rinsate.

13. DISPOSAL CONSIDERATIONS

END USERS MUST DISPOSE OF ANY UNUSED PRODUCT AS PER THE LABEL RECOMMENDATIONS.

PRODUCT DISPOSAL: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by incineration, or if allowed by state and local authorities by burning. If burned, stay out of smoke.

DISPOSAL METHODS: Check government regulations and local authorities for approved disposal of this material. Dispose of in accordance with applicable laws and regulations.

14. TRANSPORTATION INFORMATION

DOT (ground) SHIPPING NAME: Not regulated for domestic ground transport by U.S. DOT

REMARKS:	When shipped in bulk packaging (>119 gallons capacity): NA1997, Combustible Liquid N.O.S. (Naphthalene), 3, III Note RQ = 2,197 ga (Naphthalene)
EMERGENCY RESPONSE GUIDEBOOK NO.:	128 (for bulk containers)
ICAO/IATA SHIPPING NAME:	UN 3082 Environmentally Hazardous Substance, Liquid, N.O.S. (Thiobencarb), 9, III, Marine Pollutant
REMARKS:	Single or inner packaging less than 5 L (liquid) or 5 Kg net (solids) excepted from Dangerous Goods regulations -- see IATA Special Provision A197. For U.S. Shipping, Emergency Response Guidebook No. 171
IMDG SHIPPING NAME:	UN 3082, Environmentally Hazardous Substance, Liquid, N.O.S. (Thiobencarb), 9, III, Marine Pollutant
REMARKS:	Single or inner packaging less than 5 L (liquid) or 5 Kg net (solids) excepted from Dangerous Goods regulations – see IMDG 2.10.2.7 US shipping, Emergency Response Guidebook No. 171
EMS NO.:	F-A, S-F

15. REGULATORY INFORMATION

EPA-FIFRA LABEL INFORMATION THAT DIFFERS FROM OSHA-GHS REQUIREMENTS:

This material is a pesticide product registered by the EPA under FIFRA and is subject to certain labeling requirements under federal pesticide law. These requirements may differ from the classification criteria and hazard information required by OSHA GHS for safety data sheets, and for workplace labels of non-pesticide chemicals. The following is the hazard information as required on the FIFRA pesticide label:

- ***EPA FIFRA SIGNAL WORD: CAUTION***
- ***Harmful if swallowed or inhaled***
- ***Causes moderate eye irritation***
- ***Avoid contact with eyes, skin and clothing***
- ***Avoid breathing spray mist.***
- ***Keep out of reach of children.***

PESTICIDE REGULATIONS: All pesticides are governed under FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act). Therefore, the regulations presented below are pertinent only when handled outside of the normal use and applications of pesticides. This includes waste streams resulting from manufacturing/formulation facilities, spills or misuse of products, and storage of large quantities of products containing hazardous or extremely hazardous substances.

U.S. FEDERAL REGULATIONS: Ingredients in this product are reviewed against an inclusive list of federal regulations. Therefore, the user should consult appropriate authorities. The federal regulations reviewed include: Clean Water Act, SARA, CERCLA, RCRA, DOT, TSCA and OSHA. If no components or information is listed in the space below this paragraph, then none of the regulations reviewed are applicable.

Thiobencarb	
SARA 313 Chemicals	1.0% de minimis concentration
Total hydrocarbons	
TSCA Inventory List -	Present
Naphthalene	
TSCA Inventory List -	Present
Clean Water Act - Hazardous Substances	Present
Clean Water Act Section 307	Present

SARA 313 Chemicals	0.1% de minimis concentration
CERCLA Reportable Quantity (RQ):	100 lb (45.4 kg)

Product Reportable Quantity (RQ): 2,197 gallons

SARA (311, 312):

Immediate Health:	Yes
Chronic Health:	Yes
Fire:	Yes
Sudden Pressure:	No
Reactivity:	No

STATE REGULATIONS: Each state may promulgate standards more stringent than the federal government. This section cannot encompass an inclusive list of all state regulations. Therefore, the user should consult state or local authorities. The state regulations reviewed include: California Proposition 65, California Directors List of Hazardous Substances, Massachusetts Right to Know, Michigan Critical Materials List, New Jersey Right to Know, Pennsylvania Right to Know, Rhode Island Right to Know and the Minnesota Hazardous Substance list. For Washington State Right to Know, see Section 8 for Exposure Limit information. For Louisiana Right to Know refer to SARA information listed under U.S. Regulations above. If no components or information is listed in the space below this paragraph, then none of the regulations reviewed are applicable.

Thiobencarb	
California - Directors List of Hazardous Substances	Present
NJ Right To Know	3472
Naphthalene	
California Proposition 65	carcinogen
California - Directors List of Hazardous Substances	Present
MA Right To Know	Present
NJ Right To Know	1322 3758
PA Right To Know	Environmental hazard
RI Right To Know	Listed
MN Hazardous Substance	Present Carcinogen

For information regarding potential adverse health effects from exposure to this product, refer to Sections 2 and 11.

16. OTHER INFORMATION

REASON FOR ISSUE:	Updated information to meet OSHA Hazcom 2012 (GHS) regulations.
SDS NO.:	0198
EPA REGISTRATION NUMBER:	59639-79
REVISION NUMBER:	2
REVISION DATE:	11/02/2015
SUPERCEDES DATE:	11/02/2015
RESPONSIBLE PERSON(S):	Valent U.S.A. Corporation, Corporate EH&S, (925) 256-2803

The information provided in this Safety Data Sheet (SDS) is provided in good faith and believed to be accurate at the time of preparation of the SDS. However, to the extent consistent with applicable law, Valent U.S.A. Corporation and its subsidiaries or affiliates extend no warranties, make no representations, and assume no responsibility as to the acccuracy, suitability, or completeness of such information. Additionally, to the extent consistent with applicable law, neither Valent U.S.A. Corporation nor any of its subsidiaries or affiliates represents or guarantees that this information or product may be used without infringing the intellectual property rights of others. Except to the extent a particular use and particular information are expressly stated on the product label, it is the users' own responsibility to determine the suitability of this information for their own particular use of this product. If necessary, contact Valent U.S.A. Corporation to confirm that you have the most current product label and SDS.

This Safety Data Sheet (SDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-APPROVED PRODUCT LABEL (attached to and accompanying the product container). This SDS provides important health, safety, and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use as required by the Occupational Health and Safety Act (29 CFR 1910.1200, "Hazcom").

The product label provides information specifically for product use in the ordinary course. Use, storage and disposal of pesticide products is regulated by the EPA under the authority of FIFRA through the proudct label. All necessary hazard classification and appropriate precautionary use, storage, and disposal information is set forth on that label or labeling accompanying the pesticide or to which reference is made on the label. It is a violation of federal law to use an EPA-registered pesticide product in any manner inconsistent with its labeling.

2015 Valent U.S.A. Corporation

Dow AgroSciences

SAFETY DATA SHEET
DOW AGROSCIENCES LLC

Product name: GOAL™ 2XL Herbicide

Issue Date: 10/28/2015
Print Date: 11/02/2015

DOW AGROSCIENCES LLC encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: GOAL™ 2XL Herbicide

Recommended use of the chemical and restrictions on use
Identified uses: End use herbicide product

COMPANY IDENTIFICATION
DOW AGROSCIENCES LLC
9330 ZIONSVILLE RD
INDIANAPOLIS IN 46268-1053
UNITED STATES

Customer Information Number: 800-992-5994
info@dow.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 800-992-5994
Local Emergency Contact: 352-323-3500

2. HAZARDS IDENTIFICATION

Hazard classification
This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.
Skin irritation - Category 2
Eye irritation - Category 2A
Skin sensitisation - Sub-category 1B
Carcinogenicity - Category 2
Reproductive toxicity - Category 1B
Specific target organ toxicity - single exposure - Category 3
Aspiration hazard - Category 1

Label elements
Hazard pictograms

Signal word: **DANGER!**

Hazards
May be fatal if swallowed and enters airways.
Causes skin irritation.
May cause an allergic skin reaction.
Causes serious eye irritation.
May cause respiratory irritation.
Suspected of causing cancer.
May damage fertility or the unborn child.

Precautionary statements

Prevention
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing should not be allowed out of the workplace.
Wear eye protection/ face protection.
Wear protective gloves.
Use personal protective equipment as required.

Response
IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
IF ON SKIN: Wash with plenty of soap and water.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical advice/ attention.
Do NOT induce vomiting.
If skin irritation or rash occurs: Get medical advice/ attention.
If eye irritation persists: Get medical advice/ attention.
Take off contaminated clothing and wash before reuse.

Storage
Store in a well-ventilated place. Keep container tightly closed.
Store locked up.

Disposal
Dispose of contents/ container to an approved waste disposal plant.

Other hazards
No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature: Mixture
This product is a mixture.

Component	CASRN	Concentration
Oxyfluorfen	42874-03-3	22.3%
2-Methylnaphthalene	91-57-6	15.0%
N-Methyl-2-pyrrolidone	872-50-4	10.0%
Benzenesulfonic acid, dodecyl-, calcium salt	26264-06-2	9.1%
Naphthalene	91-20-3	>= 0.4 - < 8.6 %
1-Methylnaphthalene	90-12-0	7.2%
Isobutanol	78-83-1	>= 1.0 - <= 1.6 %

4. FIRST AID MEASURES

Description of first aid measures
General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice.

Skin contact: Take off contaminated clothing. Wash skin with soap and plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. Wash clothing before reuse. Shoes and other leather items which cannot be decontaminated should be disposed of properly. Suitable emergency safety shower facility should be available in work area.

Eye contact: Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice. Suitable emergency eye wash facility should be immediately available.

Ingestion: Immediately call a poison control center or doctor. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give any liquid to the person. Do not give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed: Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and

special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed
Notes to physician: Repeated excessive exposure may aggravate preexisting lung disease. Skin contact may aggravate preexisting dermatitis. Maintain adequate ventilation and oxygenation of the patient. May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants, antitussives and corticosteroids may be of help. If burn is present, treat as any thermal burn, after decontamination. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. The decision of whether to induce vomiting or not should be made by a physician. Administer 100% oxygen to relieve headache and a general sense of weakness. Determine methemoglobin concentration of blood every 3 to 6 hours for first 24 hours. It should return to normal within 24 hours. The treatment of toxic methemoglobinemia may include the intravenous administration of methylene blue. If methemoglobin >10-20% consider methylene blue 1-2 mg/kg body weight as 1% solution intravenously over 5 minutes followed by 15-30 cc flush (Price D, Methemoglobinemia, Goldfrank Toxicologic Emergencies, 5th ed., 1994). Also provide 100% oxygen. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

Unsuitable extinguishing media: Do not use direct water stream. May spread fire.

Special hazards arising from the substance or mixture
Hazardous combustion products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Nitrogen oxides. Hydrogen fluoride. Hydrogen chloride. Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Dense smoke is produced when product burns.

Advice for firefighters
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Consider feasibility of a controlled burn to minimize environment damage. Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers,

boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to section 7, Handling, for additional precautionary measures. Keep upwind of spill. Keep personnel out of low areas. Ventilate area of leak or spill. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. Spills or discharge to natural waterways is likely to kill aquatic organisms.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling: Keep out of reach of children. Do not swallow. Avoid contact with eyes, skin, and clothing. Avoid breathing vapor. Avoid prolonged or repeated contact with skin. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage: Store in a dry place. Store in original container. Keep container tightly closed. Do not store near food, foodstuffs, drugs or potable water supplies.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Oxyfluorfen	Dow IHG	TWA	0.2 mg/m3
2-Methylnaphthalene	ACGIH	TWA	0.5 ppm
N-Methyl-2-pyrrolidone	US WEEL	TWA	10 ppm
	US WEEL	TWA	SKIN
Naphthalene	Dow IHG	TWA	10 ppm
	Dow IHG	TWA	SKIN
	Dow IHG	STEL	15 ppm
	Dow IHG	STEL	SKIN
	ACGIH	TWA	10 ppm
	ACGIH	TWA	SKIN
	OSHA Z-1	TWA	50 mg/m3 10 ppm
1-Methylnaphthalene	ACGIH	TWA	0.5 ppm

Isobutanol	ACGIH	TWA		50 ppm
	OSHA Z-1	TWA	300 mg/m3	100 ppm
	OSHA P0	TWA	150 mg/m3	50 ppm

RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.

Exposure controls

Engineering controls: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use chemical goggles.

Skin protection

Hand protection: Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Chlorinated polyethylene. Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl alcohol ("PVA"). Polyvinyl chloride ("PVC" or "vinyl"). Styrene/butadiene rubber. Viton. Examples of acceptable glove barrier materials include: Butyl rubber. Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator.
The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	Liquid.
Color	Yellow to brown
Odor	Sweet
Odor Threshold	No test data available
pH	*7 pH Electrode*
Melting point/range	Not applicable
Freezing point	No test data available

Boiling point (760 mmHg)	201.7 °C (395.1 °F)
Flash point	**closed cup** 98 °C (208 °F) *Setaflash Closed Cup ASTM D3828*
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammability (solid, gas)	Flammable liquid
Lower explosion limit	1.3 % vol Solvent
Upper explosion limit	11.8 % vol Solvent
Vapor Pressure	0.29 hPa at 20 °C (68 °F)
Relative Vapor Density (air = 1)	5.2
Relative Density (water = 1)	1.077 at 20 °C (68 °F) *Digital Density Meter (Oscillating Coil)*
Water solubility	emulsifiable
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	346 °C (655 °F)
Decomposition temperature	290 °C (554 °F)
Dynamic Viscosity	5.9 mPa.s at 39.9 °C (103.8 °F)
Kinematic Viscosity	No data available
Explosive properties	No
Oxidizing properties	yes
Liquid Density	1.077 g/cm3 at 20 °C (68 °F) *Digital density meter*
Molecular weight	No data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: No dangerous reaction known under conditions of normal use.

Chemical stability: Thermally stable at typical use temperatures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Some components of this product can decompose at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible materials: Avoid contact with: Acids. Amines. Bases. Halogens.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Carbon monoxide. Carbon dioxide. Hydrogen chloride. Hydrogen fluoride. Nitrogen oxides. Toxic gases are released during decomposition.

11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Acute toxicity

Acute oral toxicity
Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

As product:
LD50, Rat, female, 3,129 mg/kg

Acute dermal toxicity
Prolonged skin contact is unlikely to result in absorption of harmful amounts.

As product:
LD50, Rat, male and female, > 5,000 mg/kg

Acute inhalation toxicity
No adverse effects are anticipated from single exposure to mist. Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs.

As product:
LC50, Rat, male and female, 4 Hour, dust/mist, > 5.12 mg/l OECD Test Guideline 403 No deaths occurred at this concentration.

Skin corrosion/irritation
Brief contact may cause severe skin irritation with pain and local redness.
May cause drying and flaking of the skin.
Prolonged contact may cause skin irritation, even a burn.

Serious eye damage/eye irritation
May cause moderate eye irritation which may be slow to heal.
May cause slight corneal injury.

Sensitization
Has caused allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)
May cause respiratory irritation.

Specific Target Organ Systemic Toxicity (Repeated Exposure)
For the active ingredient(s):
In animals, effects have been reported on the following organs:
Liver.
Blood.
Spleen.

Contains component(s) which have been reported to cause effects on the following organs in animals:
Blood-forming organs (Bone marrow & Spleen).
Excessive exposure may cause hemolysis, thereby impairing the blood's ability to transport oxygen.

Liver.
Cataracts and other eye effects have been reported in humans repeatedly exposed to naphthalene vapor or dust.
Ingestion of naphthalene by humans has caused hemolytic anemia.
Central nervous system.
Excessive exposure to solvent(s) may cause respiratory irritation and central nervous system depression.

Carcinogenicity
Contains naphthalene which has caused cancer in some laboratory animals. In humans, there is limited evidence of cancer in workers involved in naphthalene production. Limited oral studies in rats were negative.

For the active ingredient(s): An increase in spontaneously occurring tumors observed in mice is of questionable relevance. No increases in tumors were observed in rats.

Teratogenicity
For the active ingredient(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Active ingredient did not cause birth defects in laboratory animals.

For the solvent(s): Did not cause birth defects or any other fetal effects in laboratory animals.

N-methyl pyrrolidone has caused toxic effects to the fetus in laboratory animals at high dose levels with either mild or undetectable maternal toxicity.

Reproductive toxicity
For the active ingredient(s): In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

Mutagenicity
In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Based on information for component(s): In vitro genetic toxicity studies were negative in some cases and positive in other cases.

Aspiration Hazard
May be fatal if swallowed and enters airways.

Carcinogenicity

Component	List	Classification
Naphthalene	IARC	Group 2B: Possibly carcinogenic to humans
	US NTP	Reasonably anticipated to be a human carcinogen
	ACGIH	A3: Confirmed animal carcinogen with unknown relevance to humans.

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

Toxicity

Oxyfluorfen

Acute toxicity to fish
Material is very highly toxic to aquatic organisms on an acute basis (LC50/EC50 <0.1 mg/L in the most sensitive species).
LC50, Rainbow trout (Oncorhynchus mykiss), static test, 96 Hour, 0.25 mg/l

Acute toxicity to aquatic invertebrates
EC50, water flea Daphnia magna, 48 Hour, 0.072 mg/l

Acute toxicity to algae/aquatic plants
EbC50, diatom Navicula sp., static test, 96 Hour, Biomass, 0.031 mg/l, OECD Test Guideline 201 or Equivalent

Chronic toxicity to fish
NOEC, Pimephales promelas (fathead minnow), flow-through test, 33 d, survival, 0.038 mg/l
NOEC, Pimephales promelas (fathead minnow), flow-through test, 265 d, survival, 0.005 mg/l
NOEC, Cyprinodon variegatus (sheepshead minnow), flow-through test, 34 d, growth, 0.0047 mg/l

Chronic toxicity to aquatic invertebrates
NOEC, water flea Daphnia magna, flow-through test, 21 d, 0.013 mg/l

Toxicity to Above Ground Organisms
Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).
Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).
LD50, Colinus virginianus (Bobwhite quail), > 2,150 mg/kg
LC50, Anas platyrhynchos (Mallard duck), 8 d, > 5,000 mg/kg
oral LD50, Apis mellifera (bees), 48 Hour, > 100micrograms/bee
contact LD50, Apis mellifera (bees), 48 Hour, > 100.0micrograms/bee
dietary LC50, Colinus virginianus (Bobwhite quail), > 5,000 mg/kg

2-Methylnaphthalene

Acute toxicity to fish
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).
LC50, Oncorhynchus mykiss (rainbow trout), 96 Hour, 1.5 mg/l

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), 48 Hour, 1.5 mg/l

N-Methyl-2-pyrrolidone

Acute toxicity to fish
Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).
LC50, Oncorhynchus mykiss (rainbow trout), static test, 96 Hour, > 5,000 mg/l
LC50, Pimephales promelas (fathead minnow), static test, 96 Hour, 1,072 mg/l

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), static test, 24 Hour, > 1,000 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants

ErC50, Desmodesmus subspicatus (green algae), static test, 72 Hour, Growth rate inhibition, > 500 mg/l, OECD Test Guideline 201 or Equivalent

Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), semi-static test, 21 d, 12.5 mg/l

Benzenesulfonic acid, dodecyl-, calcium salt

Acute toxicity to fish
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).
LC50, Cyprinus carpio (Carp), 96 Hour, 2.8 - 4.2 mg/l, Method Not Specified.
LC50, Oryzias latipes (Orange-red killifish), 48 Hour, 3.0 - 5.3 mg/l, Method Not Specified.

Naphthalene

Acute toxicity to fish
Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested).
LC50, Oncorhynchus mykiss (rainbow trout), 96 Hour, 0.11 mg/l

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), static test, 48 Hour, 1.6 - 24.1 mg/l

Acute toxicity to algae/aquatic plants
ErC50, Skeletonema costatum (marine diatom), Growth rate inhibition, 72 Hour, 0.4 mg/l

Chronic toxicity to fish
NOEC, Other, flow-through, 40 d, mortality, 0.37 mg/l

1-Methylnaphthalene

Acute toxicity to fish
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).
LC50, Pimephales promelas (fathead minnow), 96 Hour, 9 mg/l

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), 48 Hour, 1.2 - 1.4 mg/l

Isobutanol

Acute toxicity to fish
Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).
LC50, Pimephales promelas (fathead minnow), flow-through test, 96 Hour, 1,430 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates
EC50, Daphnia pulex (Water flea), static test, 48 Hour, 1,100 mg/l

Acute toxicity to algae/aquatic plants
ErC50, Pseudokirchneriella subcapitata (green algae), static test, 72 Hour, Growth rate inhibition, 1,799 mg/l

Toxicity to bacteria
IC50, activated sludge, static test, 16 Hour, Growth inhibition, > 1,000 mg/l

Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), 21 d, number of offspring, 20 mg/l
MATC (Maximum Acceptable Toxicant Level), Daphnia magna (Water flea), 21 d, number of offspring, 28 mg/l

Persistence and degradability

Oxyfluorfen

Biodegradability: Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.

Theoretical Oxygen Demand: 1.305 mg/mg

Stability in Water (1/2-life)
Hydrolysis, 3.9 d, pH 5 - 9, Half-life Temperature 20 °C

2-Methylnaphthalene

Biodegradability: Expected to degrade slowly in the environment.

N-Methyl-2-pyrrolidone

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Pass
Biodegradation: 91 %
Exposure time: 28 d
Method: OECD Test Guideline 301B or Equivalent
10-day Window: Not applicable
Biodegradation: 73 %
Exposure time: 28 d
Method: OECD Test Guideline 301C or Equivalent
10-day Window: Not applicable
Biodegradation: > 90 %
Exposure time: 8 d
Method: OECD Test Guideline 302B or Equivalent

Theoretical Oxygen Demand: 2.58 mg/mg

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 0.486 d
Method: Estimated.

Benzenesulfonic acid, dodecyl-, calcium salt

Biodegradability: For similar material(s): Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Pass
Biodegradation: 95 %
Exposure time: 28 d
Method: OECD Test Guideline 301E or Equivalent

Naphthalene

Biodegradability: Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%).

Theoretical Oxygen Demand: 3.00 mg/mg

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	57.000 %
10 d	71.000 %
20 d	71.000 %

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 5.9 Hour
Method: Estimated.

1-Methylnaphthalene

Biodegradability: Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.
10-day Window: Not applicable
Biodegradation: 0 - 2 %
Exposure time: 28 d
Method: OECD Test Guideline 301C or Equivalent

Isobutanol

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Pass
Biodegradation: 70 - 80 %
Exposure time: 28 d
Method: OECD Test Guideline 301D or Equivalent
10-day Window: Not applicable
Biodegradation: 90 %
Exposure time: 14 d
Method: OECD Test Guideline 301C or Equivalent

Theoretical Oxygen Demand: 2.59 mg/mg Estimated.

Chemical Oxygen Demand: 2.29 mg/mg Dichromate

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	64 - 69 %
10 d	73 - 79 %
20 d	72 - 81 %

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals

Atmospheric half-life: 1.55 d
Method: Estimated.

Bioaccumulative potential

Oxyfluorfen
Bioconcentration factor (BCF): 184 - 1,151 Lepomis macrochirus (Bluegill sunfish) 168 Hour

2-Methylnaphthalene
Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water(log Pow): 3.86 Estimated.

N-Methyl-2-pyrrolidone
Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): -0.38 Measured

Benzenesulfonic acid, dodecyl-, calcium salt
Bioaccumulation: Bioconcentration potential is high (BCF > 3000 or Log Pow between 5 and 7).
Partition coefficient: n-octanol/water(log Pow): 6.78 estimated

Naphthalene
Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water(log Pow): 3.3 Measured
Bioconcentration factor (BCF): 40 - 300 Fish 28 d Measured

1-Methylnaphthalene
Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water(log Pow): 3.87 Estimated.

Isobutanol
Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): 0.76 Measured
Bioconcentration factor (BCF): 2 Estimated.

Mobility in soil

Oxyfluorfen
Expected to be relatively immobile in soil (Koc > 5000).
Partition coefficient(Koc): 6831

2-Methylnaphthalene
No relevant data found.

N-Methyl-2-pyrrolidone
Potential for mobility in soil is very high (Koc between 0 and 50).
Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.
Partition coefficient(Koc): 21 Estimated.

Benzenesulfonic acid, dodecyl-, calcium salt

No relevant data found.

Naphthalene

Potential for mobility in soil is medium (Koc between 150 and 500).
Partition coefficient(Koc): 240 - 1300 Measured

Isobutanol

Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient(Koc): 2 Estimated.

13. DISPOSAL CONSIDERATIONS

Disposal methods: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

14. TRANSPORT INFORMATION

DOT

Proper shipping name	Environmentally hazardous substance, liquid, n.o.s.(Naphthalene)
UN number	UN 3082
Class	9
Packing group	III
Reportable Quantity	Naphthalene

Classification for SEA transport (IMO-IMDG):

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(Oxyfluorfen, Naphthalene)
UN number	UN 3082
Class	9
Packing group	III
Marine pollutant	Oxyfluorfen, Naphthalene
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Proper shipping name	Environmentally hazardous substance, liquid, n.o.s.(Oxyfluorfen, Naphthalene)
UN number	UN 3082
Class	9

Packing group III

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312
Acute Health Hazard
Chronic Health Hazard

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

Components	CASRN
N-Methyl-2-pyrrolidone	872-50-4
Naphthalene	91-20-3
Oxyfluorfen	42874-03-3

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
WARNING: This product contains a chemical(s) known to the State of California to cause birth defects or other reproductive harm.

Pennsylvania (Worker and Community Right-To-KnowAct): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:
The following product components are cited in the Pennsylvania Hazardous Substance List and/or the Pennsylvania Environmental Substance List, and are present at levels which require reporting.

Components	CASRN
2-Methylnaphthalene	91-57-6
N-Methyl-2-pyrrolidone	872-50-4
Benzenesulfonic acid, dodecyl-, calcium salt	26264-06-2
Naphthalene	91-20-3
1-Methylnaphthalene	90-12-0
Isobutanol	78-83-1

Pennsylvania (Worker and Community Right-To-KnowAct): Pennsylvania Special Hazardous Substances List:

To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

United States TSCA Inventory (TSCA)
This product contains chemical substance(s) exempt from U.S. EPA TSCA Inventory requirements. It is regulated as a pesticide subject to Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requirements.

Federal Insecticide, Fungicide and Rodenticide Act
EPA Registration Number: 62719-424
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

WARNING

Causes skin irritation
Causes moderate eye irritation
Harmful or fatal if swallowed or absorbed through the skin

16. OTHER INFORMATION

Hazard Rating System
NFPA

Health	Fire	Reactivity
2	1	0

Revision
Identification Number: 101223292 / A211 / Issue Date: 10/28/2015 / Version: 5.0
DAS Code: GF-1243
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

ACGIH	USA. ACGIH Threshold Limit Values (TLV)
Dow IHG	Dow Industrial Hygiene Guideline
OSHA P0	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
OSHA Z-1	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
SKIN	Absorbed via skin
STEL	Short term exposure limit
TWA	Time weighted average
US WEEL	USA. Workplace Environmental Exposure Levels (WEEL)

Information Source and References
This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

DOW AGROSCIENCES LLC urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 PRODUCT IDENTIFIER:
TRADE NAME: **RIFLE® HERBICIDE**
1.2 RECOMMENDED USE: AGRICULTURAL HERBICIDE
1.3 SUPPLIER DETAILS:
LOVELAND PRODUCTS, INC.
P.O. Box 1286 • Greeley, CO 80632-1286
1.4 24 Hour Emergency Phone: 1-800-424-9300 - **Medical Emergencies:** 1-866-944-8565 – **Product Information:** 1-888-574-2878 (LPI-CUST)
U.S. Coast Guard National Response Center: 1-800-424-8802

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to 29 CFR 1910.1200

Eye Damage/Irritation	Category 2A	H319
Acute Toxicity - Oral	Category 4	H302

2.2 Label elements

Signal word: WARNING

Hazard Statement:
H319 – Causes serious eye irritation.
H302 – Harmful if swallowed.

Precautionary Statement: (Prevention):
P264 – Wash hands and face thoroughly after handling.
P270 – Do not eat, drink or smoke when using this product.
P280 – Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary Statement: (Response):
P305+P351+P338: IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.
P337+P313: If eye irritation persists: Get medical advice/attention.
P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P330 – Rinse mouth.

Precautionary Statement: (Storage):

(Disposal): P501 – Dispose of contents/container on site or at an approved waste disposal facility.

2.3 Other hazards
None known

Potential Health effects

Routes of exposure	Eye contact. Ingestion.
Eyes	Causes serious eye irritation.
Skin	Not a skin irritant.
Inhalation	No data available.
Ingestion	Harmful if swallowed.
Target organs	Eyes. Ingestion.
Signs and symptoms	Causes serious eye irritation.

Potential environmental effects This product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have harmful or damaging effect on the environment.

3. COMPOSITION, INFORMATION ON INGREDIENTS

3.1 Substances

3.2 Mixtures

Classification according to 29 CFR 1910.1200

Chemical Name:	CAS No.	Classification	Concentration [%]
Dimethylamine salt of Dicamba	2300-66-5	Eye Dam. 2A; H319 Oral tox. 4; H302	48.20
*Other ingredients	n/a		51.80

*Ingredients not specifically listed are non-hazardous or are to be considered proprietary or confidential business information per 29 CFR 1910.1200(i)

4. FIRST AID MEASURES

4.1 Description of First Aid Measures

General Advice: Get medical attention if symptoms occur.

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

If swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

4.2 Most Important Symptoms and Effects, Acute and Delayed

Symptoms: Eyes: Causes serious eye irritation.
Oral: Harmful if swallowed.

4.3 Immediate Medical Attention and Special Treatment

Treatment: Treat symptomatically. Symptoms may be delayed.
FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: 1-866-944-8565
Take container, label or product name with you when seeking medical attention.

NOTES TO PHYSICIAN: If in eyes, specialized ophthalmologic attention may be necessary. If swallowed probable mucosal damage may contraindicate gastric lavage. There is no specific antidote; treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 EXTINGUISHING MEDIA:

Suitable Extinguishing Media: Use medium appropriate to surrounding fire. Dry chemical, carbon dioxide (CO_2), alcohol foam, foam, water spray or fog.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE:

Specific Hazards During Firefighting: Dicamba amine salt, oxides of nitrogen, hydrogen chloride, and oxides of carbon may be released.

5.3 SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS

Special Protective Equipment for Firefighters: Self-contained breathing apparatus and full protective gear should be worn in fighting large fires involving chemicals. Use water spray to keep fire exposed containers cool. Keep people away. Isolate fire and deny unnecessary entry.

6. ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Personal Precautions: Avoid inhalation of vapors and spray mist and contact with skin and eyes. Ensure adequate ventilation. Wear suitable protective clothing.

6.2 ENVIRONMENTAL PRECAUTIONS

Environmental Precautions: Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters or rinsate.

6.3 METHODS AND MATERIALS FOR CONTAINMENT AND CLEAN-UP

Methods for Clean-Up: Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. After removal flush contaminated area thoroughly with water.
Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to Remove residual contamination.
Never return spills to original containers for re-use.

7. HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING:

Advice on Safe Handling: Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

7.2 CONDITIONS FOR SAFE STORAGE:

Requirements for Storage Areas and Containers: Store in original container only in a well-ventilated area separately from fertilizer, feed, and foodstuffs. Avoid cross-contamination with other pesticides. Do not contaminate water, food or feed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 CONTROL PARAMETERS:

OCCUPATIONAL EXPOSURE LIMITS

U.S. Workplace Exposure Level (ACGIH) TLVs

Components	Type	Value
Dimethylamine	TLV	9.2 mg/m^3

U.S. Workplace Exposure Level (OSHA) PELs

Components	Type	Value
Dimethylamine	TLV	18 mg/m^3

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Specimen
No listings		

8.2 EXPOSURE CONTROLS:

Engineering Measures

Provide adequate general and local exhaust ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of vapors and spray mists. Provide eyewash station and safety shower.

Individual Protection Measures:

Eye / Face Protection:	Goggles or shielded safety glasses are recommended.
Skin Protection:	Long-sleeved shirt and long pants. Chemical-resistant gloves, such as polyethylene or polyvinylchloride. Shoes plus socks.
Respiratory Protection:	In case of inadequate ventilation or risk of inhalation of mists or vapors, use suitable respiratory equipment such as MSHA/NIOSH TC-84A with NIOSH equipped N, R, or P class filter media. Wear respiratory protection during operations where spraying or misting occurs. If respirators are used, a program should be in place to assure compliance with 29 CFR 1910.134, the OSHA Respiratory Protection standard. Wear air supplied respiratory protection if exposure concentrations are unknown.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 APPEARANCE : Liquid
ODOR: Rubber-like.
ODOR THRESHOLD: No data available.
COLOR: Clear, orange.
pH: 7.7
MELTING POINT / FREEZING POINT: No data available
BOILING POINT: No data available
FLASH POINT: > 212°F (> 100°C).
FLAMMABILILITY (solid, gas): No data available.
UPPER / LOWER FLAMMABILITY OR EXPLOSIVE LIMITS: No data available.
VAPOR PRESSURE: 4.5 mPa @ 25°C (Dicamba acid).
VAPOR DENSITY: No data available.
RELATIVE DENSITY: No data available.
SOLUBILITY: Soluble.
PARTITION CO-EFFICIENT, n-OCTANOL / WATER: log Pow = -0.15 (pH 7) (Dicamba acid).
AUTO-IGNITION TEMPERATURE: No data available.
DECOMPOSITION TEMPERATURE: No data available.
VISCOSITY: 4.14 cSt @ 20°C; 4.13 cSt @ 40°C
SPECIFIC GRAVITY (Water = 1): 1.15 g/ml
BULK DENSITY: 9.60 lbs./gal / 1.15 kg/L

Note: These physical data are typical values based on material tested but may vary from sample to sample.
Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.

10. STABILITY AND REACTIVITY

10.1 REACTIVITY
Stable

10.2 CHEMICAL STABILITY
Stable under normal temperature conditions

10.3 POSSIBILITY OF HAZARDOUS REACTIONS
No data available. Will not polymerize.

10.4 CONDITIONS TO AVOID
Excessive heat. Do not store near heat or flame.

10.5 INCOMPATIBILE MATERIALS
Oxidizing agents and acids.

10.6 HAZARDOUS DECOMPOSITION PRODUCTS
Dicamba amine salt, oxides of nitrogen, hydrogen chloride, and oxides of carbon may be released.

11 TOXICOLOGICAL INFORMATION

11.3 LIKELY ROUTES OF EXPOSURE
Eye contact. Harmful if swallowed.
LC_{50} (rat): > 2.53 mg/L (4 HR)
LD_{50} Oral (rat): 2,000 mg/kg
LD_{50} Dermal (rat): > 5,050 mg/kg
Acute Toxicity Estimates: No data available
Skin Irritation (rabbit): Slight irritant.
Eye Irritation (rabbit): Moderate eye irritant.
Specific Target Organ Toxicity: No data available.
Aspiration: No data available
Skin Sensitization (guinea pig): Not a sensitizer
Carcinogenicity: No data available.
Germ Cell Mutagenicity: No data available

Interactive Effects: None known

12 ECOLOGICAL INFORMATION

12.3 ECOTOXICITY

The product may be toxic to fish and aquatic invertebrates. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. Information below is based on the technical ingredient Dicamba acid.

Ecotoxicological Data

	Species	Test Results
Dicamba Acid	Rainbow trout	100 mg/L – 96-hour LC_{50}
	Bluegill	135 mg/L – 96-hour LC_{50}
	Bee	> 100 µ/bee

Drift or runoff may adversely affect non-target plants.
Do not apply directly to water.
Do not contaminate water when disposing of equipment wash water.
Do not apply when weather conditions favor drift from target area.

12.2 PERSISTENCE AND DEGRADABILITY

Biodegradability: No data available.

12.3 BIOACCUMULATIVE POTENTIAL

Bioaccumulation: No data available.

12.4 MOBILITY IN SOIL

No data available.

12.5 OTHER ADVERSE EFFECTS

Assessment: No data available.

13 DISPOSAL CONSIDERATIONS

13.1 WASTE TREATMENT METHODS

Wastes may be disposed of on site or at an approved waste disposal facility. Triple rinse (or equivalent), adding rinse water to spray tank. Offer container for recycling or dispose of in a sanitary landfill or by other procedures approved by appropriate authorities. Recycling decontaminated containers is the best option of container disposal. The Agricultural Container Recycling Council (ACRC) operates the national recycling program. To contact your state and local ACRC recycler visit the ACRC web page at http://www.acrecycle.org/. Do not contaminate water, food or feed by storage or disposal.

14 TRANSPORT INFORMATION

14.3 LAND TRANSPORT

DOT Shipping Description: 250 GALLONS AND LESS: NOT REGULATED BY DOT
DOT Shipping Description: GREATER THAN 250 GALLONS: UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., 9, III (DICAMBA), ERG GUIDE 171
U.S. Surface Freight Classification: COMPOUND, TREE OR WEED KILLING, NOI (NMFC 50320, SUB 2: CLASS: 60)

15 REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS

NFPA & HMIS Hazard Ratings:

NFPA			HMIS	
2	Health	0 Least	2	Health
0	Flammability	1 Slight	0	Flammability
1	Instability	2 Moderate	1	Reactivity
		3 High	H	PPE
		4 Severe		

SARA Hazard Notification/Reporting
SARA Title III Hazard Category:

Immediate	Y	Fire	N	Sudden Release of Pressure	N
Delayed	N	Reactive	N		

Reportable Quantity (RQ) under U.S. CERCLA: Dicamba (CAS: 1918-00-9) 1,000 pounds.
SARA, Title III, Section 313: Dimethylamine Dicamba (CAS: 2300-66-5) 48.20%
RCRA Waste Code: Not listed
CA Proposition 65: Not listed.

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

WARNING
Causes substantial but temporary eye injury.
Harmful if swallowed.
Do not get in eyes or on clothing.
Avoid contact with skin.

16 OTHER INFORMATION

SDS STATUS: Format revised.

PREPARED BY: Registrations and Regulatory Affairs **REVIEWED BY:** Environmental Health and Safety

EPA REG. NO.: 34704-861

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Disclaimer and Limitation of Liability: This data sheet was developed from information on the constituent materials identified herein and does not relate to the use of such materials in combination with any other material or process. No warranty is expressed or implied with respect to the completeness or ongoing accuracy of the information contained in this data sheet, and LOVELAND PRODUCTS, INC. disclaims all liability for reliance on such information. This data sheet is not a guarantee of safety. Users are responsible for ensuring that they have all current information necessary to safely use the product described by this data sheet for their specific purpose.

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 PRODUCT IDENTIFIER:
TRADE NAME: **RIFLE®-D HERBICIDE**
1.2 RECOMMENDED USE: AGRICULTURAL HERBICIDE
1.3 SUPPLIER DETAILS:
LOVELAND PRODUCTS, INC.
P.O. Box 1286 • Greeley, CO 80632-1286
1.4 24 Hour Emergency Phone: 1-800-424-9300 - **Medical Emergencies:** 1-866-944-8565 – **Product Information:** 1-888-574-2878 (LPI-CUST)
U.S. Coast Guard National Response Center: 1-800-424-8802

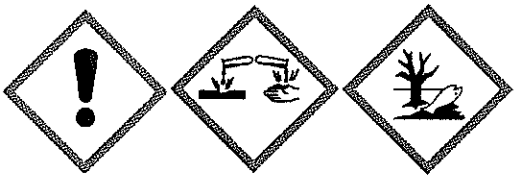
2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to 29 CFR 1910.1200

Eye Damage/Irritation	Category 1	H318
Acute Toxicity - Oral	Category 4	H302
Aquatic Toxicity - Acute	Category 2	H401
Aquatic Toxicity – Long term	Category 2	H411

2.2 Label elements



Signal word:	DANGER
Hazard Statement:	H318 – Causes serious eye damage. H302 – Harmful if swallowed. H401 – Toxic to aquatic life. H411 – Toxic to aquatic life with long lasting effects.
Precautionary Statement: (Prevention):	P260 – Do not breathe dust/fume/gas/mist/vapors/spray. P264 – Wash thoroughly after handling. P270 – Do not eat, drink or smoke when using this product. P280 – Wear protective gloves/eye protection/face protection. P102 – Keep out of reach of children. P273 – Avoid release to the environment.
Precautionary Statement: (Response):	P305+P351+P338: IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing. P301+P310+P331: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Do NOT induce vomiting. P101 – If medical advice is needed, have the product container or label at hand. P363 – Wash contaminated clothing before reuse. P391 – Collect spillage.
Precautionary Statement: (Storage):	P401+P233+P234 – Store in a dry place. Do not store below 32°F (0°C). Keep container tightly closed. Keep only in original container. P405 – Store locked up.

2.3 Other hazards
None known

Potential Health effects

Routes of exposure	Eye contact. Ingestion.
Eyes	Causes serious eye damage.
Skin	Not a skin irritant.
Inhalation	No data available.
Ingestion	Harmful if swallowed.
Target organs	Eyes. Ingestion.
Signs and symptoms	Causes serious eye damage.

Potential environmental effects This product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have harmful or damaging effect on the environment.

3. COMPOSITION, INFORMATION ON INGREDIENTS

3.1 Substances

3.2 Mixtures

Classification according to 29 CFR 1910.1200

Chemical Name:	CAS No.	Classification	Concentration [%]
Dimethylamine salt of 2,4-D	2008-39-1	Eye Dam. 1; H318	35.70
Dimethylamine salt of Dicamba	2300-66-5	Oral tox. 4; H302	12.40
*Other ingredients	n/a	Aquatic Acute. 2; H401	51.90

*Ingredients not specifically listed are non-hazardous or are to be considered proprietary or confidential business information per 29 CFR 1910.1200(i)

4. FIRST AID MEASURES

4.1 Description of First Aid Measures

General Advice: Get medical attention if symptoms occur.

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

If swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

If on skin or clothing: Take of contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

4.2 Most Important Symptoms and Effects, Acute and Delayed

Symptoms: Eyes: Causes serious eye damage.
Oral: Harmful if swallowed.

4.3 Immediate Medical Attention and Special Treatment

Treatment: Treat symptomatically. Symptoms may be delayed.
FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: 1-866-944-8565
Take container, label or product name with you when seeking medical attention.

NOTES TO PHYSICIAN: If in eyes, specialized ophthalmologic attention may be necessary. If swallowed probable mucosal damage may contraindicate gastric lavage. There is no specific antidote; treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 EXTINGUISHING MEDIA:

Suitable Extinguishing Media: Use medium appropriate to surrounding fire. Dry chemical, carbon dioxide (CO_2), alcohol foam, foam, water spray or fog.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE:

Specific Hazards During Firefighting: Dicamba amine salt, 2,4-D amine salt, oxides of nitrogen, hydrogen chloride, organochloride products, and oxides of carbon may be released.

5.3 SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS

Special Protective Equipment for Firefighters: Self-contained breathing apparatus and full protective gear should be worn in fighting large fires involving chemicals. Use water spray to keep fire exposed containers cool. Keep people away. Isolate fire and deny unnecessary entry.

6. ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Personal Precautions: Avoid inhalation of vapors and spray mist and contact with skin and eyes. Ensure adequate ventilation. Wear suitable protective clothing.

6.2 ENVIRONMENTAL PRECAUTIONS

Environmental Precautions: Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters or rinsate.

6.3 METHODS AND MATERIALS FOR CONTAINMENT AND CLEAN-UP

Methods for Clean-Up: Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. After removal flush contaminated area thoroughly with water.
Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to Remove residual contamination.
Never return spills to original containers for re-use.

7. HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING:

Advice on Safe Handling: Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

7.2 CONDITIONS FOR SAFE STORAGE:

Requirements for Storage Areas and Containers: Do not store below temperature of 30° F. Store in original container only in a well-ventilated area separately from fertilizer, feed, and foodstuffs. Avoid cross-contamination with other pesticides. Do not contaminate water, food or feed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 CONTROL PARAMETERS:

OCCUPATIONAL EXPOSURE LIMITS

U.S. Workplace Exposure Level (ACGIH) TLVs

Components	Type	Value
2,4-D Acid	TLV	10 mg/m^3
Dimethylamine	TLV	9.2 mg/m^3

U.S. Workplace Exposure Level (OSHA) PELs

Components	Type	Value
2,4-D Acid	TLV	10 mg/m^3
Dimethylamine	TLV	18 mg/m^3

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Specimen
No listings		

8.2 EXPOSURE CONTROLS:

Engineering Measures

Provide adequate general and local exhaust ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of vapors and spray mists. Provide eyewash station and safety shower.

Individual Protection Measures:

Eye / Face Protection:	Goggles or shielded safety glasses are recommended.
Skin Protection:	Long-sleeved shirt and long pants. Chemical-resistant gloves, such as polyethylene or polyvinylchloride. Shoes plus socks.
Respiratory Protection:	In case of inadequate ventilation or risk of inhalation of mists or vapors, use suitable respiratory equipment such as MSHA/NIOSH TC-84A with NIOSH equipped N, R, or P class filter media. Wear respiratory protection during operations where spraying or misting occurs. If respirators are used, a program should be in place to assure compliance with 29 CFR 1910.134, the OSHA Respiratory Protection standard. Wear air supplied respiratory protection if exposure concentrations are unknown.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 APPEARANCE : Liquid
ODOR: Amine.
ODOR THRESHOLD: No data available.
COLOR: Amber.
pH: 8.5 (1% solution)
MELTING POINT / FREEZING POINT: No data available
BOILING POINT: No data available
FLASH POINT: Does not flash.
FLAMMABILILITY (solid, gas): No data available.
UPPER / LOWER FLAMMABILITY OR EXPLOSIVE LIMITS: No data available.
VAPOR PRESSURE: No data available.
SOLUBILITY: Soluble.
PARTITION CO-EFFICIENT, n-OCTANOL / WATER: No data available.
AUTO-IGNITION TEMPERATURE: No data available.
DECOMPOSITION TEMPERATURE: No data available.
VISCOSITY: 9.507 cPs @ 25.2°C
SPECIFIC GRAVITY (Water = 1): 1.17 g/ml
BULK DENSITY: 9.76 lbs./gal / 1.17 kg/L

Note: These physical data are typical values based on material tested but may vary from sample to sample.
Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.

10. STABILITY AND REACTIVITY

10.1 REACTIVITY
Stable

10.2 CHEMICAL STABILITY
Stable under normal temperature conditions

10.3 POSSIBILITY OF HAZARDOUS REACTIONS
No data available. Will not polymerize.

10.4 CONDITIONS TO AVOID
Excessive heat. Do not store near heat or flame.

10.5 INCOMPATIBILE MATERIALS
Strong oxidizing agents, bases and acids.

10.6 HAZARDOUS DECOMPOSITION PRODUCTS
Dicamba amine salt, 2,4-D amine salt, oxides of nitrogen, hydrogen chloride, organochloride products, and oxides of carbon may be released.

11 TOXICOLOGICAL INFORMATION

11.3 LIKELY ROUTES OF EXPOSURE
Eye contact. Harmful if swallowed.
LC_{50} (rat): > 2.07 mg/L (4 HR)
LD_{50} Oral (rat): 1,256 mg/kg
LD_{50} Dermal (rat): > 5,000 mg/kg
Acute Toxicity Estimates: No data available
Skin Irritation (rabbit): Minimal irritant.
Eye Irritation (rabbit): Corrosive; causes irreversible eye damage.
Specific Target Organ Toxicity: Skin, CNS, liver, kidneys.
Aspiration: No data available
Skin Sensitization (guinea pig): Not a sensitizer
Carcinogenicity: IARC Group 2B (limited evidence for carcinogenicity in humans).
Germ Cell Mutagenicity: No data available
Interactive Effects: None known

12 ECOLOGICAL INFORMATION

12.3 ECOTOXICITY

The product may be toxic to fish and aquatic invertebrates. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. Information below is based on the technical ingredient 2,4-D acid.

Ecotoxicological Data

	Species	Test Results
2,4-D Acid	Rainbow trout	245 mg/L – 96-hour LC_{50}
	Bluegill	524 mg/L – 96-hour LC_{50}
	Fathead minnow	344 mg/L – 96-hour LC_{50}
	Pink shrimp	181 mg/L – 96-hour LC_{50}
	Daphnia magna	184 mg/L – 96-hour LC_{50}
	Tidewater silverside	469 mg/L –96-hour LC_{50}
	Eastern oyster	136 mg/L – 48-hour EC_{50}
Dicamba Dimethylamine salt	Rainbow trout	100 mg/L – 96-hour LC_{50}
	Bluegill	100 mg/L – 96-hour LC_{50}
	Daphnia magna	160 mg/L – 48-hour EC_{50}

Drift or runoff may adversely affect non-target plants.
Do not apply directly to water.
Do not contaminate water when disposing of equipment wash water.
Do not apply when weather conditions favor drift from target area.

12.2 PERSISTENCE AND DEGRADABILITY

Biodegradability: Biochemical oxygen demand is 0.72 for 5, 10 and 20 days. Chemical oxygen demand is 0.72. Under aerobic soil conditions the half-life is 4 – 23 days. Under aerobic aquatic conditions, the half-life is 0.5 – 11 days.

12.3 BIOACCUMULATIVE POTENTIAL

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or log Pow < 3).

12.4 MOBILITY IN SOIL

High (50 < Koc < 150). Soil organic carbon/water partition coefficient (Koc) is 72-136.

12.5 OTHER ADVERSE EFFECTS

Assessment: No data available.

13 DISPOSAL CONSIDERATIONS

13.1 WASTE TREATMENT METHODS

Wastes may be disposed of on site or at an approved waste disposal facility. Triple rinse (or equivalent), adding rinse water to spray tank. Offer container for recycling or dispose of in a sanitary landfill or by other procedures approved by appropriate authorities. Recycling decontaminated containers is the best option of container disposal. The Agricultural Container Recycling Council (ACRC) operates the national recycling program. To contact your state and local ACRC recycler visit the ACRC web page at http://www.acrecycle.org/. Do not contaminate water, food or feed by storage or disposal.

14 TRANSPORT INFORMATION

14.3 LAND TRANSPORT

DOT Shipping Description: 28 GALLONS AND LESS: NOT REGULATED BY DOT
DOT Shipping Description: GREATER THAN 28 GALLONS: RQ UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., 9, III (2,4-D, DICAMBA), ERG GUIDE 171
U.S. Surface Freight Classification: COMPOUND, TREE OR WEED KILLING, NOI (NMFC 50320, SUB 2: CLASS: 60)

15 REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS

NFPA & HMIS Hazard Ratings:

NFPA		HMIS
3 Health	0 Least	3 Health
0 Flammability	1 Slight	0 Flammability
0 Instability	2 Moderate	0 Reactivity
	3 High	H PPE
	4 Severe	

SARA Hazard Notification/Reporting
SARA Title III Hazard Category:

Immediate	Y	Fire	N	Sudden Release of Pressure	N
Delayed	N	Reactive	N		

Reportable Quantity (RQ) under U.S. CERCLA: 2,4-D Acid (CAS: 94-75-7) 100 pounds; Dicamba (CAS: 1918-00-9) 1,000 pounds.
SARA, Title III, Section 313: 2,4-D Acid (CAS: 94-75-7) 29.6%; Dimethylamine Dicamba (CAS: 2300-66-5) 12.40%
RCRA Waste Code: U240; D016
CA Proposition 65: Not listed.

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

DANGER
Corrosive
Causes irreversible eye damage.
Harmful if swallowed.
Harmful if absorbed through skin.
Do not get in eyes or on clothing.
Avoid contact with skin.
Avoid breathing spray mist.
Wash thoroughly with soap and water after handling.
Remove contaminated clothing and wash before reuse.

16 OTHER INFORMATION

SDS STATUS: Format revised.

PREPARED BY: Registrations and Regulatory Affairs **REVIEWED BY:** Environmental Health and Safety

EPA REG. NO.: 34704-869

®Rifle is a registered trademark of Loveland Products, Inc.

Disclaimer and Limitation of Liability: This data sheet was developed from information on the constituent materials identified herein and does not relate to the use of such materials in combination with any other material or process. No warranty is expressed or implied with respect to the completeness or ongoing accuracy of the information contained in this data sheet, and LOVELAND PRODUCTS, INC. disclaims all liability for reliance on such information. This data sheet is not a guarantee of safety. Users are responsible for ensuring that they have all current information necessary to safely use the product described by this data sheet for their specific purpose.

MATERIAL SAFETY DATA SHEET

RIFLE PLUS® HERBICIDE

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300

. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

FORMULATED FOR:

LOVELAND PRODUCTS, INC.
P.O. Box 1286 • Greeley, CO 80632-1286

24-Hour Emergency Phone: 1-800-424-9300
Medical Emergencies: 1-800-301-7976
U.S. Coast Guard National Response Center: 1-800-424-8802

PRODUCT NAME: RIFLE PLUS® HERBICIDE
CHEMICAL NAME: Potassium salt of Dicamba: (3,6-dichloro-o-anisic acid); Atrazine: (2-chloro-4-ethylamino-6-isopropylamine-S-triazine)
CHEMICAL FAMILY: Substituted Benzoic Acid-Substituted Triazine Herbicide
EPA REG. NO.: 34704-860
MSDS Number: 000860-06-LPI **MSDS Revisions:** Sections 1 and 16 **Date Of Issue:** 10/25/06 **Supersedes:** 09/15/04

2. HAZARDS IDENTIFICATION SUMMARY

KEEP OUT OF REACH OF CHILDREN – CAUTION – Causes moderate eye imitation. Harmful if swallowed, inhaled or absorbed through skin. Avoid contact with eyes, skin or clothing. Avoid breathing spray mist.

This product is brown slurry liquid suspension with a mild amine odor.

3. COMPOSITION, INFORMATION ON INGREDIENTS

Chemical Ingredients:	Percentage by Weight:	CAS No.	TLV (Units)
Potassium salt of Dicamba	13.42	10007-85-9	none established
Atrazine	22.23	1912-24-9	5 mg/m^3
Ethylene Glycol	6.00	107-21-1	100 mg/m^3 (C)
Inert Ingredients	58.35		

4. FIRST AID MEASURES

If swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

on skin: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contacts, if present, after the first 5 minutes, then continue rinsing eye.

If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: 1-800-301-7976. Have the product label or container with you when calling a poison control center or doctor, or going for treatment.

5. FIRE FIGHTING MEASURES

FLASH POINT (°F/Test Method): Does not flash.
FLAMMABLE LIMITS (LFL & UFL): Not established
EXTINGUISHING MEDIA: Water fog, foam, carbon dioxide, or dry chemical.
HAZARDOUS COMBUSTION PRODUCTS: Dicamba potassium salt, oxides of nitrogen, hydrogen chloride, Organochlorine products, and oxides of carbon.
SPECIAL FIRE FIGHTING PROCEDURES: Wear self-contained breathing apparatus with full protective clothing. Fight fire from upwind and keep all non-essential personnel out of area.
UNUSUAL FIRE AND EXPLOSION HAZARDS: If water is used to fight fire and cool the containers, contain run-off by diking to prevent contamination of water supplies. Containers in fire may burst or explode from excessive heat.

6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

For small spills, absorb with an absorbent material such as pet litter. Sweep up and transfer to containers for possible land application according to label use or for proper disposal. Wash the spill with water containing a strong detergent, absorb with pet litter or other absorbent material, sweep up and place in a chemical container and handle in an approved manner. Check local, state and federal regulations for proper disposal. Flush the area with water to remove any residue. For large spills: contain liquid by diking the area, keep product out of water supplies. Large spills that soak into ground should be dug up to a depth of 1 to 2 inches, placed in drums and disposed of in accordance with instructions provided under DISPOSAL, section 13 of this MSDS. Any recovered spilled liquid should be similarly collected and disposed of.

CAUTION: Keep spills and cleaning runoff out of municipal sewers and open bodies of water.

7. HANDLING AND STORAGE

ANDLING: Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

STORAGE: Store in original container in a well-ventilated area separately from fertilizer, feed, and foodstuffs. Avoid cross-contamination with other pesticides. Do not contaminate water, food, or feed by storage or disposal.

Personal Protective Equipment (PPE): Applicators and other handlers must wear: long sleeved shirt and long pants, chemical-resistant gloves, such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, polyvinyl chloride, or Viton® ≥ 14 mils, chemical-resistant footwear plus socks. **Mixers and loaders must wear:** long sleeved shirt and long pants, chemical-resistant gloves, such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, polyvinyl chloride, or Viton® ≥ 14 mils, chemical-resistant footwear plus socks, and protective eyewear. Follow manufacturer's instructions for cleaning and maintaining PPE. If no instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: When handlers use enclosed cabs, or aircraft in a manner that meets the requirements listed in the worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d) (4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

RESPIRATORY PROTECTION: Not normally required; if vapors or mists become excessive, wear a NIOSH approved pesticide respirator with cartridges for pesticide vapors.

EYE PROTECTION: Chemical goggles or shielded safety glasses.

SKIN PROTECTION: Wear protective clothing: long-sleeved shirts and pants, chemical-resistant footwear plus socks. Wear rubber or chemical-resistant gloves.

	OSHA PEL 8 hr TWA	ACGIH TLV-TWA
Atrazine	not listed	5 mg/m^3
Ethylene Glycol	not listed	100 mg/m^3 (Celing)

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR: Brown slurry liquid suspension with a mild amine odor.
SPECIFIC GRAVITY (Water = 1): 1.15-1.16 g/ml
BULK DENSITY: 9.59-9.68 lbs/gal.
SOLUBILITY: Miscible
VAPOR PRESSURE: 18 (as water) mm Hg @ 68°F/20°C
BOILING POINT: Not established
pH: 7-10
PERCENT VOLATILE (by volume): > 40%
EVAPORATION RATE: Not established

Note: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.

10. STABILITY AND REACTIVITY

STABILITY: Stable
CONDITIONS TO AVOID: None known.
INCOMPATIBILITY: None known.
HAZARDOUS DECOMPOSITION PRODUCTS: None known.
HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION

Acute Oral LD_{50} (rat): 5,900 mg/kg
Acute Dermal LD_{50} (rabbit): >2,000 mg/kg
Eye Irritation (rabbit): Not an irritant
Skin Irritation (rabbit): Not an irritant
Inhalation LC_{50} (rat): 3.38 mg/L (4 hr).
Skin Sensitization (guinea pig): Not a sensitizer
Carcinogenic Potential: Nothing listed in ACGIH, NTP, or OSHA. IARC has classified Atrazine in Group 3 (Unclassifiable as to Carcinogenicity in Humans).

12. ECOLOGICAL INFORMATION

Keep out of lakes, streams, or ponds. This product is toxic to aquatic invertebrates. For terrestrial uses, do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Runoff and drift from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not apply when weather conditions favor drift from target areas. Do not contaminate water by disposing of equipment wash waters.

13. DISPOSAL CONSIDERATIONS

Plastic Containers: Triple rinse (or equivalent), then offer for recycling at an ACRC site (go to http://www.acrecycle.org/ for locations) or by reconditioning, or puncture and dispose of in a sanitary landfill or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.
Bulk/Mini-bulk Containers: Reusable containers should be returned to the point of purchase for cleaning and refilling because the container must be thoroughly cleaned before refilling. Pesticide wastes are toxic. Wastes resulting from this product may be disposed of on site or at an approved waste disposal facility. Do not contaminate water, food, or feed by storage or disposal.

4. TRANSPORT INFORMATION

DOT Shipping Description: 909 gallons and over: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., 9, UN3082, III, (DICAMBA), ERG GUIDE 171
DOT Shipping Description: Less than 909 gallons: NOT REGULATED BY USDOT
U.S. Surface Freight Classification: COMPOUND, TREE OR WEED KILLING, NOI (NMFC 50320, SUB 2: CLASS: 60)

Consult appropriate ICAO/IATA and IMDG regulations for shipment requirements in the Air and Maritime shipping modes.

15. REGULATORY INFORMATION

NFPA & HMIS Hazard Ratings:

NFPA			HMIS
2 Health	0 Least		2 Health
0 Flammability	1 Slight		0 Flammability
0 Instability	2 Moderate		0 Reactivity
	3 High		H PPE
	4 Severe		

SARA Hazard Notification/Reporting
SARA Title III Hazard Category:

Immediate	Y	Fire	N	Sudden Release of Pressure	N
Delayed	N	Reactive	N		

Reportable Quantity (RQ) under U.S. CERCLA: Dicamba (CAS: 1918-00-9) 1000 pounds; Ethylene Glycol (CAS: 107-21-1) 5000 pounds
SARA, Title III, Section 313: Dicamba (CAS: 1918-00-9) 11.45%; Atrazine (CAS: 1912-24-9) 22.23%; Ethylene Glycol (CAS: 107-21-1) 6.00%
RCRA Waste Code: Not listed.
CA Proposition 65: Not listed.

6. OTHER

MSDS STATUS: Sections 1 and 16 revised
PREPARED BY: Registrations and Regulatory Affairs **REVIEWED BY:** Environmental/ Regulatory Services

®Rifle Plus is a registered trademark of Loveland Products, Inc.

®Viton is a registered trademark of DUPONT DOW ELASTOMERS L.L.C.

This product is a Restricted Use Pesticide (Ground and Surface Water Concerns)

Disclaimer and Limitation of Liability: This data sheet was developed from information on the constituent materials identified herein and does not relate to the use of such materials in combination with any other material or process. No warranty is expressed or implied with respect to the completeness or ongoing accuracy of the information contained in this data sheet, and LOVELAND PRODUCTS, Inc. disclaims all liability for reliance on such information. This data sheet is not a guarantee of safety. Users are responsible for ensuring that they have all current information necessary to safely use the product described by this data sheet for their specific purpose.

ProGibb 40% Plant Growth Regulator, Water Soluble Granule

SDS# VBC-0007 Revision 2 ISSUED 09/29/15

[Classification according to OSHA; 29 CFR § Part 1910.1200, (3/12/2012)]

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY

1.1 Product Identifier

MATERIAL NAME: ProGibb® 40% Plant Growth Regulator, Water Soluble Granule

Synonyms: RyzUp® SmartGrass Plant Growth Regulator, RyzUp SmartCorn, ProGibb SG, ProGibb 40 SG, ProGibb 40% SG, ProGibb 40% GS, ProGibb 400, ProGibb 4X, Accel 40 SG, Accel 40 WSG, Activol 40 WG, Berelex 40%, Berelex 40 SG, Grocel 40 SG, Grocel 40 WSG, RyzUp 40 SG, RyzUp SmartGrass 40 SG

EPA Reg No.: 73049-1
Code Number: 35550, 53556
Chemical Family: Gibberellin, naturally occurring plant growth regulators

1.2 Relevant Identified Uses and Uses Advised Against

Identified Uses: Pesticide (Plant Growth Regulator)
Uses Advised Against: It is a violation of Federal Law to use this product in a manner inconsistent with its Pesticide labeling.

1.3 Details of the supplier of the Safety Data Sheet

Supplied By: Valent BioSciences Corporation
870 Technology Way
Libertyville, Illinois 60048

Manufactured By: Valent BioSciences Corporation
870 Technology Way
Libertyville, Illinois 60048

1.4 EMERGENCY TELEPHONE NUMBERS

Emergency Health or Spill:
Outside the United States: (01) 651-632-6184
Within the United States: 877-315-9819

2. HAZARDS IDENTIFICATION

2.1 Classification of the Substance or Mixture

Eye Irritation, Category 2B

2.2 Labeling Elements

Symbol(s)

None

Signal Word

WARNING

Hazard Statement(s)

Causes eye irritation

Precautionary Statement:

Prevention

Avoid breathing dust
Wash thoroughly after handling
Wear protective clothing/eye protection

Response

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/ attention.
IF ON SKIN: Wash with plenty of water.
If skin irritation or rash occurs: Get medical advice/ attention.
Take off contaminated clothing and wash it before reuse.

Disposal

Dispose of contents/container in accordance with local/regional/national/regulations.

Labeling

FIFRA EPA approved pesticide labeling required.

2.3 Other Hazards

None identified.

3. COMPOSITION/INFORMATION ON INGREDIENTS

CAS #	Active Ingredients - Name	Percent
77-06-5	Gibberellic Acid (GA3)	40%

CAS #	Component Other-Ingredient Name	Percent
Trade Secret	Other ingredients	60%

4. FIRST AID MEASURES

4.1 Description of First Aid Measures

GENERAL: In all cases of doubt, seek medical attention.

EYES: Remove from source of exposure. Flush with copious amounts of water. Remove contact lenses, if present and easy to do, after the first 5 minutes, then continue rinsing. If irritation persists or signs of toxicity occur, seek medical attention. Provide symptomatic /supportive

care as necessary.

SKIN: Remove from source of exposure. Take off contaminated clothing. Flush with copious amounts of water. If irritation persists or signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary.

INGESTION: Remove from source of exposure. Move person to fresh air. Do NOT induce vomiting. Give large quantities of water. If signs of toxicity occur, seek medical attention. Provide symptomatic /supportive care as necessary.

INHALATION: Remove from source of exposure. If signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary. If person is not breathing, call 911, and then give artificial respiration.

4.2 Most important Symptoms and Effects, both Acute and Delayed

Acute

Eye irritation

Delayed

No information on significant adverse effects

4.3 Indication of any Immediate Medical Attention and Special Treatment Needed

Treat symptomatically and supportively

5. FIRE FIGHTING PROCEDURES

5.1 Extinguisher Media

Suitable Extinguisher Media

Dry chemical, water spray, foam or carbon dioxide.

Unsuitable Extinguisher Media

None known

5.2 Specific Hazards Arising from the Chemical

None known

Thermal decomposition products

Carbon oxides, nitrogen oxides

5.3 Advice to Firefighters

Protective Equipment and precautions for firefighters

Fire fighter should wear full-face, self-contained breathing apparatus and impervious protective

clothing. Fire fighters should avoid inhaling combustion products. See Section 8 (Exposure Controls / Personal Protection)

Fire & Explosive hazard
. Formulated product is not expected to be flammable.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions, Protective Equipment and Emergency Procedures
Where exposure level is known, wear respirator suitable for level of exposure. Where exposure level is not known, wear approved, positive pressure, self-contained respirator. In addition to the personal protection as recommended in section 8.

6.2 Environmental Precautions
Keep out of drains, sewers, ditches and waterways. Avoid runoff to waterways and sewers. Do not discharge effluent containing this product into natural bodies of water.

6.3 Methods and Materials for Containment and Cleaning Up
Ventilate area. Wear appropriate personal protective equipment. Recover product and place in appropriate container for disposal. Do not flush to sewer.

6.4 Reference to Other Sections
See Section 7 for Handling Procedures. See Section 8 for Personal Protective Equipment recommendations. See Section 13 for Disposal Considerations.
US regulations may require reporting spills of hazardous materials: See section 15: Regulatory Information for details on reportable quantities, if any.

7. HANDLING AND STORAGE

7.1 Precautions for Safe handling
Ventilate. Avoid breathing dust. Avoid contact with eyes, skin or clothing. Wash thoroughly after handling. Do not eat, drink or smoke while working with product. Obey reasonable safety precautions and practice good housekeeping. For filling operations respiratory protection may be recommended particularly in enclosed areas.

7.2 Conditions for Safe Storage, Including Incompatibilities
Protect against physical damage. Close containers of unused material. Store in a dry, cool place.

Incompatibilities
None Known

7.3 Specific End Use(s)
Pesticide, Plant Growth Regulator.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control Parameters

Component Exposure Limits

None established.

Derived No Effect Levels (DNELs)

No DNELs available

Predicted No Effect Concentrations (PNECs)

No PNECs available

8.2 Exposure Controls

Appropriate Engineering Controls

Provide general ventilation. Where adequate general ventilation is unavailable use process enclosure, local exhaust ventilation, or other engineering controls to control dust.

SKIN PROTECTION:

Wear impervious protective clothing, including boots and gloves. Wear gloves made of impervious materials. Wash thoroughly with soap and water after handling.

EYE PROTECTION:

Wear goggles or safety glasses with side shields when handling.

RESPIRATORY PROTECTION:

For filling operations if dust is produced respiratory protection is recommended. Use dust/mist filtering respirator (MSHA/NIOSH approved number prefix TC-21C) or a NIOSH approved respirator with any N, P, R or HE filter).

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on Basic Physical and Chemical Properties

Appearance/Color:	White granules	Odor:	Odorless
pH:	2.9% (1% solution)	Pour density:	0.53 g/mL
Tap density:	0.55 g/mL	Free acidity:	6.2% w/w as sulphuric acid
Explosive properties:	Not explosive (TGAI)	Self-ignition temperature:	Material does not self-ignite below 400 °C
Oxidizing properties:	Not oxidizing (TGAI)	Flammability Class:	Not highly flammable (TGAI)

10. CHEMICAL STABILITY AND REACTIVITY

10.1 Reactivity
Material does not pose a significant reactivity hazard.

10.2 Chemical Stability
Stable under ordinary conditions of use and storage.

10.3 Possibility of Hazardous Reactions
Does not undergo hazardous polymerization

10.4 Conditions to Avoid
None known.

10.5 Incompatible Materials
None

10.6 Hazardous Decomposition Products
Carbon oxides and unidentified organic compounds.

11. TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological Effects

Likely Routes of Exposure

Inhalation: Yes
Eye Contact: Yes
Skin Contact: Yes
Ingestion: No

Product (or TGAI, as noted) Toxicology

Acute Effects

Oral Toxicity:	LD_{50} > 5,000 mg/kg bw (rat)
Dermal Toxicity:	LD_{50} > 5,000 mg/kg bw (rat) [Limit Test]
Inhalation Toxicity:	LC_{50} > 2.269 mg/L air (rat) [Limit Test]
Corrosiveness:	Not corrosive.
Dermal Irritation:	Slightly irritating. All dermal irritation cleared within 48 hrs (rabbit)
Ocular Irritation:	Mildly irritating. All ocular irritation cleared within 72 hrs (rabbit)
Dermal Sensitization:	Not a sensitizer [Magnusson-Kligman method] (guinea pig)

Mutagenicity Information: Components of this product are not listed as mutagens. Negative in chromosomal aberration, sister chromatid exchange in CHO.

Did NOT induce Unscheduled DNA synthesis (UDS) in Rat hepatocytes in vivo (2000 mg/kg ;limit dose). Negative in E-coli reverse mutation AMES test, 10,000 mcg/dish. [TGAI]

Carcinogenicity Information: Components of this product are not listed as carcinogenic by NTP, IARC or OSHA.
Developmental / Reproductive Toxicity: This material is not a teratogenic compound.
Special Target Organ: None identified
Aspiration Hazard: Not Applicable
Repeat Dose Studies: Not Applicable, Acute toxicity testing was all negative.

12. ECOLOGICAL INFORMATION

12.1 Ecotoxicity of the Mixture

Fish: LC_{50} >100 mg a.i./L (96-H, *Cyprinus carpio*)
Bird: LC_{50} > 5,000 mg a.i./kg bw (Acute Oral – Pigeon)
LC_{50} > 5,000 mg a.i./kg bw (Acute Oral – Chicken)
Invertebrates: EC_{50} > 140 mg a.i./L (48-H, Daphnia), NOEC 140 mg/L (48-H, Daphnia)
Bees (insect): LD_{50} > 285.05 µg a.i./bee (24-H, 48-H) (Oral toxicity, honey bee)
LD_{50} > 250.00 µg a.i./bee (24-H, 48-H) (Contact toxicity, honey bee)
Algae: Cell density EC50 > 92 mg/L (72-H, Freshwater alga)
Growth rate E_rC50 > 92 mg/L (72-H, Freshwater alga)
Area under the growth curve E_bC50 > 92 mg/L (72-H, Freshwater alga)

12.2 Persistence and Degradability

Active ingredient is naturally occurring plant growth regulator. Active ingredient does not undergo aqueous photo-degradation. Active ingredient is not considered readily biodegradable.

12.3 Bioaccumulation potential

No data available. Bio-concentration Factor (BCF): Given that the log P_{OW} for the active ingredient (0.45) is much less than 3, there is no potential for bio-concentration in fatty tissues and no potential for aquatic bio-magnification.

12.4 Mobility in Soil

No data available

12.5 Results of PBT and vPvB assessment

Assessments not performed

12.6 Other adverse effects

None known

13. DISPOSAL CONSIDERATIONS

13.1 Waste Disposal Methods

Dispose of product in accordance with federal, state, provincial, and local regulations. Prevent contamination of environment by wastes.

US EPA Waste Number & Descriptions:
There is no applicable EPA waste number. This product, if discarded, is not expected to be a characteristic or listed hazardous waste.

14. TRANSPORTATION INFORMATION

DOT STATUS: Not Regulated as Hazardous by DOT

IATA/ICA0 STATUS: Not Regulated

IMO STATUS: Not Regulated

15. REGULATORY INFORMATION

15.1 Safety, Health and Environmental Regulations / Specific Legislation

TSCA STATUS: N/L
CERCLA STATUS: Not regulated as hazardous
SARA STATUS: Acute: No Chronic: No Fire: No CDT: No
RCRA STATUS: Not regulated as hazardous
State Right-To-Know: Consult applicable national, state provincial or local laws to determine regulations, laws or ordinances which may be applicable.

OSHA HAZARD COMMUNICATION STANDARD: Not defined by the OSHA Hazard Communication Standard, 29 CFR

15.2 EPA Pesticide Regulations

EPA Registration Number: 73049-1
EPA Pesticide Label signal word: CAUTION

Product must have EPA Approved Pesticide Label attached to or accompanying all containers.

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. The hazard information

required on the pesticide label is reproduced below. The pesticide label also includes other important information, including directions and limitations for its use.

KEEP OUT OF REACH OF CHILDREN
CAUTION

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS & DOMESTIC ANIMALS

Caution: Causes moderate eye irritation. Harmful if absorbed through skin. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling. Remove and wash contaminated clothing before reuse.

Personal Protective Equipment (PPE)
Applicators and other handlers must wear:

- Long-sleeved shirt and long pants.
- Waterproof gloves.
- Shoes plus socks.

Follow the manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

User Safety Recommendations

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

For terrestrial uses: Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning or disposing of equipment washwaters or rinsate.

Do not use treated seed for food, feed, or oil purposes. Exposed treated seed may be hazardous to birds and other wildlife. Treat only those seeds needed for immediate use and planting. Do not store excess treated seed beyond planting time. Dispose of all excess treated seed and seed packaging by burial away from bodies of water.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected

handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the State or Tribe agency responsible for pesticide regulation.

GENERAL DIRECTIONS FOR USE

Use only as directed. Read the label thoroughly and make sure it is understood before making applications. Keep out of reach of children.

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

Pesticide Storage

Keep containers tightly closed when not in use.

Pesticide Disposal

Wastes resulting from the use of this product must be disposed of on site or at an approved waste disposal facility.

Container Disposal: (80 or 320 grams bottles)

Non-refillable container. Do not reuse or refill this container. Triple rinse (or equivalent) promptly after emptying. Triple rinse as follows: Empty remaining contents into application equipment or mix tank. Fill container ¼ full with water and recap. Shake 10 seconds. Pour rinsate into application equipment or mix tank or store rinsate for later use or disposal. Drain for 10 seconds after flow begins to drip. Repeat this procedure two more times. Then offer for recycling or dispose of in a sanitary landfill, or incineration, if allowed by state and local authorities by burning. If burned, stay out of smoke.

(2.5 grams sachets)

Non-refillable container. Do not reuse or refill this container. Offer for reconditioning if appropriate or dispose of in a sanitary landfill, or incineration, if allowed by state and local authorities by burning. If burned, stay out of smoke.

16. OTHER INFORMATION

NFPA Hazard Ratings		HMIS Hazard Ratings		
Health:	0	Health:	0	0 = minimal
Flammability:	0	Flammability:	0	1 = slight
Instability:	0	Instability:	0	2 = moderate
				3 = serious
				4 = Extreme

REASONS FOR ISSUE: Correct Phys-chem data and Regulatory information
APPROVAL DATE: 09/29/15
SUPERSEDES DATE: 04/25/15

LEGEND: N/A = Not Applicable N/D = Not Determined
N/L = Not Listed L = Listed
C = Ceiling S = Short-term
(R) = Registered Trademark of Valent BioSciences
(TM) = Registered Trademark of Valent BioSciences

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VALENT BIOSCIENCES CORPORATION
870 Technology Way
Libertyville, IL 60048 – 800-323-9597

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Safety Data Sheet

United Phosphorus, Inc.

Preparation Date 10-May-2015 **Revision date** 10-May-2015 **Revision Number:** 1

1. Identification of the Substance/Preparation and of the Company/Undertaking

Product identifier

Product Description: ZIRAM 76DF

Other means of identification

Item#: 12-140
UN-No 3077
Synonyms Not Available
Registration number(s) 70506-173

Recommended use of the chemical and restrictions on use

Recommended use Fungicide.
Uses advised against Activties contrary to label recomendation

Details of the Supplier of the Safety Data Sheet

Supplier Address
United Phosphorus Inc.
630 Freedom Business Center
Suite 402
King of Prussia, PA 19406

Emergency telephone number

Company Phone Number 1-800-438-6071
Emergency telephone number Chemtrec: (800) 424-9300 (24hrs) or (703) 527-3887
Medical: Rocky Mountain Poison Control Center
(866) 673-6671 (24hrs)

2. Hazards Identification

Classification

OSHA Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

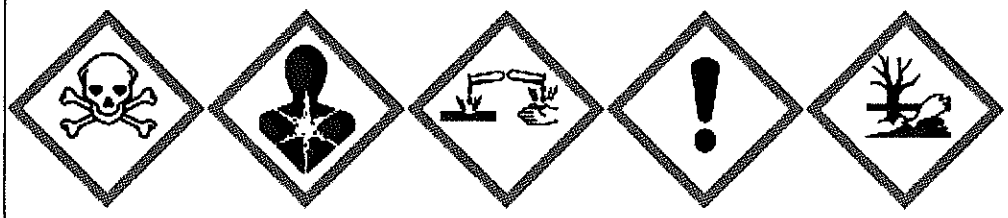
Acute toxicity - Oral	Category 4
Acute toxicity - Inhalation (Gases)	Category 1
Acute toxicity - Inhalation (Vapors)	Category 1
Acute toxicity - Inhalation (Dusts/Mists)	Category 3
Serious eye damage/eye irritation	Category 1
Skin sensitization	Category 1
Specific target organ toxicity (single exposure)	Category 3
Specific target organ toxicity (repeated exposure)	Category 2

Label elements

EMERGENCY OVERVIEW

DANGER

hazard statements
HARMFUL IF SWALLOWED
Fatal if inhaled
Causes serious eye damage
May cause an allergic skin reaction
May cause respiratory irritation
May cause damage to organs through prolonged or repeated exposure



appearance white light brown **Physical state** powder **Odor** odorless

Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
In case of inadequate ventilation wear respiratory protection
Wear protective gloves/protective clothing/eye protection/face protection
Contaminated work clothing should not be allowed out of the workplace

Precautionary Statements - Response
Get medical advice/attention if you feel unwell
IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Immediately call a POISON CENTER or doctor/physician
IF ON SKIN: Wash with plenty of soap and water
If skin irritation or rash occurs: Get medical advice/attention
Wash contaminated clothing before reuse
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Immediately call a POISON CENTER or doctor/physician
Call a POISON CENTER or doctor if you feel unwell
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth

Precautionary Statements - Storage
Store in a well-ventilated place. Keep container tightly closed
Store locked up

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Hazards Not Otherwise Classified (HNOC)
OTHER INFORMATION
- Very toxic to aquatic life with long lasting effects
- Very toxic to aquatic life
- May be harmful in contact with skin

3. Composition/information on Ingredients

Chemical name	CAS-No	Weight %	Trade secret
Zinc, bis(dimethylcarbamodithioaot-kappaS, kappaS)-(T-4)	137-30-4	76	

*The exact percentage (concentration) of composition has been withheld as a trade secret.

4. First aid measures

FIRST AID MEASURES

Eye contact Hold eye open and rinse slowly and gently with water for 15 - 20 minutes. Remove contact

lenses, if present, after 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

Skin contact Wash off immediately with plenty of water removing all contaminated clothes and shoes. Call poison control center or doctor for treatment advice.

Inhalation Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a physician or poison control center immediately.

Ingestion Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately.

Protection of First-aiders Use personal protective equipment.

Most Important Symptoms and Effects, Both Acute and Delayed

Most Important Symptoms and Effects No information available.

Indication of Any Immediate Medical Attention and Special Treatment Needed

Notes to physician Treat symptomatically.

5. Fire-fighting measures

Suitable extinguishing media
Carbon dioxide (CO2).
Use:. Dry chemical. Water spray, alcohol-resistant foam.

Unsuitable extinguishing media No information available.

Specific hazards arising from the chemical
Thermal decomposition can lead to release of irritating gases and vapours.

Hazardous combustion products carbon disulfide, sulfur dioxide.

Explosion data
Protective equipment and precautions for firefighters
Use personal protective equipment. As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal Precautions Wear protective gloves/clothing and eye/face protection. Avoid contact with the skin and the eyes. Wash thoroughly after handling.

Environmental Precautions

Environmental precautions Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinenet environmental permits.

Methods and material for containment and cleaning up

Methods for Clean-Up Sweep up and shovel into suitable containers for disposal.

7. Handling and Storage

Precautions for safe handling

Handling Wear personal protective equipment. Avoid contact with skin and eyes. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Keep out of reach of children.

Conditions for safe storage, including any incompatibilities

Storage Keep containers tightly closed in a cool, well-ventilated place. Keep away from heat. Protect from light. Keep in properly labelled containers.

incompatible materials Strong oxidizing agents.

8. Exposure Controls/Personal Protection

Exposure guidelines This product does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Engineering controls Investigate engineering techniques to reduce exposures. Local mechanical exhaust ventilation is preferred. Consult ACGIH ventilation manual or NFPA Standard 91 for design of exhaust systems.

Personal protective equipment

Eye/Face Protection Use eye protection to avoid eye contact. Where there is potential for eye contact have eye flushing equipment available. Safety glasses with side-shields.

Skin protection Wear protective gloves/clothing. Socks and footwear.

Respiratory protection Where airborne exposure is likely, use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. Full facepiece equipment is recommended and, if used, replaces need for face shield and/or chemical goggles. If exposures cannot be kept at a minimum with engineering controls, consult respirator manufacturer to determine appropriate type equipment for given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where there may be a potential for significant exposure, use an approved full face positive-pressure, self-contained breathing apparatus. Respiratory protection programs must comply with 29 CFR 1910.134.

General hygiene considerations

Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing before re-use. Wear suitable gloves and eye/face protection. Wash hands before breaks and immediately after handling the product.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Physical state	powder		
appearance	white light brown	**Odor**	odorless
color	No information available		

Property	**VALUES**	**Remarks/ • Method**
pH	No information available	
Melting point/freezing point	No information available	
Boiling Point/Range	No information available	
Flash Point	No information available	
Evaporation Rate	No information available	
flammability (solid, gas)	No information available	
Flammability limit in air		
Upper Flammability Limit	No information available	
Lower Flammability Limit	No information available	
vapor pressure	No information available	
Vapor Density	No information available	
Specific gravity	No information available	
Water solubility	No information available	
Solubility in Other Solvents	No information available	

Partition coefficient: n-octanol/water	No information available
Autoignition temperature	No information available
decomposition temperature	No information available
Viscosity, kinematic	No information available
Dynamic viscosity	No information available
Explosive properties	No information available
Oxidizing properties	No information available

OTHER INFORMATION

Softening point	No information available
molecular weight	No information available
VOC Content	No information available
density	No information available
Bulk density	No information available

10. Stability and Reactivity

Reactivity
no data available

Chemical stability
Stable under normal conditions. Hazardous polymerisation does not occur.
Possibility of hazardous reactions
None under normal processing.
Hazardous polymerization Hazardous polymerisation does not occur.

Conditions to avoid
Keep away from children.
incompatible materials
Strong oxidizing agents.
Hazardous decomposition products
Oxides of sulfur.

11. Toxicological Information

Information on Likely Routes of Exposure

Product information Ziram 76 DF

Single exposure studies indicate that this material is slightly toxic if swallowed (rat LD50 1,889 mg/kg), practically non-toxic if absorbed through skin (rabbit LD50 >5,000 mg/kg), moderately toxic if inhaled (rat 4 hr LC50 < 0.53 mg/l), severely irritating to rabbit eyes and non-irritatng to rabbit skin. No skin allergy was observed in guinea pigs following repeated exposure.

Inhalation Harmful by inhalation.

Eye contact Causes irreversible eye damage.

Skin contact May be harmful if absorbed through the skin.

Ingestion HARMFUL IF SWALLOWED.

Chemical name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Zinc, bis(dimethylcarbamodithioaot-kappa S, kappaS)-(T-4) 137-30-4	= 267 mg/kg (Rat)	> 2 g/kg (Rabbit)	= 81 mg/m^3 (Rat) 4 h

Information on Toxicological Effects

Symptoms No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

sensitization No information available.
Mutagenic effects No information available.
Carcinogenicity The information below indicates whether any agency has listed any ingredient as a carcinogen.

Chemical name	ACGIH	IARC	NTP	OSHA
Zinc, bis(dimethylcarbamodithioaot-kappaS, kappaS)-(T-4) 137-30-4	-	Group 3		-

Reproductive effects Not Available.
STOT - Single Exposure No information available.
STOT - repeated exposure No information available.
Chronic toxicity Avoid repeated exposure.
Aspiration hazard No information available.

Numerical Measures of Toxicity - Product information

The following values are calculated based on chapter 3.1 of the GHS document .
LD50 Oral 1889 mg/kg (rat)
LD50 Dermal > 5000 mg/kg (rat)
LC50 Inhalation: Inhalation LC50 < 0.53 mg/l

12. Ecological Information

Marine Pollutant.

ecotoxicity

Zirm 76 DF :
Highly toxic to Daphnia magna 48 hr LC50 0.048 mg/L
Bluegill sunfish 96 hr LC50 0.0097 mg/L
Moderatelt oxic to Rainbow trout 96 hr LC50 1.7 mg/L
Bobwhite quail LC50 97 mg/kg
Honeybees LC50 100 ug/bee

3.6% of the mixture consists of components(s) of unknown hazards to the aquatic environment

Persistence/Degradability
No information available.

Bioaccumulation/ Accumulation
Bioaccumulative potential.

Chemical name	Log Pow
Zinc, bis(dimethylcarbamodithioaot-kappaS, kappaS)-(T-4) 137-30-4	1.086

Other Adverse Effects
No information available

13. Disposal Considerations

Waste Treatment Methods

Waste Disposal Method Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide or rinsate is a violation of Federal law. If the wastes cannot be disposed of by use or according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Contaminated packaging Refer to product label.

Chemical name	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
Zinc, bis(dimethylcarbamodithioaot -kappaS, kappaS)-(T-4)	P205	Included in waste stream: K161		

Chemical name	RCRA - Halogenated Organic Compounds	RCRA - P Series Wastes	RCRA - F Series Wastes	RCRA - K Series Wastes
Zinc, bis(dimethylcarbamodithioaot -kappaS, kappaS)-(T-4)		P205		

14. Transport Information

DOT

UN-No	3077
Proper shipping name	Environmentally hazardous substances, solid, n.o.s (Ziram)
Hazard class	9
Packing group	PG III
Reportable Quantity (RQ):	10 lbs
Marine Pollutant	Marine Pollutant.

ICAO

UN-No	UN3077
Proper shipping name	Environmentally hazardous substance, solid, n.o.s (Ziram)
Hazard class	9
Packing group	PG III
Description	Marine Pollutant

IATA

UN-No	3077
Proper shipping name	Environmentally hazardous substances, solid, n.o.s (Ziram)
Hazard class	9
Packing group	PG III
Description	Marine Pollutant

IMDG/IMO

UN-No	3077
Proper shipping name	Environmentally hazardous substances, solid, n.o.s (Ziram)
Hazard class	9
Packing group	PG III
EmS No.	F-A, S-F
Marine Pollutant	Yes

15. Regulatory Information

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

signal word DANGER!

Ventilation Control PESTICIDE APPLICATORS & WORKERS THESE WORKERS MUST REFER TO PRODUCT LABELING AND DIRECTIONS FOR USE IN ACCORDANCE WITH EPA WORKER PROTECTION STANDARD 40 CFR PART 170.

Corrosive. Causes irreversible eye damage. May be fatal if inhaled. Harmful if swallowed or absorbed through the skin. Toxic to fish and aquatic inverebrates.

International Inventories

USINV	Not determined
DSL/NDSL	Not determined
EINECS/ ELINCS	Does not comply
ENCS	Does not comply
China	Does not comply
KECL	Complies
PICCS	Does not comply
AICS	Complies
TSCA	Does not comply

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and and Title 40n of the Code of Federal Regulations, Part 372:

SARA 311/312 Hazardous Categorization

Acute health hazard	yes
Chronic health hazard	yes
Fire hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	yes

Chemical name	RQ	CERCLA EHS RQs	RQ
Zinc, bis(dimethylcarbamodithioaot-kappaS, kappaS)-(T-4) 137-30-4	10 lb		RQ 10 lb final RQ RQ 4.54 kg final RQ

CERCLA

Component	RQ
Zinc, bis(dimethylcarbamodithioaot-kappaS, kappaS)-(T-4) 137-30-4 (76)	10 lb

SARA Product RQ 0

RCRA

Component	RCRA - D Series Wastes	RCRA - P Series Wastes	RCRA - U Series Wastes
Zinc, bis(dimethylcarbamodithioaot-kappaS, kappaS)-(T-4) 137-30-4 (76)		P205	

Pesticide Information

State Regulations

State Right-to-Know

Chemical name	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Zinc, bis(dimethylcarbamodithioaot-kappaS, kappaS)-(T-4)	X	X			

International regulations

U.S. EPA Label information

EPA Pesticide registration number 70506-173

16. Other Information

NFPA **HEALTH** 2 **flammability** 0 **Instability** 0 **Physical hazard** -

Preparation Date 10-May-2015
Revision date 10-May-2015
Revision Summary
Update to GHS format

Disclaimer

CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITYNOTICE: Read the entire Directions for Use and Conditions of Sale and Limitation of Warranty and Liability before buying or using this product. If the terms are not acceptable, return product at once, unopened, and the purchase price will be refunded. It is impossible to eliminate all risks associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as manner of use or application, weather or crop conditions, presence of other materials or other influencing factors in the use of the product, which are beyond the control of United Phosphorus, Inc. or Seller. Handling , storage, and use of the product by Buyer or User are beyond the control of United Phosphorus, Inc. and Seller. All such risks shall be assumed by Buyer and User, and Buyer and User agree to hold United Phosphorus, Inc. harmless from any claims relating to such factors.To the extent consistent with applicable law, United Phosphorus Inc. makes no warranties or merchantability or of fitness for a particular purpose nor any other express or implied warranty except as stated on this label. To the extent consistent with applicable law, United Phosphorust Inc. shall not be liable for any incidental, consequential, indirect, or special damages resulting from the use or handling of this product and THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE EXCLUSIVE LIABILITY OF UNITED PHOSPHORUS INC. FOR ANY AND ALL CLAIMS, LOSSES, INJURIES, OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TOROT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, SHALL BE THE RETURN OF THE PURCHASE PRICE OF THE PRODUCT OR, AT THE ELECTION OF UNITED PHOSPHORUS, INC. THE REPLACEMENT OF THE PRODUCT. United Phosphorus, Inc., offers this product, and Buyer and User accept it, subject to the foregoing conditions of sale and limitations of warranty and of liability, which may not be modified except by written agreement signed by the duly authorized representative of United Phosphorus, Inc.

End of MSDS

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 PRODUCT IDENTIFIER:
TRADE NAME: **INTENSITY® POST-EMERGENCE GRASS HERBICIDE**
1.2 RECOMMENDED USE: FOR POST-EMERGENCE CONTROL OF GRASSES
1.3 SUPPLIER DETAILS:
LOVELAND PRODUCTS, INC.
P.O. Box 1286 • Greeley, CO 80632-1286
1.4 24 Hour Emergency Phone: 1-800-424-9300 - **Medical Emergencies:** 1-866-944-8565
U.S. Coast Guard National Response Center: 1-800-424-8802

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to 29 CFR 1910.1200

Acute Oral toxicity	Category 4	H302
Skin irritation	Category 2	H315
Skin/Dermal Sensitization	Category 1	H317
Eye Irritation	Category 2B	H320
Acute Inhalation Toxicity	Category 4	H332
Carcinogenicity	Category 2	H351

2.2 Label elements

Signal word: WARNING
Hazard Statement:
H302 – Harmful if swallowed.
H315 – Causes skin irritation.
H317 – May cause an allergic skin reaction.
H320 – Causes eye irritation.
H332 – Harmful if inhaled
H351 – Suspected of causing cancer.

Precautionary Statement: (Prevention):
P262 – Do not get in eyes, on skin, or on clothing.
P264 - Wash hands thoroughly after handling.
P271 – Use only outdoors or in a well-ventilated area.
P280 – Wear protective gloves/protective clothing/eye protection/face protection.
P102 – Keep out of reach of children.

Precautionary Statement: (Response):
P305+P351+P338: IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.
P101 – If medical advice is needed, have the product container or label at hand.
P363 – Wash contaminated clothing before reuse.
P391 – Collect spillage.

Precautionary Statement: (Storage):
P402+P234 – Store in a dry place. Keep only in original container.
P405 – Store locked up.

2.3 Other hazards
None known

KEEP OUT OF REACH OF CHILDREN –
Appearance and odor: Amber liquid with mild aromatic odor.
Potential Health effects

Routes of exposure	Eye contact. Skin contact.
Eyes	Causes eye irritation.
Skin	Causes skin irritation.
Inhalation	Harmful if inhaled.
Ingestion	Harmful if swallowed.
Target organs	Eyes.
Signs and symptoms	Causes eye irritation.

Potential environmental effects This product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have harmful or damaging effect on the environment.

3. COMPOSITION, INFORMATION ON INGREDIENTS

3.1 Substances

3.2 Mixtures

Classification according to 29 CFR 1910.1200

Chemical Name:	CAS No.	Classification	Concentration [%]
Clethodim	99129-21-2	Oral tox 4; H302	26.40
*Other ingredients, including	n/a	Skin irrit. 2; H315	73.60
+contains xylene range aromatic solvent	64742-94-5	Skin/dermal sens. 1; H317	
Naphthalene	91-20-3	Eye irrit. 2B; H320 Inh. tox. 4; H332	

*Ingredients not specifically listed are non-hazardous and are to be considered proprietary or confidential business information per 29 CFR 1910.1200(i)

4. FIRST AID MEASURES

4.1 Description of First Aid Measures
General Advice: Get medical attention if symptoms occur.

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
If on skin or clothing: Take of contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
If swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.
If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

4.2 Most Important Symptoms and Effects, Acute and Delayed
Symptoms: Eyes: Causes eye irritation.
Skin: Causes skin irritation.

4.3 Immediate Medical Attention and Special Treatment

Treatment: Treat symptomatically. Symptoms may be delayed.
FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: 1-866-944-8565
Take container, label or product name with you when seeking medical attention.

NOTES TO PHYSICIAN: Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE FIGHTING MEASURES

5.1 EXTINGUISHING MEDIA:
Suitable Extinguishing Media: Dry chemical, carbon dioxide (CO_2), alcohol foam, foam, water spray or fog. Do not use water jet as this will spread the fire.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE:
Specific Hazards During Firefighting: During a fire, hazardous by-products can be released.

5.3 SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS
Special Protective Equipment for Firefighters: Self-contained breathing apparatus and full protective gear should be worn in fighting large fires involving chemicals. Use water spray to keep fire exposed containers cool. Keep people away. Isolate fire and deny unnecessary entry.

6. ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES
Personal Precautions: Avoid inhalation of vapors and spray mist and contact with skin and eyes. Ensure adequate ventilation. Wear suitable protective clothing.

6.2 ENVIRONMENTAL PRECAUTIONS
Environmental Precautions: Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters or rinsate.

6.3 METHODS AND MATERIALS FOR CONTAINMENT AND CLEAN-UP
Methods for Clean-Up: Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. After removal flush contaminated area thoroughly with water.
Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to Remove residual contamination.
Never return spills to original containers for re-use.

7. HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING:
Advice on Safe Handling: Avoid inhalation of mists, vapors / spray and contact with eyes, skin and clothing. Do not breathe mists or vapor. Wear personal protective equipment. Do not use in areas without adequate ventilation. Avoid prolonged exposure. Wash thoroughly after handling. Do not empty into drains. Handle and open container with care. Use care in handling/storage. Wash before eating, drinking and/or smoking.

7.2 CONDITIONS FOR SAFE STORAGE:
Requirements for Storage Areas and Containers: Keep pesticide in original container. Do not put concentrate or dilute into food or drink containers. Store in a cool, dry place. Do not store diluted spray. Do not contaminate water, foodstuffs, feed or seed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 CONTROL PARAMETERS:
OCCUPATIONAL EXPOSURE LIMITS

U.S. Workplace Exposure Level (ACGIH) TLVs

Components	Type	Value
Naphthalene	TLV	52 mg/m^3

U.S. Workplace Exposure Level (OSHA) PELs

Components	Type	Value
Naphthalene	TLV	50 mg/m^3

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Specimen
No listings		

8.2 EXPOSURE CONTROLS:

Engineering Measures

Provide adequate general and local exhaust ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of vapors and spray mists. Provide eyewash station and safety shower.

Individual Protection Measures:

Eye / Face Protection:	Goggles or shielded safety glasses are recommended.
Skin Protection:	Long-sleeved shirt and long pants. Chemical-resistant gloves, such as polyethylene or polyvinylchloride. Shoes plus socks.
Respiratory Protection:	In case of inadequate ventilation or risk of inhalation of mists or vapors, use suitable respiratory equipment such as MSHA/NIOSH approved respirators with NIOSH approved filter media. Wear respiratory protection during operations where spraying or misting occurs. If respirators are used, a program should be in place to assure compliance with 29 CFR 1910.134, the OSHA Respiratory Protection standard. Wear air supplied respiratory protection if exposure concentrations are unknown.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 APPEARANCE : Liquid
ODOR: Mild aromatic.
ODOR THRESHOLD: No data available.
COLOR: Amber.
pH: 4 – 5 (1% solution)
MELTING POINT / FREEZING POINT: No data available
BOILING POINT: No data available
FLASH POINT: 142°F (61.1°C).
FLAMMABILILITY (solid, gas): No data available.
UPPER / LOWER FLAMMABILITY OR EXPLOSIVE LIMITS: No data available.
VAPOR PRESSURE: No data available.
SOLUBILITY: Emulsifies.
PARTITION CO-EFFICIENT, n-OCTANOL / WATER: No data available.
AUTO-IGNITION TEMPERATURE: No data available.
DECOMPOSITION TEMPERATURE: No data available.
VISCOSITY: (kinematic): No data available.
SPECIFIC GRAVITY (Water = 1): 0.96 g/ml
BULK DENSITY: 8.01 lbs./gal / 0.96 kg/L

Note: These physical data are typical values based on material tested but may vary from sample to sample.
Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.

10. STABILITY AND REACTIVITY

10.1 REACTIVITY
Stable

10.2 CHEMICAL STABILITY
Stable under normal temperature conditions. Unstable at extreme pH's, temperatures, and exposure to UV light.

10.3 POSSIBILITY OF HAZARDOUS REACTIONS
No data available. Will not polymerize.

10.4 CONDITIONS TO AVOID
Excessive heat and sources of ignition.

10.5 INCOMPATIBILE MATERIALS
Strong oxidizers.

10.6 HAZARDOUS DECOMPOSITION PRODUCTS
Oxides of carbon, oxides of nitrogen and sulfur may be formed in a fire situation.

11 TOXICOLOGICAL INFORMATION

11.3 LIKELY ROUTES OF EXPOSURE
Eye contact. Skin contact. Ingestion.
LC_{50} (rat): >2 mg/L (4 HR)
LD_{50} Oral (rat): > 2,000 mg/kg
LD_{50} Dermal (rabbit): > 5,000 mg/kg
Acute Toxicity Estimates: No data available
Skin Irritation (rabbit): Causes moderate skin irritation.
Eye Irritation (rabbit): Causes moderate eye irritation
Specific Target Organ Toxicity: Single exposure: No data available.
Aspiration: No data available
Skin Sensitization (guinea pig): Sensitizer
Carcinogenicity: Reasonable Anticipated To Be A Human Carcinogen (Naphthalene)
Germ Cell Mutagenicity: No data available
Interactive Effects: None known

12 ECOLOGICAL INFORMATION

12.3 ECOTOXICITY

The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Ecotoxicological Data

	Species	Test Results
Clethodim	Rainbow trout	56 mg/L – 96-hour LC_{50}
	Bluegill	>100 mg/L – 96-hour LC_{50}
	Daphnia magna	>100 mg/L – 48-hour EC_{50}
	Bee	>100 µ/bee – Contact LD_{50}

Drift or runoff may adversely affect non-target plants.
Do not apply directly to water.
Do not contaminate water when disposing of equipment wash water.
Do not apply when weather conditions favor drift from target area.

12.2 PERSISTENCE AND DEGRADABILITY

Biodegradability: No data available

12.3 BIOACCUMULATIVE POTENTIAL

Bioaccumulation: No data available.

12.4 MOBILITY IN SOIL

No data available.

12.5 OTHER ADVERSE EFFECTS

Assessment: No data available.

13 DISPOSAL CONSIDERATIONS

13.1 WASTE TREATMENT METHODS

Wastes may be disposed of on site or at an approved waste disposal facility. Triple rinse (or equivalent), adding rinse water to spray tank. Offer container for recycling or dispose of in a sanitary landfill or by other procedures approved by appropriate authorities. Recycling decontaminated containers is the best option of container disposal. The Agricultural Container Recycling Council (ACRC) operates the national recycling program. To contact your state and local ACRC recycler visit the ACRC web page at http://www.acrecycle.org/. Do not contaminate water, food or feed by storage or disposal.

14 TRANSPORT INFORMATION

14.3 LAND TRANSPORT

DOT Shipping Description: 119 GALLONS AND LESS: NOT REGULATED BY DOT
DOT Shipping Description: GREATER THAN 119 GALLONS: NA1993, COMBUSTIBLE LIQUID, N.O.S. (NAPHTHALENE), III, ERG GUIDE 128
U.S. Surface Freight Classification: COMPOUND, TREE OR WEED KILLING, NOI (NMFC 50320, SUB 2: CLASS: 60)

15 REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS

NFPA & HMIS Hazard Ratings:

NFPA				HMIS	
2	Health	0	Least	2	Health
0	Flammability	1	Slight	0	Flammability
0	Instability	2	Moderate	0	Reactivity
		3	High	B	PPE
		4	Severe		

SARA Hazard Notification/Reporting
SARA Title III Hazard Category:

Immediate	Y	Fire	N	Sudden Release of Pressure	N
Delayed	Y	Reactive	N		

Reportable Quantity (RQ) under U.S. CERCLA: Naphthalene (CAS: 91-20-3) 100 lbs.
SARA, Title III, Section 313: Naphthalene (CAS: 91-20-3) 5-7%; 1,2,4 Trimethylbenzene (CAS: 95-63-6) 2-3%
RCRA Waste Code: Naphthalene – U165
CA Proposition 65: WARNING: This product contains chemicals known to the State of California to cause cancer or birth defects or other reproductive harm.

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

WARNING
Causes substantial but temporary eye irritation.
Avoid contact with skin.
Do not get in eyes, on skin, or on clothing.
Harmful if swallowed or inhaled.
Avoid breathing spray vapors or spray mist.
Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

16 OTHER INFORMATION

SDS STATUS: Format revised.

PREPARED BY: Registrations and Regulatory Affairs

REVIEWED BY: Environmental Health and Safety

EPA REG. NO.: 34704-864

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FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300

CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

FORMULATED FOR:

LOVELAND PRODUCTS, INC.
P.O. Box 1286 • Greeley, CO 80632-1286

24-Hour Emergency Phone: 1-800-424-9300
Medical Emergencies: 1-866-944-8565
U.S. Coast Guard National Response Center: 1-800-424-8802

PRODUCT NAME: INTENSITY® ONE POST-EMERGENCE GRASS HERBICIDE®
CHEMICAL NAME: Clethodim; (E)-2-[1-[(3-chloro-2-propenyl)oxy]limino]propyl]-5-[2-(ethylthio)propyl]-3-hydroxy-2-cyclohexen-1-one
CHEMICAL FAMILY: Cyclohexanedione Herbicide
EPA REG. NO.: 34704-976
MSDS Number: 000976-13-LPI **MSDS Revisions:** Sections 8, 13 and 15 **Date of Issue:** 05/01/13 **Supersedes:** 09/09/09

2. HAZARDS IDENTIFICATION SUMMARY

KEEP OUT OF REACH OF CHILDREN – CAUTION – Causes moderate eye irritation. Avoid contact with eyes, skin or clothing. Prolonged or frequently repeated skin contact may cause allergic reaction in some individuals. Harmful if swallowed.

This product is a light yellow liquid with mild aromatic odor. Primary routes of entry are Inhalation, eye contact and skin contact.

3. COMPOSITION, INFORMATION ON INGREDIENTS

Chemical Ingredients:	Percentage by Weight:	CAS No.	TLV (Units)
Clethodim	12.60	99129-21-2	not listed
Other Ingredients*	87.40		
*contains xylene range aromatic solvent+		64742-94-5	
+contains Naphthalene		91-20-3	10 ppm

This product is hazardous according to the OSHA Hazard Communication Standard (29 CFR 1910.1200)

4. FIRST AID MEASURES

In eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for further treatment advice.

If swallowed: Immediately call poison control center or doctor. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give any liquid to the person. Do not give anything by mouth to an unconscious person.

If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a poison control center or doctor for treatment advice.

FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: 1-866-944-8565. Have the product label or container with you when calling a poison control center or doctor, or going for treatment.

NOTE TO PHYSICIAN: Ingestion of this product or subsequent vomiting can result in aspiration of light hydrocarbon liquid, which can cause pneumonitis. If ingested, probable mucosal damage may contraindicate the use of gastric lavage.

5. FIRE FIGHTING MEASURES

FLASH POINT (°F/Test Method): >150°F / >65.55°C (Setaflash Closed Cup)
FLAMMABLE LIMITS (LFL & UFL): Not established
EXTINGUISHING MEDIA: Use medium appropriate to surrounding fire. Foam, dry chemical, carbon dioxide, and water fog.
HAZARDOUS COMBUSTION PRODUCTS: Carbon dioxide. Water vapor will emit oxides of nitrogen and sulfur. Incomplete combustion may produce carbon monoxide and toxic compounds of chlorine.
SPECIAL FIRE FIGHTING PROCEDURES: Remain upwind. Avoid breathing smoke. Wear self-contained breathing apparatus and full protective gear.
UNUSUAL FIRE AND EXPLOSION HAZARDS: Fire hazard increases as liquid temperature rises above 85°F (29.4°C) Explosive mixtures can form at temperatures at or above flashpoint. Can burn in fire, releasing irritating and toxic gases due to thermal decomposition or combustion. If water is used to fight fire or cool containers, dike to prevent runoff and contamination of municipal sewers and waterways.

6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:
Stop leak if possible without risk. Dike and contain spilled material. Absorb spill with inert material, such as pet litter, dry sand, or earth, then place in a chemical waste container. Wash area with soap and water. Absorb and pick up wash liquid and place in a chemical waste container. When exposed to water this material will form an emulsion.
CAUTION: Keep spills and cleaning runoff out of municipal sewers and open bodies of water.

7. HANDLING AND STORAGE

HANDLING: Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

STORAGE: Keep pesticide in original container. Do not put concentrate or dilute into food or drink containers. Store in cool, dry place. Do not store diluted spray. Do not use or store near heat or open flame. Do not contaminate water, food, or feed by storage or disposal.

Personal Protective Equipment (PPE): Applicators and other handlers must wear: Long-sleeved shirt and long pants, chemical-resistant gloves such as barrier laminate or Viton® >14mils, shoes plus socks, protective eyewear, goggles, face shield or safety glasses. **Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.** Follow manufacturer's instructions for cleaning and maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets with requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40CFR 170.240 (d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS. Facilities storing or utilizing this product should be equipped with an eyewash facility and a safety shower.

RESPIRATORY PROTECTION: Not normally required, if vapors or mists exceed acceptable levels, wear a MSHA/NIOSH approved respirator, if necessary.

EYE PROTECTION: Chemical goggles or shielded safety glasses.

SKIN PROTECTION: Wear protective clothing as dictated by workplace conditions: long-sleeved shirts and pants, shoes plus socks. Wear chemical-resistant gloves.

	OSHA PEL 8 hr TWA	ACGIH TLV-TWA
Naphthalene	10 ppm/50 mg/m^3	10 ppm/52 mg/m^3 (Skin)

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR: Light yellow liquid with mild aromatic odor
SPECIFIC GRAVITY (Water = 1): 0.941 g/ml
BULK DENSITY: 7.85 lbs/gal
SOLUBILITY: Emulsifies
VAPOR PRESSURE: Not established
BOILING POINT: Not established
pH: 4 - 5 (1% emulsion)
PERCENT VOLATILE (by volume): Not established
EVAPORATION RATE: Not established

Note: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.

10. STABILITY AND REACTIVITY

STABILITY: Unstable at extreme pH's, temperature and upon exposure to oxygen or UV light.
CONDITIONS TO AVOID: Avoid temperatures above 90°F (32.2°C), exposure to air, or direct sunlight. Keep containers sealed to avoid exposure to air.
INCOMPATIBILITY: May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
HAZARDOUS DECOMPOSITION PRODUCTS: Will emit oxides of hydrogen, nitrogen, and sulfur in a fire situation.
HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION

Acute Oral LD_{50} (female rat): >5,000 mg/kg
Acute Dermal LD_{50} (rat): >5,000 mg/kg
Eye Irritation (rabbit): Moderate eye irritant (similar product)
Skin Irritation (rabbit): Moderate skin irritant (similar product)
Inhalation LC_{50} (rat): >2.11 mg/L (4 HR) (similar product)
Skin Sensitization (guinea pig): Sensitizer
Carcinogenic Potential: None listed in OSHA, NTP, IARC or ACGIH

12. ECOLOGICAL INFORMATION

Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not apply where runoff is likely to occur. Do not apply where weather conditions favor drift from areas treated. Do not contaminate water when disposing of equipment wash water or rinsate. The use of this product may pose a hazard to the federally designated endangered species of Solano Grass and Wild Rice. Use of this product is prohibited in the following areas where the species are known to exist: Solano Grass: Solano County, California: the vernal lakes area bounded by the Union Pacific Railroad and Hastings Road to the north, Highway 113 to the east, Highway 12 to the south, and Travis Air Force Base to the west. Wild Rice: Hays County, Texas.

13. DISPOSAL CONSIDERATIONS

ESTICIDE DISPOSAL: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.
CONTAINER DISPOSAL: Non-refillable container. Do not reuse this container to hold materials other than pesticides or dilute pesticides (rinsate). After emptying and cleaning, it may be allowable to temporarily hold rinsate or other pesticide-related materials in the container. Contact your state regulatory agency to determine allowable practices in your state. Once cleaned, some agricultural plastic pesticide containers can be taken to a container collection site or picked up for recycling. To find the nearest site, contact your chemical dealer or manufacturer, or contact The Agricultural Container Recycling Council (ACRC) at www.acrecycle.org. Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **For packages up to 5 gallons: Triple rinse as follows:** Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. **Pressure rinse as follows:** Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip. **For packages greater than 5 gallons and less than 56 gallons: Triple rinse as follows:** Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. **Pressure rinse as follows:** Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip. **For refillable containers:** Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times Do not contaminate water, food, or feed by storage or disposal.

14. TRANSPORT INFORMATION

DOT Shipping Description: 119 GALLONS AND LESS: NOT REGULATED BY DOT
DOT Shipping Description: GREATER THAN 119 GALLONS: NA1993, COMBUSTIBLE LIQUID, N.O.S. (NAPHTHALENE), III, ERG GUIDE 128
U.S. Surface Freight Classification: COMPOUND, TREE OR WEED KILLING, NOI (NMFC 50320, SUB 2: CLASS: 60)

Consult appropriate ICAO/IATA and IMDG regulations for shipment requirements in the Air and Maritime shipping modes.

15. REGULATORY INFORMATION

NFPA & HMIS Hazard Ratings:

NFPA			HMIS	
1	Health	0 Least	1	Health
2	Flammability	1 Slight	2	Flammability
0	Instability	2 Moderate	0	Reactivity
		3 High	B	PPE
		4 Severe		

SARA Hazard Notification/Reporting
SARA Title III Hazard Category:

Immediate	Y	Fire	Y	Sudden Release of Pressure	N
Delayed	Y	Reactive	N		

Reportable Quantity (RQ) under U.S. CERCLA: Naphthalene (CAS: 91-20-3) 100 lbs.; Glycol Ethers 1 lb.
SARA, Title III, Section 313: Naphthalene (CAS: 91-20-3); 1,2,4 Trimethylbenzene* (CAS: 95-63-6); Glycol Ethers
RCRA Waste Code: Naphthalene – U165
CA Proposition 65: WARNING: This product contains chemicals known to the State of California to cause cancer or birth defects or other reproductive harm.

CAUTION – This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals.

16. OTHER INFORMATION

MSDS STATUS: Sections 8, 13 and 15 revised

PREPARED BY: Registrations and Regulatory Affairs **REVIEWED BY:** Environmental Health and Safety

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Safety Data Sheet

DuPont™ Kocide® 2000 Fungicide/Bactericide

Version 2.0

Revision Date 05/28/2015 Ref. 130000000296

This SDS adheres to the standards and regulatory requirements of the United States and may not meet the regulatory requirements in other countries.

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	DuPont™ Kocide® 2000 Fungicide/Bactericide
Tradename/Synonym	:	B11486799 DPX-GFJ52 35WG Kocide WDG Kocide WG Kocide 53.8 DF Kocide 53.8 WDG Kocide Blue Extra Kocide 35 DF Kocide 35 WG Coprantol Ultramicron K53WDG KDOS CuPro Oxford 2000 Ekoram 2000 Kocide 2000 35WG
Product Grade/Type	:	Cu 35%
Restrictions on use	:	Do not use product for anything outside of the above specified uses
Manufacturer/Supplier	:	DuPont 4417 Lancaster Pike Wilmington, DE 19805, USA
Product Information	:	1-800-441-7515 (outside the U.S. 1-302-774-1000)
Medical Emergency	:	1-800-441-3637 (outside the U.S. 1-302-774-1139)
Transport Emergency	:	CHEMTREC: +1-800-424-9300 (outside the U.S. +1-703-527-3887)

SECTION 2. HAZARDS IDENTIFICATION

Product hazard category

Acute toxicity (Oral) Category 4

Acute toxicity (Inhalation)	Category 4
Serious eye damage/eye irritation	Category 2A

Label content

Pictogram :

Signal word : Warning

Hazardous warnings : Harmful if swallowed or if inhaled
Causes serious eye irritation.

Hazardous prevention measures : Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Wear eye protection/ face protection.
IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Call a POISON CENTER or doctor/ physician if you feel unwell.
Rinse mouth.
If eye irritation persists: Get medical advice/ attention.
Dispose of contents/ container to an approved waste disposal plant.

Other hazards

If you mill or grind this product you may change its toxicological properties.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Concentration
Copper Hydroxide	20427-59-2	53.8 %
Clay		5 - 10 %
2-Propenoic Acid, Homopolymer		1 - 5 %
Phosphate Salt		5 - 10 %
Other Ingredients		20.7 - 35.7 %

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

SECTION 4. FIRST AID MEASURES

General advice : Have the product container or label with you when calling a poison control center or doctor, or going for treatment.
For medical emergencies involving this product, call toll free 1-800-441-3637.
See Label for Additional Precautions and Directions for Use.

Inhalation : Move to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a poison control center or doctor for treatment advice.

Skin contact	:	Take off all contaminated clothing immediately. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
Eye contact	:	Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
Ingestion	:	Call a poison control center or doctor for treatment advice. Have person sip a glass of water if able to swallow. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Do not give anything by mouth to an unconscious person.
Most important symptoms/effects, acute and delayed	:	No applicable data available.
Protection of first-aiders	:	No applicable data available.
Notes to physician	:	Probable mucosal damage may contraindicate the use of gastric lavage.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Water spray, Dry chemical, Foam, Carbon dioxide (CO2)
Unsuitable extinguishing media	:	High volume water jet, (contamination risk)
Specific hazards	:	No applicable data available.
Special protective equipment for firefighters	:	In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment.
Further information	:	If area is heavily exposed to fire and if conditions permit, let fire burn itself out since water may increase the area contaminated. Cool containers/tanks with water spray. Do not allow run-off from fire fighting to enter drains or water courses.

SECTION 6. ACCIDENTAL RELEASE MEASURES

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Safeguards (Personnel)	:	Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus. Use personal protective equipment.
Environmental precautions	:	Prevent material from entering sewers, waterways, or low areas.
Spill Cleanup	:	Clean-up methods - large spillage Prevent further leakage or spillage. Use approved industrial vacuum cleaner for removal. Shovel into suitable container for disposal. Clean-up methods - small spillage Sweep up or vacuum up spillage and collect in suitable container for disposal.
Accidental Release Measures	:	No applicable data available.

SECTION 7. HANDLING AND STORAGE

Handling (Personnel)	:	Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove clothing/PPE immediately if material gets inside. Wash thoroughly and put on clean clothing. Remove personal protective equipment immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.
Handling (Physical Aspects)	:	Keep away from heat and sources of ignition.
Dust explosion class	:	St1
Storage	:	Do not contaminate water, other pesticides, fertilizer, food or feed in storage. Store in original container. Store in a cool, dry place. Keep out of the reach of children.
Storage period	:	No applicable data available.
Storage temperature	:	No applicable data available.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls : Use only with adequate ventilation.

Personal protective equipment

Eye protection : Goggles, face shield, or safety glasses.

Skin and body protection : Mixers, loaders, applicators and other handlers must wear:
Long sleeved shirt and long pants
Chemical resistant gloves made of any waterproof material, such as polyvinyl chloride, nitrile rubber, or butyl rubber
Shoes plus socks
Protective eyewear
PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:
Long sleeved shirt and long pants
Chemical resistant gloves made of any waterproof material, such as polyvinyl chloride, nitrile rubber, or butyl rubber
Shoes plus socks
Protective eyewear

Protective measures : Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry. Use this product in accordance with its label.

Exposure Guidelines

Exposure Limit Values

Copper dihydroxide

TLV	(ACGIH)	0.2 mg/m3	TWA Fume. as Cu
TLV	(ACGIH)	1 mg/m3	TWA Dust and mist. as Cu
AEL *	(DUPONT)	1.5 mg/m3	8 & 12 hr. TWA

Bentonite

No applicable data available.

Polyacrylic Acid

No applicable data available.

Tetrasodium pyrophosphate
No applicable data available.

Other Ingredients
No applicable data available.

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	: solid
Form	: solid, granular
Color	: blue
Odor	: characteristic copper odor
Odor threshold	: not determined
pH	: 8.6
Melting point/range	: No applicable data available.
Boiling point/boiling range	: No applicable data available.
Flash point	: Not applicable
Evaporation rate	: No applicable data available.
Flammability (solid, gas)	: Does not sustain combustion.
Upper explosion limit	: No applicable data available.
Lower explosion limit	: No applicable data available.
Vapour Pressure	: No applicable data available.
Vapour density	: No applicable data available.

Density	:	1.0417 g/cm3
Specific gravity (Relative density)	:	No applicable data available.
Water solubility	:	0.0029 g/l
Solubility(ies)	:	No applicable data available.
Partition coefficient: n-octanol/water	:	No applicable data available.
Auto-ignition temperature	:	340 °C Auto-ignition temperature
Decomposition temperature	:	No applicable data available.
Viscosity, kinematic	:	No applicable data available.
Viscosity, dynamic	:	No applicable data available.
Oxidising Substance	:	The product is not oxidizing.

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	No applicable data available.
Chemical stability	:	Stable at normal temperatures and storage conditions.
Possibility of hazardous reactions	:	No applicable data available.
Conditions to avoid	:	Temperature > 140 °C (> 284 °F) Avoid extreme heat.
Incompatible materials	:	No applicable data available.
Hazardous decomposition products	:	Copper oxides

SECTION 11. TOXICOLOGICAL INFORMATION

DuPont™ Kocide® 2000 Fungicide/Bactericide

Inhalation 4 h LC50 : 1.311 mg/l , Rat

Dermal LD50	:	> 5,000 mg/kg , Rabbit
Oral LD50	:	1,346 mg/kg , Rat
Skin irritation	:	No skin irritation, Rabbit
Eye irritation	:	Irritating to eyes., Rabbit
Sensitisation	:	Animal test did not cause sensitization by skin contact., Guinea pig

Copper Hydroxide

Repeated dose toxicity :

No toxicological effects warranting significant target organ toxicity classification were seen below the recommended guidance values for classification., The following effects occurred at levels of exposure that significantly exceed those expected under labeled usage conditions.

Oral
Rat
-
Liver effects, Kidney effects, microcytic anemia

Information given is based on data obtained from similar substances.

Oral - feed
Rat
-
Spleen effects

Information given is based on data obtained from similar substances.

Carcinogenicity : Not classifiable as a human carcinogen.
Animal testing did not show any carcinogenic effects.
Information given is based on data obtained from similar substances.

Mutagenicity : Weight of evidence does not support classification as a germ cell mutagen.
Information given is based on data obtained from similar substances.

Reproductive toxicity : No toxicity to reproduction
Animal testing did not show any effects on fertility.

Information given is based on data obtained from similar substances.

Teratogenicity : The following effects occurred at levels of exposure that significantly exceed those expected under labeled usage conditions.
Animal testing showed effects on embryo-fetal development at levels equal to or above those causing maternal toxicity.

2-Propenoic Acid, Homopolymer

Repeated dose toxicity : Ingestion
Rat
- 28 d
NOAEL: 1,136 mg/kg
No toxicologically significant effects were found., Information given is based on data obtained from similar substances.

Mutagenicity : Animal testing did not show any mutagenic effects.
Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

Reproductive toxicity : No toxicity to reproduction
Animal testing showed no reproductive toxicity.

Teratogenicity : Animal testing showed no developmental toxicity.
Information given is based on data obtained from similar substances.

Phosphate Salt

Repeated dose toxicity : Ingestion
Rat
-
NOAEL: 500 mg/kgMethod: OECD Test Guideline 408
No toxicologically significant effects were found.

Mutagenicity : Did not cause genetic damage in cultured bacterial cells.

Carcinogenicity

The carcinogenicity classifications for this product and/or its ingredients have been determined according to HazCom 2012, Appendix A.6. The classifications may differ from those listed in the National Toxicology Program (NTP) Report on Carcinogens (latest edition) or those found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest edition).

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, or OSHA, as a carcinogen.

SECTION 12. ECOLOGICAL INFORMATION

Aquatic Toxicity

DuPont™ Kocide® 2000 Fungicide/Bactericide

96 h LC50	:	Oncorhynchus mykiss (rainbow trout) 4.79 mg/l
72 h ErC50	:	Pseudokirchneriella subcapitata (green algae) 18.03 mg/l
48 h EC50	:	Daphnia (water flea) 1.61 mg/l
21 d NOEC	:	Daphnia magna (Water flea) 0.0025 mg/l OECD Test Guideline 211 (Data on the product itself) Information source: Internal study report

Copper Hydroxide

90 d	:	NOEC 0.0017 mg/l

Propenoic Acid, Homopolymer

28 d	:	NOEC Danio rerio (zebra fish) > 450 mg/l OECD Test Guideline 204 Information given is based on data obtained from similar substances.

Environmental Fate

2-Propenoic Acid, Homopolymer

Biodegradability	:	Not rapidly biodegradable Information given is based on data obtained from similar substances.
Bioaccumulation	:	Bioaccumulation is unlikely. Information given is based on data obtained from similar substances.
Additional ecological information	:	Environmental Hazards: For Terrestrial Uses: Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters or rinsate. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas. See product label for additional application instructions relating to environmental precautions.

SECTION 13. DISPOSAL CONSIDERATIONS

Waste disposal methods - : Do not contaminate water, food or feed by disposal. Pesticide wastes are

Product		acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.
Waste disposal methods - Container	:	Container Refilling and Disposal: Refer to the product label for instructions. Do not transport if this container is damaged or leaking. In the event of a major spill, fire or other emergency, call 1-800-441-3637 day or night.
Contaminated packaging	:	No applicable data available.

SECTION 14. TRANSPORT INFORMATION

IATA_C	UN number	:	3077
	Proper shipping name	:	Environmentally hazardous substance, solid, n.o.s. (Copper hydroxide)
	Class	:	9
	Packing group	:	III
	Labelling No.	:	9MI
IMDG	UN number	:	3077
	Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Copper hydroxide)
	Class	:	9
	Packing group	:	III
	Labelling No.	:	9
	Marine pollutant	:	yes (Copper hydroxide)

Not regulated by DOT/49 CFR unless shipped in bulk package or by water.

SECTION 15. REGULATORY INFORMATION

Other regulations	:	This Safety Data Sheet is for a pesticide product registered by the US Environmental Protection Agency (USEPA) and is therefore also subject to certain labeling requirements under US pesticide law (FIFRA). These requirements differ from the classification criteria and hazard information required by OSHA for safety data sheets, and for workplace labels of non-pesticide chemicals. The following is the mandatory hazard information required by USEPA on the pesticide label: Warning Causes substantial but temporary eye damage. Harmful if swallowed, inhaled or absorbed through skin. Do not get in eyes, on skin, or on clothing. Avoid breathing dust. This product is toxic to fish. This product is toxic to: Aquatic invertebrates
SARA 313 Regulated Chemical(s)	:	Copper Hydroxide
PA Right to Know Regulated Chemical(s)	:	Substances on the Pennsylvania Hazardous Substances List present at a concentration of 1% or more (0.01% for Special Hazardous Substances): Limestone, Tetrasodium pyrophosphate, Quartz, Disodium hydrogenorthophosphate
Title III hazard classification	:	Acute Health Hazard: Yes Chronic Health Hazard: No Fire: No Reactivity/Physical hazard: No Pressure: No
EPA Reg. No.	:	352-656 In the United States this product is regulated by the US Environmental Protection Agency (EPA) under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Read and follow all label directions. This product is excluded from listing requirements under EPA/TSCA.
California Prop. 65	:	WARNING! This product contains a chemical or chemicals known to the State of California to cause cancer. WARNING! This product contains a chemical or chemicals known to the State of California to cause birth defects or other reproductive harm.

SECTION 16. OTHER INFORMATION

		NFPA
Health	:	2
Flammability	:	1
Reactivity/Physical hazard	:	0

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Revision Date : 05/28/2015

Contact person : DuPont Crop Protection, Wilmington, DE, 19898, Phone: 1-888-638-7668

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Significant change from previous version is denoted with a double bar.

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product identifier	
Trade name	FLINT® FUNGICIDE
Product code (UVP)	06351867
SDS Number	102000011560
EPA Registration No.	264-777
Relevant identified uses of the substance or mixture and uses advised against	
Use	Fungicide
Restrictions on use	See product label for restrictions.
Information on manufacturer	
	Bayer CropScience 2 T.W. Alexander Drive Research Triangle PK, NC 27709 United States
Emergency Telephone Number (24hr/ 7 days)	1-800-334-7577
Product Information Telephone Number	1-866-99BAYER (1-866-992-2937)
SDS Information or Request	SDSINFO.BCS-NA@bayer.com

SECTION 2: HAZARDS IDENTIFICATION

Classification in accordance with regulation HCS 29CFR §1910.1200
Acute toxicity (Inhalation): Category 4
Eye irritation : Category 2B
Skin sensitisation : Category 1B

Signal word: Warning

Hazard statements
Harmful if inhaled.
Causes eye irritation.
May cause an allergic skin reaction.

Precautionary statements
Avoid breathing dust, mist, spray.
Use only outdoors or in a well-ventilated area.

Wash thoroughly after handling.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
Call a POISON CENTER or doctor/ physician if you feel unwell.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.
IF ON SKIN: Wash with plenty of soap and water.
If skin irritation or rash occurs: Get medical advice/attention.
Specific treatment (see supplemental first aid instructions on this label).
Wash contaminated clothing before reuse.
Dispose of contents/container in accordance with local regulation.

Other hazards
No other hazards known.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Component Name	CAS-No.	Average % by Weight
Trifloxystrobin	141517-21-7	50.00
Diatomaceaous earth	61790-53-2	10.00

SECTION 4: FIRST AID MEASURES

Description of first aid measures

General advice When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.

Inhalation Move to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a physician or poison control center immediately.

Skin contact Take off contaminated clothing and shoes immediately. Wash off immediately with plenty of water for at least 15 minutes. Call a physician or poison control center immediately.

Eye contact Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a physician or poison control center immediately.

Ingestion Call a physician or poison control center immediately. Rinse out mouth and give water in small sips to drink. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person. Do not leave victim unattended.

Most important symptoms and effects, both acute and delayed

Symptoms	To date no symptoms are known.

Indication of any immediate medical attention and special treatment needed

Treatment	Appropriate supportive and symptomatic treatment as indicated by the patient's condition is recommended. There is no specific antidote.

SECTION 5: FIREFIGHTING MEASURES

Extinguishing media	
Suitable	Dry chemical, Foam, Carbon dioxide (CO2), Water
Unsuitable	None known.
Special hazards arising from the substance or mixture	In the event of fire the following may be released:, Hydrogen cyanide (hydrocyanic acid), Hydrogen fluoride, Carbon monoxide (CO), Nitrogen oxides (NOx)
Advice for firefighters	
Special protective equipment for fire-fighters	Firefighters should wear NIOSH approved self-contained breathing apparatus and full protective clothing.
Further information	Evacuate personnel to safe areas. Avoid contact with spilled product or contaminated surfaces. Contain the spread of the fire-fighting media. Keep out of smoke. Do not allow run-off from fire fighting to enter drains or water courses. After fire is extinguished, do not turn on any ignition source until the area is determined to be free from explosion or fire hazard.
Flash point	not applicable
Autoignition temperature	320 °C / 608 °F
Lower explosion limit	not applicable
Upper explosion limit	not applicable
Explosivity	no data available
Dust explosion class	no data available

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Precautions
Keep unauthorized people away. Isolate hazard area. Avoid contact with spilled product or contaminated surfaces. Use personal protective equipment.

Methods and materials for containment and cleaning up

Methods for cleaning up
Avoid dust formation. Sweep up or vacuum up spillage and collect in suitable container for disposal. Collect and transfer the product into a properly labelled and tightly closed container. Decontaminate tools and equipment following cleanup. Clean contaminated floors and objects thoroughly, observing environmental regulations. Contaminated soil may have to be removed and disposed.

Additional advice
Do not allow to enter soil, waterways or waste water canal.

Reference to other sections
Information regarding safe handling, see section 7.
Information regarding personal protective equipment, see section 8.
Information regarding waste disposal, see section 13.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling
Handle and open container in a manner as to prevent spillage. Avoid contact with skin, eyes and clothing. Maintain exposure levels below the exposure limit through the use of general and local exhaust ventilation.

Advice on protection against fire and explosion
Keep away from heat and sources of ignition.

Hygiene measures
Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics.
Remove Personal Protective Equipment (PPE) immediately after handling this product. Remove soiled clothing immediately and clean thoroughly before using again. Wash thoroughly and put on clean clothing.

Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers
Store in a cool, dry place and in such a manner as to prevent cross contamination with other crop protection products, fertilizers, food, and feed. Store in original container. Store in a place accessible by authorized persons only.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Components	CAS-No.	Control parameters	Update	Basis

Trifloxystrobin	141517-21-7	2.7 mg/m3 (TWA)		OES BCS*
Diatomaceaous earth	61790-53-2	6 mg/m3 (TWA)	1989	OSHA Z1A
Diatomaceaous earth (Respirable dust.)	61790-53-2	3 mg/m3 (TWA PEL)	09 2006	US CA OEL
Diatomaceaous earth (Total dust.)	61790-53-2	6 mg/m3 (TWA PEL)	09 2006	US CA OEL
Diatomaceaous earth	61790-53-2	6 mg/m3 (TWA PEL)	09 2006	US CA OEL
Diatomaceaous earth (Particulate.)	61790-53-2	27ug/m3 (ST ESL)	07 2011	TX ESL
Diatomaceaous earth (Particulate.)	61790-53-2	40ug/m3 (ST ESL)	07 2011	TX ESL
Diatomaceaous earth (Particulate.)	61790-53-2	2ug/m3 (AN ESL)	07 2011	TX ESL
Diatomaceaous earth (Particulate.)	61790-53-2	4ug/m3 (AN ESL)	07 2011	TX ESL
Diatomaceaous earth	61790-53-2	6 mg/m3 (TWA)	1989	OSHA Z1A
Diatomaceaous earth	61790-53-2	6 mg/m3 (TWA)	06 2008	TN OEL
Diatomaceaous earth (Total dust.)	61790-53-2	6 mg/m3 (TWA PEL)	08 2010	US CA OEL
Diatomaceaous earth (Respirable dust.)	61790-53-2	3 mg/m3 (TWA PEL)	08 2010	US CA OEL
Diatomaceaous earth	61790-53-2	6 mg/m3 (TWA PEL)	08 2010	US CA OEL
Diatomaceaous earth	61790-53-2	2ug/m3 (AN ESL)	03 2012	TX ESL
Diatomaceaous earth	61790-53-2	4ug/m3 (AN ESL)	03 2012	TX ESL
Diatomaceaous earth	61790-53-2	27ug/m3 (ST ESL)	03 2012	TX ESL
Diatomaceaous earth	61790-53-2	40ug/m3 (ST ESL)	03 2012	TX ESL
Sodium sulphate	7757-82-6	10 mg/m3 (TWA)		OES BCS*
Sodium sulphate (Particulate.)	7757-82-6	50ug/m3 (ST ESL)	02 2013	TX ESL
Sodium sulphate (Particulate.)	7757-82-6	5ug/m3 (AN ESL)	02 2013	TX ESL

*OES BCS: Internal Bayer CropScience "Occupational Exposure Standard"

Exposure controls

Personal protective equipment
In normal use and handling conditions please refer to the label and/or leaflet. In all other cases the following recommendations would apply.

Respiratory protection	When respirators are required, select NIOSH approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industry recommendations.
Hand protection	Chemical resistant nitrile rubber gloves
Eye protection	Safety glasses with side-shields
Skin and body protection	Wear long-sleeved shirt and long pants and shoes plus socks. Coveralls
General protective measures	Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and warm/tepid water. Keep and wash PPE separately from other laundry.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	brown
Physical State	water-dispersible granules
Odor	none
Odour Threshold	no data available
pH	9 - 11 at 1 % dispersion in water
Vapor Pressure	no data available
Vapor Density (Air = 1)	no data available
Bulk density	27 - 32 lb/ft³
Evapouration rate	not applicable
Boiling Point	no data available
Melting / Freezing Point	not applicable
Water solubility	dispersible
Minimum Ignition Energy	no data available
Decomposition temperature	no data available
Partition coefficient: n-octanol/water	no data available
Viscosity	not applicable
Flash point	not applicable

Autoignition temperature	320 °C / 608 °F
Lower explosion limit	not applicable
Upper explosion limit	not applicable
Explosivity	no data available
Dust explosion class	no data available

SECTION 10: STABILITY AND REACTIVITY

Reactivity	
Thermal decomposition	no data available
Chemical stability	Stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	no data available
Incompatible materials	no data available
Hazardous decomposition products	No decomposition products expected under normal conditions of use.

SECTION 11: TOXICOLOGICAL INFORMATION

Exposure routes	Eye contact, Skin contact, Skin Absorption, Inhalation
Immediate Effects	
Eye	May cause mild irritation to eyes.
Skin	May cause slight irritation. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Harmful if absorbed through skin.

Information on toxicological effects

Acute oral toxicity	LD50 (rat) > 5,050 mg/kg
Acute inhalation toxicity	LC50 (rat) > 2.7 mg/l Exposure time: 4 h Determined in the form of dust. LC50 (rat) > 10.8 mg/l Exposure time: 1 h Determined in the form of dust. Extrapolated from the 4 hr LC50.
Acute dermal toxicity	LD50 (rat) > 2,000 mg/kg

Skin irritation	Slight irritation (rabbit)
Eye irritation	Mild eye irritation. (rabbit)
Sensitisation	Sensitising (guinea pig) Sensitising (mouse) OECD Test Guideline 429, local lymph node assay (LLNA)

Assessment repeated dose toxicity

Trifloxystrobin did not cause specific target organ toxicity in experimental animal studies.

Assessment Mutagenicity

Trifloxystrobin was not mutagenic or genotoxic in a battery of in vitro and in vivo tests.

Assessment Carcinogenicity

Trifloxystrobin was not carcinogenic in lifetime feeding studies in rats and mice.

ACGIH

None.

NTP

None.

OSHA

None.

Assessment toxicity to reproduction

Trifloxystrobin caused reproduction toxicity in a two-generation study in rats only at dose levels also toxic to the parent animals. The reproduction toxicity seen with Trifloxystrobin is related to parental toxicity.

Assessment developmental toxicity

Trifloxystrobin caused developmental toxicity only at dose levels toxic to the dams. The developmental effects seen with Trifloxystrobin are related to maternal toxicity.

Further information

Only acute toxicity studies have been performed on the formulated product.
The non-acute information pertains to the active ingredient(s).

SECTION 12: ECOLOGICAL INFORMATION

Toxicity to fish	LC50 (Rainbow trout (Oncorhynchus mykiss)) 0.015 mg/l Exposure time: 96 h The value mentioned relates to the active ingredient trifloxystrobin.
Toxicity to aquatic invertebrates	EC50 (Water flea (Daphnia magna)) 0.016 mg/l Exposure time: 48 h The value mentioned relates to the active ingredient trifloxystrobin.
Toxicity to aquatic plants	IC50 (Desmodesmus subspicatus) 0.0053 mg/l

	Growth rate; Exposure time: 72 h The value mentioned relates to the active ingredient trifloxystrobin.
Biodegradability	Trifloxystrobin: ; not rapidly biodegradable
Koc	Trifloxystrobin: Koc: 2377
Bioaccumulation	Trifloxystrobin: Bioconcentration factor (BCF) 431; Does not bioaccumulate.
Mobility in soil	Trifloxystrobin: Slightly mobile in soils
Environmental precautions	Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate surface or ground water by cleaning equipment or disposal of wastes, including equipment wash water. Do not apply when weather conditions favor runoff or drift.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods

Product	Dispose in accordance with all local, state/provincial and federal regulations. Follow container label instructions for disposal of wastes generated during use in compliance with the product label. It is best to use all of the product in accordance with label directions. If it is necessary to dispose of unused product, please follow container label instructions and applicable local guidelines.
Contaminated packaging	Do not re-use empty containers. Triple rinse containers. Puncture container to avoid re-use. Consult state and local regulations regarding the proper disposal of container. Follow advice on product label and/or leaflet.
RCRA Information	Characterization and proper disposal of this material as a special or hazardous waste is dependent upon Federal, State and local laws and are the user's responsibility. RCRA classification may apply.

SECTION 14: TRANSPORT INFORMATION

49CFR	Not dangerous goods / not hazardous material
IMDG	
UN number	**3077**
Class	9
Packaging group	III
Marine pollutant	YES
Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.

(TRIFLOXYSTROBIN MIXTURE)

IATA

UN number	**3077**
Class	9
Packaging group	III
Environm. Hazardous Mark	YES
Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (TRIFLOXYSTROBIN MIXTURE)

This transportation information is not intended to convey all specific regulatory information relating to this product. It does not address regulatory variations due to package size or special transportation requirements.

Freight Classification: INSECTICIDES OR FUNGICIDES, N.O.I., OTHER THAN POISON

SECTION 15: REGULATORY INFORMATION

EPA Registration No. 264-777
US Federal Regulations
TSCA list
Diatomaceaous earth 61790-53-2
US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)
None.
SARA Title III - Section 302 - Notification and Information
None.
SARA Title III - Section 313 - Toxic Chemical Release Reporting
None.
US States Regulatory Reporting
CA Prop65
This product does not contain any substances known to the State of California to cause cancer.

This product does not contain any substances known to the State of California to cause reproductive harm.

US State Right-To-Know Ingredients
Diatomaceaous earth 61790-53-2 IL, MN

Canadian Regulations
Canadian Domestic Substance List
None.

Environmental
CERCLA
None.
Clean Water Section 307 Priority Pollutants
None.
Safe Drinking Water Act Maximum Contaminant Levels

None.

EPA/FIFRA Information:
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information required on the pesticide label:

Signal word:	Caution!
Hazard statements:	Causes eye irritation. Harmful if absorbed through skin. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Avoid contact with skin, eyes and clothing. Wash thoroughly with soap and water after handling.

SECTION 16: OTHER INFORMATION

NFPA 704 (National Fire Protection Association):
Health - 1 Flammability - 1 Instability - 0 Others - none

HMIS (Hazardous Materials Identification System, based on the Third Edition Ratings Guide)
Health - 1 Flammability - 1 Physical Hazard - 0 PPE -

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

Reason for Revision: Revised according to the current OSHA Hazard Communication Standard (29CFR1910.1200)

Revision Date: 03/13/2014

This information is provided in good faith but without express or implied warranty. The customer assumes all responsibility for safety and use not in accordance with label instructions. The product names are registered trademarks of Bayer.

Dow AgroSciences

SAFETY DATA SHEET
DOW AGROSCIENCES LLC

Product name: TRELLIS™ SC Herbicide

Issue Date: 05/18/2015
Print Date: 06/09/2015

DOW AGROSCIENCES LLC encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: TRELLIS™ SC Herbicide

Recommended use of the chemical and restrictions on use
Identified uses: End use herbicide product

COMPANY IDENTIFICATION
DOW AGROSCIENCES LLC
9330 ZIONSVILLE RD
INDIANAPOLIS IN 46268-1053
UNITED STATES

Customer Information Number: 800-992-5994
info@dow.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 800-992-5994
Local Emergency Contact: 352-323-3500

2. HAZARDS IDENTIFICATION

Hazard classification
This material is not hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.

Other hazards
no data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a mixture.

Component	CASRN	Concentration
Isoxaben	82558-50-7	45.45%

Propylene glycol	57-55-6	4.5%
Ethanol	64-17-5	0.2%
Balance	Not available	49.85%

4. FIRST AID MEASURES

Description of first aid measures
General advice: If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice.

Skin contact: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Eye contact: Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice.

Ingestion: No emergency medical treatment necessary.

Most important symptoms and effects, both acute and delayed: Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed
Notes to physician: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam.

Unsuitable extinguishing media: no data available

Special hazards arising from the substance or mixture
Hazardous combustion products: Under fire conditions some components of this product may decompose. The smoke may contain unidentified toxic and/or irritating compounds. Combustion products may include and are not limited to: Nitrogen oxides. Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: This material will not burn until the water has evaporated. Residue can burn. If exposed to fire from another source and water is evaporated, exposure to high temperatures may cause toxic fumes.

Advice for firefighters
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. Spills or discharge to natural waterways is likely to kill aquatic organisms.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling: Keep out of reach of children. Do not swallow. Avoid contact with eyes, skin, and clothing. Avoid breathing vapor or mist. Wash thoroughly after handling. Use with adequate ventilation. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage: Store in a dry place. Store in original container. Keep container tightly closed when not in use. Do not store near food, foodstuffs, drugs or potable water supplies.

Storage stability

Storage temperature:	**Shelf life: Use within**
0 - 30 °C (32 - 86 °F)	24 Month

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Propylene glycol	US WEEL	TWA	10 mg/m3

Ethanol	ACGIH	TWA	1,000 ppm
	ACGIH	STEL	1,000 ppm
	OSHA Z-1	TWA	1,900 mg/m3 1,000 ppm

RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.

Exposure controls
Engineering controls: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations.

Individual protection measures

Eye/face protection: Use safety glasses (with side shields).

Skin protection

Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Examples of preferred glove barrier materials include: Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Wear clean, body-covering clothing.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator.
The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	Suspension
Color	White
Odor	Odorless
Odor Threshold	No test data available
pH	7.7 1% *pH Electrode* (1% aqueous suspension)
Melting point/range	Not applicable
Freezing point	No test data available
Boiling point (760 mmHg)	> 100 °C (> 212 °F)
Flash point	**closed cup** > 100 °C (> 212 °F)
Evaporation Rate (Butyl Acetate = 1)	No test data available

Flammability (solid, gas)	No
Lower explosion limit	No test data available
Upper explosion limit	No test data available
Vapor Pressure	Not applicable
Relative Vapor Density (air = 1)	No test data available
Relative Density (water = 1)	1.09 at 20 °C (68 °F) / 4 °C
Water solubility	No test data available
Partition coefficient: n-octanol/water	no data available
Auto-ignition temperature	> 400 °C (> 752 °F) *Unspecified*
Decomposition temperature	No test data available
Kinematic Viscosity	Not applicable
Explosive properties	Not explosive
Oxidizing properties	No significant increase (>5C) in temperature.
Molecular weight	no data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: No dangerous reaction known under conditions of normal use.

Chemical stability: Thermally stable at typical use temperatures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Active ingredient decomposes at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible materials: None known.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Carbon monoxide. Carbon dioxide. Nitrogen oxides. Toxic gases are released during decomposition.

11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Acute toxicity

Acute oral toxicity

Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

As product:
LD50, Rat, > 5,000 mg/kg No deaths occurred at this concentration.

Acute dermal toxicity
Prolonged skin contact is unlikely to result in absorption of harmful amounts.

As product:
LD50, Rat, > 5,000 mg/kg No deaths occurred at this concentration.

Acute inhalation toxicity
No adverse effects are anticipated from inhalation. Based on the available data, respiratory irritation was not observed.

As product:
LC50, Rat, male and female, dust/mist, > 5.71 mg/l No deaths occurred at this concentration.

Skin corrosion/irritation
Brief contact is essentially nonirritating to skin.

Serious eye damage/eye irritation
Essentially nonirritating to eyes.

Sensitization
For similar material(s):
Did not demonstrate the potential for contact allergy in mice.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)
Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Specific Target Organ Systemic Toxicity (Repeated Exposure)
For the active ingredient(s):
In animals, effects have been reported on the following organs:
Liver.
Kidney.

Carcinogenicity
For the active ingredient(s): An increase in nonmalignant liver tumors was observed with isoxaben in one of two species tested.

Teratogenicity
For the active ingredient(s): Has caused birth defects in laboratory animals only at doses toxic to the mother.

Reproductive toxicity
For the active ingredient(s): In animal studies, has been shown to interfere with reproduction in females. Effects have been seen only at doses that produced significant toxicity to the parent animals.

Mutagenicity
For the active ingredient(s): In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were predominantly negative.

Aspiration Hazard
Based on physical properties, not likely to be an aspiration hazard.

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

Toxicity

Acute toxicity to fish
Material is very highly toxic to aquatic organisms on an acute basis (LC50/EC50 <0.1 mg/L in the most sensitive species).

LC50, Oncorhynchus mykiss (rainbow trout), flow-through test, 96 Hour, > 200 mg/l, OECD Test Guideline 203

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), static test, 48 Hour, 544 mg/l, OECD Test Guideline 202

Acute toxicity to algae/aquatic plants
ErC50, Desmodesmus subspicatus (green algae), static test, 72 Hour, Growth rate inhibition, 60.21 mg/l, OECD Test Guideline 201

EbC50, Lemna minor (duckweed), static test, 14 d, Biomass, 0.044 mg/l

Chronic aquatic toxicity
Chronic toxicity to fish
Information refers to the main component.
NOEC, Pimephales promelas (fathead minnow), semi-static test, 33 d, growth, 0.4 mg/l

Chronic toxicity to aquatic invertebrates
Information refers to the main component.
NOEC, Daphnia magna (Water flea), semi-static test, 21 d, growth, 0.69 mg/l

Toxicity to Above Ground Organisms
contact LD50, Apis mellifera (bees), 48 Hour, > 100micrograms/bee

oral LD50, Apis mellifera (bees), 48 Hour, > 100micrograms/bee

Toxicity to soil-dwelling organisms
LC50, Eisenia fetida (earthworms), 14 d, mortality, > 1,000 mg/kg

Persistence and degradability

Isoxaben

Biodegradability: Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability. Biodegradation rate may increase in soil and/or water with acclimation.

Theoretical Oxygen Demand: 1.98 mg/mg

Chemical Oxygen Demand: 1.77 mg/g

Stability in Water (1/2-life)
Hydrolysis, half-life, > 5 d, pH 7.0

Photodegradation
Test Type: Half-life (direct photolysis)
Method: Measured
Photodegradation
Test Type: Half-life (direct photolysis)
Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 0.628 Hour
Method: Estimated.

Propylene glycol

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Biodegradation may occur under anaerobic conditions (in the absence of oxygen).
10-day Window: Pass
Biodegradation: 81 %
Exposure time: 28 d
Method: OECD Test Guideline 301F or Equivalent
10-day Window: Not applicable
Biodegradation: 96 %
Exposure time: 64 d
Method: OECD Test Guideline 306 or Equivalent

Theoretical Oxygen Demand: 1.68 mg/mg

Chemical Oxygen Demand: 1.53 mg/mg

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	69.000 %
10 d	70.000 %
20 d	86.000 %

Photodegradation
Atmospheric half-life: 10 Hour
Method: Estimated.

Ethanol

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Pass
Biodegradation: > 70 %
Exposure time: 5 d
Method: OECD Test Guideline 301D or Equivalent

Theoretical Oxygen Demand: 2.08 mg/mg

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals

Atmospheric half-life: 2.99 d
Method: Estimated.

Balance
Biodegradability: No relevant data found.

Bioaccumulative potential

Isoxaben
Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): 2.64 Measured

Propylene glycol
Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): -1.07 Measured
Bioconcentration factor (BCF): 0.09 Estimated.

Ethanol
Bioaccumulation: Bioaccumulation is unlikely. Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): -0.31 Measured

Balance
Bioaccumulation: No relevant data found.

Mobility in soil

Isoxaben
Potential for mobility in soil is low (Koc between 500 and 2000).
Partition coefficient(Koc): 700 - 1290

Propylene glycol
Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.
Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient(Koc): < 1 Estimated.

Ethanol
Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient(Koc): 1.0 Estimated.

Balance
No relevant data found.

13. DISPOSAL CONSIDERATIONS

Disposal methods: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal

methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

14. TRANSPORT INFORMATION

DOT

Not regulated for transport

Classification for SEA transport (IMO-IMDG):

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(Isoxaben)
UN number	UN 3082
Class	9
Packing group	III
Marine pollutant	Isoxaben
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Proper shipping name	Environmentally hazardous substance, liquid, n.o.s.(Isoxaben)
UN number	UN 3082
Class	9
Packing group	III

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

OSHA Hazard Communication Standard
This product is not a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312
Acute Health Hazard
Chronic Health Hazard

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

Pennsylvania (Worker and Community Right-To-KnowAct): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:
The following product components are cited in the Pennsylvania Hazardous Substance List and/or the Pennsylvania Environmental Substance List, and are present at levels which require reporting.

Components	CASRN
Propylene glycol	57-55-6

Pennsylvania (Worker and Community Right-To-KnowAct): Pennsylvania Special Hazardous Substances List:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

United States TSCA Inventory (TSCA)
This product contains chemical substance(s) exempt from U.S. EPA TSCA Inventory requirements. It is regulated as a pesticide subject to Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requirements.

Federal Insecticide, Fungicide and Rodenticide Act
EPA Registration Number: 62719-659
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

CAUTION

Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

16. OTHER INFORMATION

Hazard Rating System
NFPA

Health	Fire	Reactivity
0	1	0

Revision
Identification Number: 101200104 / A211 / Issue Date: 05/18/2015 / Version: 2.0
DAS Code: EAF-496
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

ACGIH	USA. ACGIH Threshold Limit Values (TLV)
OSHA Z-1	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
STEL	Short-term exposure limit
TWA	8-hour, time-weighted average
US WEEL	USA. Workplace Environmental Exposure Levels (WEEL)

Information Source and References

This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

DOW AGROSCIENCES LLC urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

Safety Data Sheet

syngenta®

BRAVO WeatherStik®

Date: 5/13/2016
places: 6/9/2015

1. PRODUCT IDENTIFICATION

Product identifier on label: **BRAVO WeatherStik®**
Product No.: A12531B
Use: Fungicide
Manufacturer: Syngenta Crop Protection, LLC
Post Office Box 18300
Greensboro NC 27419

Manufacturer Phone: 1-800-334-9481

Emergency Phone: 1-800-888-8372

2. HAZARDS IDENTIFICATION

Classifications:
Oral: Category 4
Inhalation: Category 3
Skin Sensitizer: Category 1B
Carcinogenicity: Category 2
Specific Target Organ Toxicity: Respiratory Irritation Category 3

Signal Word (OSHA): Danger

Hazard Statements:
Harmful if swallowed
May cause an allergic skin reaction
Toxic if inhaled
May cause respiratory irritation
Suspected of causing cancer

Hazard Symbols:

Precautionary Statements:
Wash hands and face thoroughly after handling.
Do not eat, drink or smoke when using this product.
If swallowed: Call a poison center, doctor or Syngenta if you feel unwell. Rinse mouth.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing must not be allowed out of the workplace.
Wear protective gloves, protective clothing, eye protection.
If on skin: Wash with plenty of soap and water.
If skin irritation or rash occurs: Get medical advice.

If inhaled: Remove person to fresh air and keep comfortable for breathing.

If exposed or concerned: Get medical advice/attention.

Call a poison center, doctor or Syngenta if you feel unwell.

See Section 4 First Aid Measures.

Wash contaminated clothing before reuse.

Store locked up.

Dispose of contents and container in accordance with local regulations.

Other Hazard Statements: None

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Common Name	CAS Number	Concentration
1,2-Propanediol	Propylene Glycol	57-55-6	Trade Secret
Silica, amorphous	Silica, amorphous	112926-00-8	Trade Secret
Other ingredients	Other ingredients	Trade Secret	46.0%
Tetrachloroisophthalonitrile	Chlorothalonil	1897-45-6	54.0%

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.

4. FIRST AID MEASURES

Have the product container, label or Safety Data Sheet with you when calling Syngenta (800-888-8372), a poison control center or doctor, or going for treatment.

Ingestion: If swallowed: Call Syngenta (800-888-8372), a poison control center or doctor immediately for treatment advice. Do not give any liquid to the person. Do not induce vomiting unless told to do so after calling 800-888-8372 or by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

Eye Contact: If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.

Skin Contact: If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.

Inhalation: If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call Syngenta (800-888-8372), a poison control center or doctor for further treatment advice.

Most important symptoms/effects:

Allergic skin reaction

Respiratory irritation

Indication of immediate medical attention and special treatment needed:

There is no specific antidote if this product is ingested.

Treat symptomatically.

Persons suffering a temporary allergic reaction may respond to treatment with antihistamines or steroid creams and/or systemic steroids.

5. FIRE FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media:

Use dry chemical, foam or CO2 extinguishing media. If water is used to fight fire, dike and collect runoff.

Specific Hazards:

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

Special protective equipment and precautions for firefighters:

Wear full protective clothing and self-contained breathing apparatus. Evacuate nonessential personnel from the area to prevent human exposure to fire, smoke, fumes or products of combustion.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures:

Follow exposure controls/personal protection outlined in Section 8.

Methods and materials for containment and cleaning up:

Control the spill at its source. Contain the spill to prevent from spreading or contaminating soil or from entering sewage and drainage systems or any body of water. Clean up spills immediately, observing precautions outlined in Section 8. Cover entire spill with absorbing material and place into compatible disposal container. Scrub area with hard water detergent (e.g. commercial products such as Tide, Joy, Spic and Span). Pick up wash liquid with additional absorbent and place into compatible disposal container. Once all material is cleaned up and placed in a disposal container, seal container and arrange for disposition.

7. HANDLING AND STORAGE

Precautions for safe handling:

Store the material in a well-ventilated, secure area out of reach of children and domestic animals. Do not store food, beverages or tobacco products in the storage area. Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

Conditions for safe storage, including any incompatibilities:

Store locked up.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION AND PACKAGING OF THIS PRODUCT.

FOR COMMERCIAL APPLICATIONS AND/OR ON-FARM APPLICATIONS CONSULT THE PRODUCT LABEL.

Occupational Exposure Limits:

Chemical Name	OSHA PEL	ACGIH TLV	Other	Source
Propylene Glycol	Not Established	Not Established	10 mg/m³ TWA	AIHA
Silica, amorphous	80 mg/m³/% SiO2 TWA	Not Established	6 mg/m³ TWA	NIOSH
Other ingredients	Not Established	Not Established	Not Established	Not Applicable
Chlorothalonil	Not Established	Not Established	0.1 mg/m³ TWA	Syngenta

Appropriate engineering controls:

Use effective engineering controls to comply with occupational exposure limits (if applicable).

Individual protection measures:

Ingestion:

Prevent eating, drinking, tobacco usage and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

Eye Contact:

Where eye contact is likely, use chemical splash goggles. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

Skin Contact:

Where contact is likely, wear chemical-resistant gloves (such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, polyvinyl chloride [PVC] or Viton), coveralls, socks and chemical-resistant footwear.

Inhalation:

A respirator is not normally required when handling this substance. Use effective engineering controls to comply with occupational exposure limits.

In case of emergency spills, use a NIOSH approved respirator with any N, R, P or HE filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Light gray liquid

Odor: Slight

Odor Threshold: Not Available

pH: 6.5 - 8.5

Melting point/freezing point: Not Applicable

Initial boiling point and boiling range: 212 °F

Flash Point (Test Method): Not Applicable

Flammable Limits (% in Air): Not Available

Flammability: Not Applicable

Vapor Pressure: Chlorothalonil 0.00000057mmHg @ 77°F (25°C)

Vapor Density: Not Available

Relative Density: 1.34 g/ml (water = 1)

Solubility (ies): Chlorothalonil 0.81 mg/l @ 77°F (25°C)

Partition coefficient: n-octanol/water: Not Available

Autoignition Temperature: Not Applicable

Decomposition Temperature: Not Available

Viscosity: Not Available

Other: None

10. STABILITY AND REACTIVITY

Reactivity: Not reactive.

Chemical stability: Stable under normal use and storage conditions.

Possibility of hazardous reactions: Material is not known to polymerize.

Conditions to Avoid: None known.

Incompatible materials: None known.

Hazardous Decomposition Products: None.

11. TOXICOLOGICAL INFORMATION

Health effects information

Likely routes of exposure: Dermal, Inhalation

Symptoms of exposure: Respiratory irritation

Delayed, immediate and chronic effects of exposure: Possible carcinogenicity, Allergic skin reaction, Respiratory system effects

Numerical measures of toxicity (acute toxicity/irritation studies (finished product))

Ingestion:	Oral (LD50 Female Rat) :	2000 mg/kg body weight
Dermal:	Dermal (LD50 Rat) :	> 2000 mg/kg body weight
Inhalation:	Inhalation (LC50 Rat) :	> 0.704 mg/l air - 4 hours
Eye Contact:	Moderately Irritating (Rabbit)	
Skin Contact:	Mildly Irritating (Rabbit)	
Skin Sensitization:	A skin sensitizer.	

Reproductive/Developmental Effects

Chlorothalonil: Did not show reproductive toxicity effects in animal experiments. Did not show teratogenic effects in animal experiments.

Chronic/Subchronic Toxicity Studies

Chlorothalonil: In dogs, 1 year administration caused a significant decrease in body weight gain and increases in absolute liver and kidney weights.

Neurotoxicity: No evidence in regulatory studies.

Carcinogenicity

Chlorothalonil: Chlorothalonil causes kidney tumors in rats and mice via a nongentoxic mode of action secondary to target organ toxicity.
Did not show mutagenic effects in animal experiments.
IARC identifies chlorothalonil as a 2B carcinogen (possibly carcinogenic to humans).

Chemical Name	NTP/IARC/OSHA Carcinogen
1,2-Propanediol	No
Silica, amorphous	IARC Group 3
Other ingredients	No
Tetrachloroisophthalonitrile	IARC Group 2B

Other Toxicity Information

Studies on rats and mice have suggested that technical chlorothalonil (97%), when fed at high levels in the diet, may

have oncogenic potential to these laboratory animals. However, neither chlorothalonil nor its metabolites interact with DNA and thus are not mutagenic. Tumor formation has been related to a non-genotoxic mechanism of action for which threshold levels have been established in rats and mice. Comprehensive dietary and worker exposure studies have shown exposure levels for humans to be well below these threshold levels. In addition, surveillance of chlorothalonil plant workers for over twenty years has not demonstrated any increase in oncogenic potential to humans.

Additional Toxicity Information:
May cause irritation of the gastrointestinal tract following ingestion of large amounts.

Mildly irritating to skin. Material rarely causes an allergic reaction.

May be irritating to the respiratory tract. This is rarely observed.

Material is not readily absorbed through intact skin.

Toxicity of Other Components

Other ingredients

Not Established

Propylene Glycol

Reported to cause central nervous system depression (anesthesia, dizziness, confusion), headache and nausea. Also, eye irritation may occur with lacrimation but no residual discomfort or injury. Prolonged contact to skin may cause mild to moderate irritation and possible allergic reactions. Chronic dietary exposure caused kidney and liver injury in experimental animals.

Silica, amorphous

Dusts in high concentrations may cause skin, eye and respiratory tract irritation.

Target Organs

Active Ingredients

Chlorothalonil:	Lung, kidney

Inert Ingredients

Other ingredients:	Not Established
Propylene Glycol:	CNS, kidney, liver
Silica, amorphous:	Skin, eye, respiratory tract

12. ECOLOGICAL INFORMATION

Eco-Acute Toxicity

Chlorothalonil:

Green Algae 5-day EC50 190 ppb

Bird (Mallard Duck) LD50 Oral > 4640 mg/kg

Invertebrate (Water Flea) 48-hour EC50 70 ppb

Fish (Rainbow Trout) 96-hour LC50 47 ppb

Environmental Fate

Chlorothalonil:

The information presented here is for the active ingredient, chlorothalonil.
Low bioaccumulation potential. Not persistent in soil or water. Low mobility in soil. Sinks in water (after 24 h).

13. DISPOSAL CONSIDERATIONS

Disposal:

Do not reuse product containers. Dispose of product containers, waste containers, and residues according to local, state, and federal health and environmental regulations.

Characteristic Waste: Not Applicable

Listed Waste: Not Applicable

14. TRANSPORT INFORMATION

DOT Classification

Ground Transport - NAFTA
Non-Bulk: Not regulated
Tank Truck:
Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S. (Chlorothalonil), Marine Pollutant
Hazard Class or Division: Class 9
Identification Number: UN 3082
Packing Group: PG III

Comments

Water Transport - International
Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S. (Chlorothalonil), Marine Pollutant
Hazard Class or Division: Class 9
Identification Number: UN 3082
Packing Group: PG III

Air Transport
Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S. (Chlorothalonil)
Hazard Class or Division: Class 9
Identification Number: UN 3082
Packing Group: PG III

15. REGULATORY INFORMATION

Pesticide Registration:

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

Caution: Harmful if swallowed, absorbed through skin, or inhaled. Causes moderate eye irritation. Avoid contact with skin, eye, or clothing. Avoid breathing spray mist. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

EPA Registration Number(s):

50534-188-100

EPCRA SARA Title III Classification:

Section 311/312 Hazard Classes:	Acute Health Hazard Chronic Health Hazard
Section 313 Toxic Chemicals:	Chlorothalonil 54.0% (CAS No. 1897-45-6)

California Proposition 65:

This product contains a chemical known to the State of California to cause cancer.

CERCLA/SARA 304 Reportable Quantity (RQ):

None

RCRA Hazardous Waste Classification (40 CFR 261):

Not Applicable

TSCA Status:

Exempt from TSCA, subject to FIFRA

16. OTHER INFORMATION

NFPA Hazard Ratings		HMIS Hazard Ratings	
Health:	2	Health:	2
Flammability:	1	Flammability:	1
Instability:	0	Reactivity:	0

0	Minimal
1	Slight
2	Moderate
3	Serious
4	Extreme
*	Chronic

Syngenta Hazard Category: D,S

For non-emergency questions about this product call:

1-800-334-9481

Original Issued Date: 1/8/2001

Revision Date: 5/13/2016 Replaces: 6/9/2015

Section(s) Revised: 11

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.

Safety Data Sheet

Issue Date: 24-May-2013 **Revision Date:** 16-Oct-2015 **Version** 2

1. IDENTIFICATION

Product Identifier

Product Name **Parazone 3SL**

Other means of identification

SDS # MANA-006

Registration Number(s) EPA Reg. No. 66222-130

UN/ID No UN2922

Recommended use of the chemical and restrictions on use

Recommended Use EPA registered pesticide.

Details of the supplier of the safety data sheet

Manufacturer Address

Makhteshim Agan of North America, Inc.
3120 Highwoods Blvd., Suite 100
Raleigh, NC 27604
1-919-256-9300

Emergency Telephone Number

Emergency Telephone (24 hr) For fire, spill and/or leak contact INFOTRAC:
1-800-535-5053 (North America) 1-352-323-3500 (International)
For medical emergencies and health/safety inquiries, contact PROSAR:
1-877-250-9291

2. HAZARDS IDENTIFICATION

This chemical is a product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-EPA registered chemicals. Please see Section 15 for additional EPA information.

Appearance Dark green liquid **Physical State** Liquid **Odor** Strong Pungent

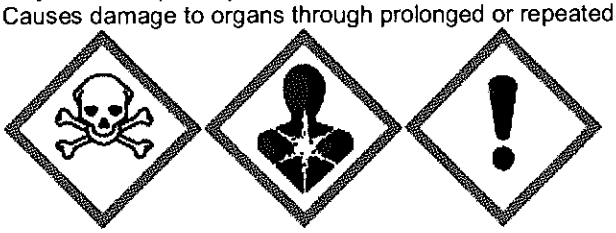
Classification

Acute toxicity - Oral	Category 3
Acute toxicity - Inhalation (Dusts/Mists)	Category 1
Skin corrosion/irritation	Category 1 Sub-category C
Serious eye damage/eye irritation	Category 1
Specific target organ toxicity (single exposure)	Category 3
Specific target organ toxicity (repeated exposure)	Category 1

Signal Word

Danger

Hazard Statements
Toxic if swallowed
Fatal if inhaled
Causes severe skin burns and eye damage
May cause respiratory irritation. May cause drowsiness or dizziness
Causes damage to organs through prolonged or repeated exposure



Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Wear protective gloves/protective clothing/eye protection/face protection
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wear respiratory protection

Precautionary Statements - Response
Immediately call a poison center or doctor/physician
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Immediately call a poison center or doctor/physician
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
Call a poison center or doctor/physician if you feel unwell
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Immediately call a poison center or doctor/physician
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
Rinse mouth
Do not induce vomiting

Precautionary Statements - Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Other Hazards
Very toxic to aquatic life with long lasting effects

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No	Weight-%
Paraquat	1910-42-5	42.49 - 45.11

If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. FIRST-AID MEASURES

First Aid Measures

General Advice When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor/physician.

Skin Contact IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. Call a poison center or doctor/physician if you feel unwell.

Inhalation If inhaled remove to fresh air. Give oxygen if breathing is difficult. If breathing has stopped, call 911, give artificial respiration. Immediately call a physician.

Ingestion Immediately call a poison center or doctor/physician. DO NOT induce vomiting. If conscious, drink 8-10 oz. of water promptly. Never give anything by mouth to an unconscious person. Obtain medical attention. Do not induce vomiting unless directed by medical personnel.

Most important symptoms and effects

Symptoms Causes severe skin burns and eye damage. Will irritate mucous membranes. May cause drowsiness or dizziness. May cause skin redness, irritation or swelling. Ingestion may cause severe burns to mouth, throat or stomach.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically. Consider: gastric lavage with protected airway, administration of activated charcoal.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Water spray (fog). Dry chemical. Foam. Carbon dioxide (CO_2). Foam or dry chemical systems are preferred to prevent environmental damage from excessive water runoff.

Unsuitable Extinguishing Media Not determined.

Specific Hazards Arising from the Chemical

Toxic fumes may be given off when material is exposed to fire.

Hazardous Combustion Products Carbon monoxide. Carbon dioxide (CO_2). Chlorine gas. Hydrogen chloride. Traces of phosgene upon pyrolysis. Nitrogen oxides (NO_x). Ammonia. Combustion may release noxious or toxic vapors.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Evacuate area of unprotected personnel. Remain upwind of fire to avoid hazardous vapors and decomposition products. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Wear protective clothing as described in Section 8 of this safety data sheet. Isolate hazard area. Keep unnecessary and unprotected personnel from entering.

Environmental Precautions Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. See Section 13: DISPOSAL CONSIDERATIONS.

Methods and material for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for Clean-Up For small spills, absorb with sand, clay, or other inert absorbent. Place in appropriate containers for disposal. For large spills: recover free product. Dike for later disposal. Absorb with inert material, and then place in suitable container for chemical waste.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Use personal protection recommended in Section 8. Do not breathe dust/fume/gas/mist/vapors/spray. Wash face, hands, and any exposed skin thoroughly after handling. Do not contaminate water, food or feed by storage, disposal or by cleaning equipment. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep container tightly closed and store in a cool, dry and well-ventilated place. Keep out of the reach of children. Store away from incompatible materials. Protect from excessive heat. Store locked up. Keep/store only in original container. Do not transport or store below 0 C/ 32 F.

Incompatible Materials 10% permanganate solutions and iron powder.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Paraquat 1910-42-5	-	TWA: 0.5 mg/m^3 respirable dust (vacated) TWA: 0.1 mg/m^3 respirable dust Paraquat (vacated) S* Paraquat S*	IDLH: 1 mg/m^3 TWA: 0.1 mg/m^3 respirable dust

Appropriate engineering controls

Engineering Controls Please refer to the product label. Use only with adequate ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures, such as personal protective equipment

Eye/Face Protection	Use splash goggles or face shield when contact may occur.
Skin and Body Protection	Wear chemical-resistant gloves, footwear, and protective clothing appropriate for the risk of exposure. Viton or other impervious gloves are required. Long sleeve shirt, trousers, and safety shoes.
Respiratory Protection	Ensure adequate ventilation, especially in confined areas. Wear an appropriate NIOSH/MSHA approved respirator if ventilation is inadequate.
General Hygiene Considerations	Wash hands before eating, drinking, smoking and using the toilet. Remove contaminated clothing promptly and wash thoroughly before reused. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning and maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Liquid		
Appearance	Dark green liquid	**Odor**	Strong Pungent
Color	Dark green	**Odor Threshold**	Not determined

Property	Values	Remarks • Method
pH	3.0 - 4.0	
Melting Point/Freezing Point	Not determined	
Boiling Point/Boiling Range	Not determined	
Flash Point	> 100 °C / > 212 °F	
Evaporation Rate	Not determined	
Flammability (Solid, Gas)	Liquid-not applicable	
Upper Flammability Limits	Not applicable	
Lower Flammability Limit	Not applicable	
Vapor Pressure	Not determined	
Vapor Density	Not determined	
Specific Gravity	Not determined	
Water Solubility	Miscible in water	
Solubility in other solvents	Not determined	
Partition Coefficient	Not determined	
Auto-ignition Temperature	>625 °C / 1157 °F	
Decomposition Temperature	Not determined	
Kinematic Viscosity	Not determined	
Dynamic Viscosity	3.65 @ 20°C; 2.44 @ 40°C centistokes	
Explosive Properties	Not determined	
Oxidizing Properties	Not determined	
Bulk Density	1.135 lb/gal	

10. STABILITY AND REACTIVITY

Reactivity

Not reactive under normal conditions.

Chemical Stability

Stable under recommended storage conditions.

Possibility of Hazardous Reactions

None under normal processing.

Hazardous Polymerization Not known to occur.

Conditions to Avoid

Elevated temperatures. Avoid temperatures below 0°C/ 32°F.

Incompatible Materials

10% permanganate solutions and iron powder.

Hazardous Decomposition Products

Carbon monoxide. Carbon dioxide (CO2). Chlorine gas. Hydrogen chloride. Traces of phosgene upon pyrolysis. Nitrogen oxides (NOx). Ammonia. Thermal decomposition can lead to release of irritating and toxic gases and vapors.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Eye Contact	Causes severe eye damage.
Skin Contact	Causes severe skin burns.
Inhalation	Fatal if inhaled.
Ingestion	Toxic if swallowed.

Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Paraquat 1910-42-5	= 57 mg/kg (Rat)	= 80 mg/kg (Rat) = 325 mg/kg (Rabbit)	-

Information on physical, chemical and toxicological effects

Symptoms	Please see section 4 of this SDS for symptoms.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Carcinogenicity	Not classifiable as a human carcinogen.
STOT - single exposure	May cause respiratory irritation. May cause drowsiness or dizziness.
STOT - repeated exposure	Causes damage to organs through prolonged or repeated exposure.

Product Information (Numerical measures of toxicity)

Acute Oral LD50 (Rat): 238 mg/kg
Acute Dermal LD50 (Rabbit): >2,000 mg/kg
Acute Inhalation LC50 (Rat): >0.0006 mg/L (4-hr)
Eye Irritation: Moderately irritating.
Dermal Irritation: Slightly irritating.
Dermal Sensitization: Not a contact sensitizer.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Very toxic to aquatic life with long lasting effects. This product is toxic to wildlife. Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash waters. Parazone 3SL is a contact herbicide that desiccates all green plant tissue. Paraquat dichloride, the active ingredient in this product, is toxic to non-target crops and plants if off-target movement occurs because it desiccates all green plant tissue. Extreme care must be taken to ensure that off-target drift is minimized to the greatest extent possible. Refer to the local and state laws, regulations, guidelines, and spray drift information contained in the "Directions for Use" section of the product labeling for proper application to avoid off-target movement. Do not apply under conditions involving possible drift to food, forage, or other plantings that might be damaged or the crops thereof rendered unfit for sale, use, or consumption. Do not apply when weather conditions favor drift from treated areas. To avoid drift, do not make aerial applications during periods of thermal inversion.

Component Information

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Paraquat 1910-42-5		15: 96 h Cyprinus carpio mg/L LC50 static 8.5 - 19: 96 h Lepomis macrochirus mg/L LC50 static 11.0 - 19.0: 96 h Oncorhynchus mykiss mg/L LC50 static	EC50 = 967 mg/L 5 min	9.1 - 12.2: 48 h Daphnia magna mg/L EC50 Static

Persistence/Degradability

Not determined.

Bioaccumulation

Not determined.

Mobility

Not determined

Other Adverse Effects

Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes END USERS MUST DISPOSE OF ANY UNUSED PRODUCT AS PER THE LABEL RECOMMENDATIONS. Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinse is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency or Hazardous Waste representative at the nearest EPA regional office. Never place any unused product down an indoor or outdoor drain. Do not contaminate water, food or feed by disposal.

Contaminated Packaging Disposal should be in accordance with applicable regional, national and local laws and regulations.

14. TRANSPORT INFORMATION

DOT

UN/ID No	UN2922
Proper Shipping Name	Corrosive liquid, toxic, n.o.s. (Paraquat dichloride)
Hazard Class	8
Subsidiary Hazard Class	6.1
Packing Group	III

IATA

UN/ID No	UN2922
Proper Shipping Name	Corrosive liquid, toxic, n.o.s. (Paraquat dichloride)
Hazard Class	8
Subsidiary Hazard Class	6.1
Packing Group	III

IMDG

UN/ID No	UN2922
Proper Shipping Name	Corrosive liquid, toxic, n.o.s. (Paraquat dichloride)
Hazard Class	8
Subsidiary Hazard Class	6.1
Packing Group	III

15. REGULATORY INFORMATION

International Inventories

TSCA All ingredients are listed or exempt from listing on Chemical Substance Inventory

Legend:

TSCA *- United States Toxic Substances Control Act Section 8(b) Inventory*

US Federal Regulations

CERCLA

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Paraquat 1910-42-5		10 lb.	

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

SARA 313

Chemical Name	CAS No	Weight-%	SARA 313 - Threshold Values %
Paraquat - 1910-42-5	1910-42-5	42.49 - 45.11	1.0

US State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Paraquat 1910-42-5	X	X	X

EPA Pesticide Registration Number 66222-130
EPA Statement
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

EPA Pesticide Label
Signal Word: Danger

May be fatal if swallowed Fatal if inhaled Do not breathe spray mist Wear a dust/mist respirator as specified in the PPE section of this label Causes irreversible eye damage Wear protective eyewear Harmful if absorbed through skin Do not get in eyes or on clothing Avoid contact with skin IMPORTANT Inhalation is an unlikely route of exposure due to low vapor pressure and large spray droplet size but mucosal irritation or nose bleeds may occur Prolonged contact with this concentrated product can irritate your skin

Difference between SDS and EPA pesticide label

	EPA	OSHA
Signal Word	Danger	Danger
Acute toxicity - Oral	May be fatal if swallowed	Toxic if swallowed
Acute toxicity - Dermal	Harmful if absorbed through skin	N/A
Acute toxicity - Inhalation (Dusts/Mists)	Fatal if inhaled	Fatal if inhaled
Skin corrosion/irritation	Prolonged contact can irritate skin	Causes severe skin burns
Serious eye damage/eye irritation	Causes irreversible eye damage	Causes severe eye damage
STOT - single exposure	Mucosal irritation or nose bleeds may occur	May cause respiratory irritation. May cause drowsiness or dizziness
STOT - repeated exposure	N/A	Causes damage to organs through prolonged or repeated exposure

16. OTHER INFORMATION

NFPA	**Health Hazards**	**Flammability**	**Instability**	**Special Hazards**
	4	0	0	None
HMIS	**Health Hazards**	**Flammability**	**Physical Hazards**	**Personal Protection**
	3	0	0	See section 8

Issue Date: 24-May-2013
Revision Date: 16-Oct-2015
Revision Note: Updated format from 02-Jun-2014

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

Safety Data Sheet

Venom® Insecticide

1. IDENTIFICATION: CHEMICAL PRODUCT AND COMPANY

PRODUCT NAME: Venom® Insecticide
EPA REGISTRATION NUMBER: 59639-135
VC NUMBER(S): 1526
SYNONYM(S): Dinotefuran 70 SG
PRODUCT DESCRIPTION: Insecticide

Venom is a registered trademark of Valent U.S.A. Corporation

MANUFACTURER/DISTRIBUTOR
VALENT U.S.A. CORPORATION
P.O. Box 8025
1600 Riviera Avenue, Suite 200
Walnut Creek, CA 94596-8025

EMERGENCY TELEPHONE NUMBERS
HEALTH EMERGENCY OR SPILL (24 hr):
(800) 892-0099
TRANSPORTATION (24 hr.): CHEMTREC
(800) 424-9300 or (202) 483-7616

PRODUCT INFORMATION
AGRICULTURAL PRODUCTS: (800) 682-5368

The current SDS is available through our website (www.valent.com), or by calling the product information numbers listed above.

2. HAZARDS IDENTIFICATION

For EPA FIFRA-specific information see Section 15

Classification

Carcinogenicity	Category 1A

Label elements

EMERGENCY OVERVIEW

Danger

Hazard statements
May cause cancer

Precautionary Statements - Prevention
Read product label prior to using this product. For specific handling instruction refer to Section 7, Handling and Storage

Precautionary Statements - Response
See Section 4, First Aid Measures

Precautionary Statements - Storage
For information on Storage and Handling see Section 7.

Precautionary Statements - Disposal
For further information on product and container disposal see Section 13.

Hazards not otherwise classified (HNOC)
Other Information
25% of the mixture consists of ingredient(s) of unknown toxicity

For information on Transportation requirements see Section 14.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	Weight/ Percent	TRADE SECRET
Dinotefuran	165252-70-0	70	
Particulates Not Otherwise Classified	No CAS#	30	

Other ingredients, which may be maintained as trade secrets, are any substances other than an active ingredient contained in this product. Some of these may be hazardous, but their identities are withheld because they are considered trade secrets. The hazards associated with the other ingredients are addressed in this document. Specific information on other ingredients for the management of exposures, spills, or safety assessments can be obtained by a treating physician or nurse by calling **(800) 892-0099** at any time.

4. FIRST AID MEASURES

EMERGENCY NUMBER (800) 892-0099

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact **1-800-892-0099** for emergency medical treatment information.

EYE CONTACT:
Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

SKIN CONTACT:
Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

INGESTION:
Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. DO NOT induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

INHALATION:
Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

NOTES TO PHYSICIAN:
None

5. FIRE FIGHTING MEASURES

Flash point °F	Not Applicable
AUTOIGNITION:	350°C
EXTINGUISHING MEDIA:	Water fog, carbon dioxide, foam, dry chemical
FLAMMABLE LIMITS IN AIR - LOWER (%):	Not applicable
FLAMMABLE LIMITS IN AIR - UPPER (%):	Not applicable

NFPA RATING:

Health:	1
Flammability:	3
Reactivity:	1
Special:	None

(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using professional judgement. Values were not available in the guidelines or published evaluations prepared by the National Fire Protection Association, NFPA.

FIRE FIGHTING INSTRUCTIONS: Products of combustion from fires involving this material may be toxic. Avoid breathing smoke and mists. Avoid personnel and equipment contact with fallout and runoff. Minimize the amount of water used for fire fighting. Do not enter any enclosed area without full protective equipment, including self-contained breathing equipment. Contain and isolate runoff and debris for proper disposal. Decontaminate personal protective equipment and fire fighting equipment before reuse.

This material is not expected to burn or explode in normal conditions, but will burn violently if involved in a fire. Dinotefuran becomes self-reactive in high temperatures. Exposure to heat may promote violent decomposition.

HAZARDOUS DECOMPOSITION PRODUCTS: Normal combustion forms carbon dioxide, water vapor and may produce: Oxides of Nitrogen

6. ACCIDENTAL RELEASE MEASURES

VALENT EMERGENCY PHONE NUMBER: (800) 892-0099
CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300
OBSERVE PRECAUTIONS IN SECTION 8: PERSONAL PROTECTION
Stop the source of the spill if safe to do so. Contain the spill to prevent further contamination of the soil, surface water, or ground water. For additional spill response information refer to the North American Emergency Response Guidebook.

UN/NA NUMBER: Not applicable **EMERGENCY RESPONSE GUIDEBOOK NO.:** Not applicable

FOR SPILLS ON LAND:

CONTAINMENT: Remove all sources of ignition. Ventilate area of leak or spill. Clean-up personnel may require protection from inhalation of dust. Avoid runoff into storm sewers or other bodies of water.

CLEANUP: Clean up spill immediately in a manner that does not disperse dust into the air and place in a chemical waste container. Wash area with soap and water. Pick up wash liquid with additional absorbent and place in a chemical waste container.

FOR SPILLS IN WATER:

CONTAINMENT: This material will disperse or dissolve in water. Stop the source of the release. Contain and isolate to prevent further release into soil, surface water and ground water.

CLEANUP: Clean up spill immediately. Absorb spill with inert material. Remove contaminated water for treatment or disposal.

7. HANDLING AND STORAGE

END USER MUST READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.

HANDLING:
Keep away from all possible sources of ignition (sparks or flame). Avoid high temperatures exceeding 150°C. Keep container closed. Use only with adequate ventilation. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring the material. Use explosion-proof electrical equipment. Take precautionary measures against static discharges.

Wear protective clothing and equipment when handling this product. Goggles or protective eyeware, gloves, long-sleeved shirt, long pants, socks and shoes are appropriate.

Users should wash hands thoroughly with soap and water before eating, drinking, chewing gum, using tobacco or using the toilet.

STORAGE:
Keep pesticide in original container only. Do not put concentrate into food or drink containers. Do not dilute concentrate in food or drink containers. Store in a cool, dry place. Do not store diluted spray. Do not contaminate water, food or feed by storage or disposal.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

END USER MUST READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.

EYES & FACE: Do not get this material in your eyes. Eye contact can be avoided by wearing protective eyewear.

RESPIRATORY PROTECTION: Use this material only in well ventilated areas. If operating conditions result in airborne concentrations of this material, the use of an approved respirator is recommended.

SKIN & HAND PROTECTION: Avoid contact with skin or clothing. Skin contact can be minimized by wearing protective clothing including gloves.

EXPOSURE LIMITS

Chemical Name	ACGIH Exposure Limits	OSHA Exposure Limits	Manufacturer's Exposure Limits
Dinotefuran	None	None	None
Particulates Not Otherwise Classified	10 mg/m³ TWA (inhalable particulate); 3 mg/m³ TWA (respirable fraction)	15 mg/m³ TWA (total dust); 5 mg/m³ TWA (respirable fraction)	None

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	Solid		
Appearance	Granules	**Odor**	No information available
Color	Light brown	**Odor threshold**	No information available

PROPERTIES	Values	Remarks • Method
pH	6.4 @ 21° C	1% solution
Melting point/freezing point	107.5 °C	
Boiling point/boiling range	Decomposed 208 °C	
Flash point	Not Applicable	
Evaporation rate	No information available	
Flammability (solid, gas)	No information available	
Flammability Limits in Air		
Upper flammability limits	Not applicable	
Lower flammability limit	Not applicable	
Vapor pressure	No information available	
Vapor density	No information available	
Specific Gravity	No information available	
Water solubility	Soluble in water	
Solubility in other solvents	No information available	
Partition coefficient	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Viscosity	No information available	
Explosive properties	No information available	
Oxidizing properties	No information available	
Density	No information available	
Bulk density	29.8 lb/cubic ft	

10. STABILITY AND REACTIVITY

Reactivity
No data available

Chemical stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

Conditions to avoid
Extremes of temperature and direct sunlight.

Incompatible materials
None known based on information supplied.

Hazardous Decomposition Products
Carbon oxides, Nitrogen oxides (NOx), Oxides of sulfur, Crystalline silica.

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY:

Based on an evaluation of the ingredients and/or similar products.

Oral Toxicity LD_{50} (rats)	>5000 mg/kg	EPA Tox Category	IV
Dermal Toxicity LD_{50} (rabbits)	>5000 mg/kg	EPA Tox Category	IV
Inhalation Toxicity LC_{50} (rats)	>2.34 mg/L	EPA Tox Category	IV
Eye Irritation (rabbits)	Minimally irritating	EPA Tox Category	IV
Skin Irritation (rabbits)	Brief and/or minor irritation	EPA Tox Category	IV
Skin Sensitization (guinea pigs)	Non-sensitizer	EPA Tox Category	Not applicable

CARCINOGEN CLASSIFICATION

Chemical Name	IARC	OSHA - Select Carcinogens	NTP Carcinogen List
Dinotefuran	Not listed	Not listed	Not listed
Particulates Not Otherwise Classified	Not listed	Not listed	Not listed
Sodium dodecylbenzene sulfonate	Not listed	Not listed	Not listed
Dioctyl sodium sulfosuccinate	Not listed	Not listed	Not listed
Paper fiber (cellulose)	Not listed	Carcinogen	Known Carcinogen
Naphthalene sulfonic acid, polymer with formaldehyde, sodium salt	Not listed	Not listed	Not listed
Lactose Monohydrate	Not listed	Not listed	Not listed

TOXICITY OF DINOTEFURAN TECHNICAL

SUBCHRONIC: Dinotefuran technical was tested in 13-week dietary toxicity studies in rats, mice and dogs. In the rat study, a NOEL of 500 ppm was established, based on reduced body weight gain in females and adrenal cortical vacuolation in males and a NOAEL of 5,000 ppm based on marked growth retardation at 25,000 ppm (adrenal cortical vacuolation not adverse). A NOEL of 25,000 ppm was established in the mouse study based on reduced body weight gain at 50,000 ppm. In the dog 13-week dietary study, a NOEL of 8,000 ppm was established based on reduced body weight gain. No target organs were identified in subchronic inhalation or dermal toxicity studies in rats.

CHRONIC/CARCINOGENICITY: Dinotefuran technical was tested in lifetime studies with rats and mice and a one-year study with dogs. In common with the subchronic studies in these species, no specific target organs could be identified. In the 78-week mouse study a NOAEL of 2500 ppm was established, based on decreased weight gain and a decrease in circulating platelet counts. In the 104-week rat study a NOAEL of 2000 ppm was established, based on a decrease in weight gain in females. There were no treatment-related effects in rats or mice on survival or the nature and incidence of neoplastic and adverse non-neoplastic histomorphological findings in either species at any dose level. In the 52-week dog study a NOAEL of 16000 ppm was established based on decreased weight gain in both sexes and decreased food consumption in females.

NEUROTOXICITY: Dinotefuran did not produce any functional or histomorphological evidence of neurotoxicity in acute (gavage) and 13-week (dietary) neurotoxicity studies in rats. The NOEL for neurotoxicity in the acute study was 1,500 mg/kg, the highest dose level administered. The NOEL for neurotoxicity in the 13-week dietary study was 50,000 ppm. The NOEL for all effects in this study was 5,000 ppm based on reduced body weight gain and food consumption.

DEVELOPMENTAL TOXICITY: In a developmental toxicity study of Dinotefuran technical in rats the maternal NOAEL was 300 mg/kg/day based on reduced weight gain, food consumption and water intake at 1000 mg/kg/day. Dinotefuran technical did not produce developmental effects in rats at doses up to 1000 mg/kg/day (the highest does tested). In a study with rabbits the maternal NOAEL was 52 mg/kg/day based on reduced weight gain, food consumption and water intake and clinical signs noted at 300 mg/kg/day and pathology findings in the liver and stomach at 125 mg/kg/day and higher. The developmental NOEL was 300 mg/kg/day.

REPRODUCTION: Dinotefuran technical was tested in a two-generation rat reproduction study at doses of 0, 300, 1000, 3000 and 10000 ppm. The NOAEL for systemic toxicity in parental animals was 3000 ppm based on decreased body weight gain and food consumption and decreased spleen and thyroid weights at the highest dose level evaluated (10000 ppm). The NOAEL for reproductive effects was 10000 ppm. The NOAEL for effects on the offspring was 3000 ppm based on reduced preweaning weight gain at 10000 ppm.

MUTAGENICITY: Dinotefuran technical was negative in the following in vitro assays: Ames Assay, mouse lymphoma (L5178Y), mammalian cytogenetics (CHL/IU) or DNA Repair. Dinotefuran technical was negative in the following in vivo assays: mouse micronucleus. Overall, Dinotefuran technical does not present a genetic hazard.

For a summary of the potential for adverse health effects from exposure to this product, refer to Section 2. For information regarding regulations pertaining to this product, refer to Section 15.

12. ECOLOGICAL INFORMATION

AVIAN TOXICITY:

Dinotefuran Technical is practically non-toxic to moderately toxic to avian species.
Test results include:
Oral LD_{50} quail: greater than 2000 mg/kg
Dietary LC_{50} Mallard duck: greater than 997.9 ppm
Dietary LC_{50} quail: greater than 1301 ppm
Reproduction quail: NOEL = 5000 ppm
Reproduction Mallard duck: NOEL = 2000 ppm

AQUATIC ORGANISM TOXICITY: Dinotefuran Technical is practically non-toxic to fish and ranges from practically nontoxic to highly toxic to aquatic invertebrate species (especially shrimp.) Test results include:
LC_{50} (96 hr) Bluegill Sunfish: greater than 100 mg/L
LC_{50} (96 hr) Rainbow Trout: greater than 100 mg/L
LC_{50} (96 hr) Common Carp: greater than 100 mg/L
LC_{50} (96 hr) Sheepshead Minnow: greater than 109 mg/L
NOEC (early life stage) Rainbow Trout: greater than 10 mg/L
EC_{50} (48 hr) Daphnia magna: greater than 1000 mg/L
NOEC (lifecycle) Daphnia magna: > 10 mg/L
LC_{50} (96 hr) saltwater Mysid Shrimp: 0.79 mg/L
NOEC (lifecycle) saltwater Mysid Shrimp: 0.089mg/L
EC_{50} (96 hr) Oyster Shell Deposition: greater than 141 mg/L
ErC_{50} (0-72 hr) Algae (P. subcapitata): greater than 100 mg/L

OTHER NON-TARGET ORGANISM TOXICITY: Dinotefuran Technical is highly toxic to bees. The acute oral and contact LD_{50} in bees were 0.056 µg/bee and 0.022 ug/bee, respectively.

OTHER ENVIRONMENTAL INFORMATION:
Do not apply directly to water, to areas where surface water is present or to intertidal areas below mean high water mark. Do not apply where runoff is likely to occur. Do not apply where weather conditions favor drift from areas treated. Do not contaminate water when cleaning equipment or disposing of equipment washwater or rinsate.

13. DISPOSAL CONSIDERATIONS

END USERS MUST DISPOSE OF ANY UNUSED PRODUCT AS PER THE LABEL RECOMMENDATIONS.

PRODUCT DISPOSAL: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL: Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. Clean container promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure 2 more times.

DISPOSAL METHODS: Check government regulations and local authorities for approved disposal of this material. Dispose of in accordance with applicable laws and regulations.

14. TRANSPORTATION INFORMATION

DOT (ground) SHIPPING NAME: Pesticide, Solid, Non-regulated
REMARKS: Not regulated for domestic ground transport by U.S. DOT
EMERGENCY RESPONSE GUIDEBOOK NO.: Not applicable

ICAO/IATA SHIPPING NAME: UN 3077 Environmentally Hazardous Substance, Solid, N.O.S. (Dinotefuran), 9, III, Marine Pollutant

REMARKS:	Single or inner packaging less than 5 L (liquid) or 5 Kg net (solids) excepted from Dangerous Goods regulations -- see UN Special Provision 375. For U.S. Shipping, Emergency Response Guidebook No. 171
IMDG SHIPPING NAME:	UN 3077 Environmentally Hazardous Substance, Solid, N.O.S. (Dinotefuran), 9, III, Marine Pollutant
EMS NO.:	F-A, S-F

15. REGULATORY INFORMATION

EPA-FIFRA LABEL INFORMATION THAT DIFFERS FROM OSHA-GHS REQUIREMENTS:

This material is a pesticide product registered by the EPA under FIFRA and is subject to certain labeling requirements under federal pesticide law. These requirements may differ from the classification criteria and hazard information required by OSHA GHS for safety data sheets, and for workplace labels of non-pesticide chemicals. The following is the hazard information as required on the FIFRA pesticide label:

EPA FIFRA SIGNAL WORD: CAUTION

- ***Avoid breathing vapor or dust.***
- ***Avoid contact with eyes, skin and clothing***
- ***Powder material may form explosive dust-air mixture.***
- ***Keep out of reach of children.***

PESTICIDE REGULATIONS: All pesticides are governed under FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act). Therefore, the regulations presented below are pertinent only when handled outside of the normal use and applications of pesticides. This includes waste streams resulting from manufacturing/formulation facilities, spills or misuse of products, and storage of large quantities of products containing hazardous or extremely hazardous substances.

U.S. FEDERAL REGULATIONS: Ingredients in this product are reviewed against an inclusive list of federal regulations. Therefore, the user should consult appropriate authorities. The federal regulations reviewed include: Clean Water Act, SARA, CERCLA, RCRA, DOT, TSCA and OSHA. If no components or information is listed in the space below this paragraph, then none of the regulations reviewed are applicable.

Sodium dodecylbenzene sulfonate	
TSCA Inventory List -	Present
Clean Water Act - Hazardous Substances	Present
CERCLA Reportable Quantity (RQ):	1000 lb 454 kg
Dioctyl sodium sulfosuccinate	
TSCA Inventory List -	*
Paper fiber (cellulose)	
TSCA Inventory List -	Present
Naphthalene sulfonic acid, polymer with formaldehyde, sodium salt	
TSCA Inventory List -	*

SARA (311, 312):

Immediate Health:	Yes
Chronic Health:	Yes
Fire:	Yes
Sudden Pressure:	No
Reactivity:	No

STATE REGULATIONS: Each state may promulgate standards more stringent than the federal government. This section cannot encompass an inclusive list of all state regulations. Therefore, the user should consult state or local authorities. The state regulations reviewed include: California Proposition 65, California Directors List of Hazardous Substances, Massachusetts Right to Know, Michigan Critical Materials List, New Jersey Right to Know, Pennsylvania Right to Know, Rhode Island Right to Know and the Minnesota Hazardous Substance list. For Washington State Right to Know, see Section 8 for Exposure Limit information. For Louisiana Right to Know refer to SARA information listed under U.S. Regulations above. If no components or information is listed in the space below this paragraph, then none of the regulations reviewed are applicable.

For information regarding potential adverse health effects from exposure to this product, refer to Sections 2 and 11.

16. OTHER INFORMATION

REASON FOR ISSUE:	Updated information to meet OSHA Hazcom 2012 (GHS) regulations.
SDS NO.:	0259
EPA REGISTRATION NUMBER:	59639-135
REVISION NUMBER:	1
REVISION DATE:	03/26/2015
SUPERCEDES DATE:	None
RESPONSIBLE PERSON(S):	Valent U.S.A. Corporation, Corporate EH&S, (925) 256-2803

This Safety Data Sheet (SDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-APPROVED PRODUCT LABELING (attached to and accompanying the product container). This SDS provides important health, safety, and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course.

Use, storage and disposal of pesticide products is regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling. All necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling. It is a violation of federal law to use a pesticide product in any manner not prescribed on the EPA-approved label.

The information in this SDS is based on data available to us as of the revision date given herein, and believed to be correct. Contact Valent U.S.A. Corporation to confirm if you have the most current SDS.

Judgments as to the suitability of information herein for the individual's own use or purposes are necessarily the individual's own responsibility. Although reasonable care has been taken in the preparation of such information, Valent extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the individual's purposes or the consequences of its use.

2015 Valent U.S.A. Corporation

Safety Data Sheet

United Phosphorus, Inc.

Preparation Date 21-Apr-2015 **Revision date** 28-Mar-2016 **Revision Number:** 3

1. Identification of the Substance/Preparation and of the Company/Undertaking

Product identifier

Product Description: Bifenture 10 DF Insecticide/Miticide

Other means of identification

Item#: 12U-133R
UN-No UN3077
Synonyms Not Available
Registration number(s) 70506-227

Recommended use of the chemical and restrictions on use

Recommended use Restricted Use Pesticide.
Uses advised against Activties contrary to label recomendation

Details of the Supplier of the Safety Data Sheet

Supplier Address
United Phosphorus Inc.
630 Freedom Business Center
Suite 402
King of Prussia, PA 19406

Emergency telephone number

Company Phone Number 1-800-438-6071
Emergency telephone number Chemtrec: (800) 424-9300 (24hrs) or (703) 527-3887
Medical: Rocky Mountain Poison Control Center
(866) 673-6671 (24hrs)

2. Hazards Identification

Classification

OSHA Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute toxicity - Oral	Category 4
Acute toxicity - Dermal	Category 4
Acute toxicity - Inhalation (Vapors)	Category 3

Label elements

EMERGENCY OVERVIEW

DANGER

hazard statements
HARMFUL IF SWALLOWED
Harmful in contact with skin
Toxic if inhaled

appearance Off-white white **Physical state** powder **Odor** odorless

Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Wear protective gloves/protective clothing/eye protection/face protection
Do not get in eyes, on skin, or on clothing
Use only outdoors or in a well-ventilated area

IF ON SKIN: Wash with plenty of soap and water
Call a POISON CENTER or doctor if you feel unwell
Wash contaminated clothing before reuse
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor/physician
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth

Precautionary Statements - Storage
Store in a well-ventilated place. Keep container tightly closed
Store locked up

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Hazards Not Otherwise Classified (HNOC)
OTHER INFORMATION
- Causes mild skin irritation
- Very toxic to aquatic life with long lasting effects
- Very toxic to aquatic life

3. Composition/information on Ingredients

Chemical name	CAS-No	Weight %	Trade secret
Silica gel	112926-00-8	2.5	
Lactose	112926-00-8	30	
Kaolin	1332-58-7	43.8	
Morwet D-425	68425-94-5	3	
Bifenithrin technical	82657-04-3	10	

If CAS number is "proprietary", the specific chemical identity and percentage of composition has been withheld as a trade secret.

4. First aid measures

FIRST AID MEASURES

Eye contact Hold eye open and rinse slowly and gently with water for 15 - 20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

Skin contact Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call poison control center or doctor for treatment advice.

Inhalation If breathing is irregular or stopped, administer artificial respiration. Call a poison control center or doctor for further treatment advice.

Ingestion Call a physician or poison control center immediately. Never give anything by mouth to an unconscious person. Do not induce vomiting without medical advice.

Explosive properties No information available
Oxidizing properties No information available

OTHER INFORMATION

Softening point No information available
molecular weight No information available
VOC Content No information available
density No information available
Bulk density No information available

10. Stability and Reactivity

Reactivity
no data available

Chemical stability
Stable under recommended storage conditions.
Possibility of hazardous reactions
None under normal processing.
Conditions to avoid
Not known. Heat, flames and sparks.
incompatible materials
No materials to be especially mentioned.
Hazardous decomposition products
Carbon dioxide (CO2). Carbon monoxide. Hydrogen chloride. Hydrogen fluoride.

11. Toxicological Information

Information on Likely Routes of Exposure

Product information Bifenthrin 10 DF:
Acute oral LD50 (rat) = 550 mg/kg
Acute dermal LD50 (rat/rabbit) = >2,000 mg/kg
Acute inhalation LC50 (rat) = >5.869 mg/L
Dermal sensitization = Not a sensitizer

Inhalation May cause irritation of respiratory tract. May be harmful if inhaled.

Eye contact Contact with eyes may cause irritation.

Skin contact Prolonged contact may cause redness and irritation. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.

Ingestion MAY BE HARMFUL IF SWALLOWED.

Component Information Bifenthrin products may produce skin sensations such as rashes, numbing, burning, or tingling, which are reversible and usually subside in 12 hours.

Information on Toxicological Effects

Symptoms No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

sensitization No information available.
Mutagenic effects No information available.
Carcinogenicity The information below indicates whether any agency has listed any ingredient as a carcinogen.

Chemical name	ACGIH	IARC	NTP	OSHA
Silica gel 112926-00-8	-	Group 3		-
Lactose	-	Group 3		-

112926-00-8				

Reproductive effects Not Available.
STOT - Single Exposure No information available.
STOT - repeated exposure No information available.
Target organ effects Respiratory System.
Aspiration hazard No information available.

Numerical Measures of Toxicity - Product information

The following values are calculated based on chapter 3.1 of the GHS document .
LD50 Oral 550 mg/kg (rat)
LD50 Dermal > 2,000 mg/kg (rat)
LC50 Inhalation: > 5.869 ml/m³ (Vapor)

12. Ecological Information

Marine Pollutant.

ecotoxicity

Bifenthrin : Highly toxic to fish and aquatic arthropods (LC50 values between 0.0038 to 17.8 ug/L. Slightly toxic to water fowl and upland game birds (LD50 between 1800 to >2150 mg/kg)

Persistence/Degradability
No information available.

Bioaccumulation/ Accumulation
No information available.

Other Adverse Effects
No information available

13. Disposal Considerations

Waste Treatment Methods

Waste Disposal Method Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide or rinsate is a violation of Federal law. If the wastes cannot be disposed of by use or according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Contaminated packaging Non refillable container. Do not reuse this container. Refer to product label.

14. Transport Information

DOT When shipped domestically by highway in non-bulk containers this product can be shipped as not regulated.
UN-No UN3077
Proper shipping name Environmentally hazardous substances, solid, n.o.s (Bifenthrin)
Hazard class 9
Packing group PG III
Marine Pollutant Marine Pollutant.

IATA

UN-No	UN3077
Proper shipping name	Environmentally hazardous substances, solid, n.o.s (Bifenthrin)
Hazard class	9
Packing group	PG III
Description	Marine Pollutant

IMDG/IMO

UN-No	UN3077
Proper shipping name	Environmentally hazardous substances, solid, n.o.s (Bifenthrin)
Hazard class	9
Packing group	PG III
EmS No.	F-A,S-F
Marine Pollutant	Yes

15. Regulatory Information

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

signal word CAUTION

Restricted Use Pesticide. Toxic to fish and aquatic organisms. Harmful if absorbed through the skin.

International Inventories

USINV	Not determined
DSL/NDSL	Not determined
EINECS/ ELINCS	Does not comply
ENCS	Does not comply
China	Does not comply
KECL	Does not comply
PICCS	Does not comply
AICS	Does not comply
TSCA	Does not comply

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and and Title 40n of the Code of Federal Regulations, Part 372:

Chemical name	SARA 313 - Threshold Values
Bifenithrin technical - 82657-04-3	1.0

SARA 311/312 Hazardous Categorization

Acute health hazard	yes
Chronic health hazard	yes
Fire hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

CERCLA
SARA Product RQ 0

RCRA
Pesticide Information

State Regulations

State Right-to-Know

Chemical name	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Silica gel	X	X	X		
Lactose	X	X	X		
Kaolin	X	X	X		
Bifenithrin technical		X		X	

International regulations
U.S. EPA Label information
EPA Pesticide registration number 70506-227

16. Other Information

NFPA **HEALTH** 2 **flammability** 0 **Instability** 0 **Physical hazard** -

Preparation Date 21-Apr-2015
Revision date 28-Mar-2016
Revision Summary
Update section 14
Disclaimer
United Phosphorus, Inc. believes that the information and recommendations container herein (including data and statements) are accurate as of the date hereof. NO WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WARRANTY OF MERCHANTABILITY, OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, IS MADE CONCERNING THE INFORMATION PROVIDED HEREIN. The information provided herein relates only to the specific product designated and may not be valid where such product is used in combination with other materials or in any process. Further, since the conditions and methods of use are beyond the control of United Phosphorus , Inc. and United Phosphorus Inc. expressly disclaims any and all liability as to any results obtained or arising from any use of the product or reliance on such information.

End of MSDS

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 PRODUCT IDENTIFIER:
TRADE NAME: **CAPTAN 80 WDG**
1.2 RECOMMENDED USE: GROUP M4 FUNGICIDE
1.3 SUPPLIER DETAILS:
LOVELAND PRODUCTS, INC.
P.O. Box 1286 • Greeley, CO 80632-1286
1.4 24 Hour Emergency Phone: 1-800-424-9300 - **Medical Emergencies:** 1-866-944-8565 – **Product Information:** 1-888-574-2878 (LPI-CUST)
U.S. Coast Guard National Response Center: 1-800-424-8802

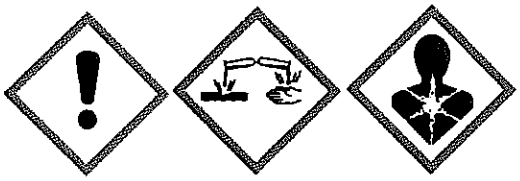
2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to 29 CFR 1910.1200

Acute Toxicity – Inhalation	Category 4	H332
Acute Toxicity – Oral	Category 4	H302
Eye Damage/Irritation	Category 1	H318
Sensitization - Skin	Category 1	H317
Carcinogenicity	Category 2	H351

2.2 Label elements



Signal word: DANGER

Hazard Statement:
H332 – Harmful if inhaled.
H302 – Harmful if swallowed.
H318 – Causes serious eye damage.
H317 – May cause an allergic skin reaction.
H351 – Suspected of causing cancer.

Precautionary Statement: (Prevention):
P261 – Avoid breathing dust/fume/gas/mist/vapors/spray.
P271 – Use only outdoors or in a well-ventilated area.
P264 – Wash hands thoroughly after handling.
P270 – Do not eat, drink or smoke when using this product.
P280 – Wear protective gloves/protective clothing/eye protection/face protection.
P272 – Contaminated work clothing must not be allowed out of the workplace.
P201 – Obtain special instructions before use.
P202 – Do not handle until all safety precautions have been read and understood.

Precautionary Statement: (Response):
P304+P340: IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing.
P312: Call a POISON CENTER or doctor/physician if you feel unwell.
P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P330 – Rinse mouth.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 – Immediately call a POISON CENTER or doctor/physician.
P302+P352 – IF ON SKIN: Wash with plenty of soap and water for several minutes.
P333+P313: If skin irritation or rash occurs: Get medical advice/attention.
P321 – Specific treatment (see additional First Aid information on the product label).
P363 – Wash contaminated clothing before reuse.
P308+P313 – If exposed or concerned: Get medical advice/attention.

Precautionary Statement: (Storage):	P405 – Store locked up.
Precautionary Statement: (Disposal):	P501 – Dispose of contents/container in accordance with federal, state and local regulations.

2.3 Other hazards
None known

3. COMPOSITION, INFORMATION ON INGREDIENTS

3.1 Substances

3.2 Mixtures

Classification according to 29 CFR 1910.1200

Chemical Name:	CAS No.	Concentration [%]
Captan	133-06-2	80.00
*Other ingredients	Proprietary	20.00

*Ingredients not specifically listed are non-hazardous or are to be considered proprietary or confidential business information per 29 CFR 1910.1200(i)

4. FIRST AID MEASURES

4.1 Description of First Aid Measures

General Advice:	Get medical attention if symptoms occur.
If in eyes:	Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
If on skin or clothing:	Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
If swallowed:	Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.
If inhaled:	Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

4.2 Most Important Symptoms and Effects, Acute and Delayed
Symptoms: Harmful if inhaled. Harmful if swallowed. Causes irreversible eye damage. Skin exposure may cause sensitization.

4.3 Immediate Medical Attention and Special Treatment

NOTES TO PHYSICIAN: Probable musical damage may contraindicate the use of gastric lavage.
FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: 1-866-944-8565
Take container, label or product name with you when seeking medical attention.

5. FIRE FIGHTING MEASURES

5.1 EXTINGUISHING MEDIA:

Suitable Extinguishing Media: Dry chemical, carbon dioxide (CO_2), foam, water spray or fog.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE:

Specific Hazards During Firefighting: May produce gases such as hydrogen chloride, hydrogen cyanide, oxides of nitrogen and oxides of carbon.

5.3 SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS

Special Protective Equipment for Firefighters: Self-contained breathing apparatus and full protective gear should be worn in fighting large fires involving chemicals. Use water spray to keep fire exposed containers cool. Keep people away. Isolate fire and deny unnecessary entry.

6. ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Personal Precautions: Avoid inhalation of dusts, mists and vapors, and contact with skin and eyes. Ensure adequate ventilation. Wear suitable protective clothing.

6.2 ENVIRONMENTAL PRECAUTIONS

Environmental Precautions: This pesticide is toxic to fish. Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Drift and runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when cleaning equipment or disposing of equipment washwaters or rinsate.

6.3 METHODS AND MATERIALS FOR CONTAINMENT AND CLEAN-UP

Methods for Clean-Up: Absorb and/or contain spill with inert material, then place in a suitable container. Check local, state and federal regulations for proper disposal.
Never return spills to original containers for re-use.
CAUTION: Keep spills and cleaning runoff out of municipal sewers and open bodies of water.

7. HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING:

Advice on Safe Handling: Do not breathe mist, vapors or spray. Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

7.2 CONDITIONS FOR SAFE STORAGE:

Requirements for Storage Areas and Containers: Store only in original container. Store in a cool, dry place away from excessive heat. Do not put concentrate or dilute into food or drink containers.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 CONTROL PARAMETERS:

OCCUPATIONAL EXPOSURE LIMITS

U.S. Workplace Exposure Level (ACGIH) TLVs

Components	Type	Value
Captan	TWA	5 mg/m^3 I (Measured as Inhalable fraction of the aerosol)

U.S. Workplace Exposure Level (OSHA) PELs

Components	Type	Value
No listings		

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Specimen	Sampling time
No listings			

8.2 EXPOSURE CONTROLS:

Engineering Measures

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Stand (WPS) for agricultural pesticides [40 CFR 17.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

Individual Protection Measures:

Eye / Face Protection: Goggles, face shield, or shielded safety glasses are recommended.

Skin Protection: Long-sleeved shirt and long pants. Shoes plus socks. Chemical-resistant gloves. Chemical resistant apron when mixing or loading.

Respiratory Protection: Dependent on job function. If vapors or dusts exceed acceptable levels, wear a MSHA/NIOSH approved air-purifying respirator with any cartridges/filter approved for pesticides. If respirators are used, a program should be in place to assure compliance with 29 CFR 1910.134, the OSHA Respiratory Protection standard. Wear air supplied respiratory protection if exposure concentrations are unknown.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 APPEARANCE: Solid.
ODOR: Mildly pungent, organic.
ODOR THRESHOLD: No data available.
COLOR: Off-white to light brown.
pH: 5.5
MELTING POINT / FREEZING POINT: No data available
BOILING POINT: No data available
FLASH POINT: Does not flash.
FLAMMABILILITY (solid, gas): No data available.
UPPER / LOWER FLAMMABILITY OR EXPLOSIVE LIMITS: No data available.
VAPOR PRESSURE: 2.01×10^{-4} Pa @ 50 °C.
SOLUBILITY: Insoluble.
PARTITION CO-EFFICIENT, n-OCTANOL / WATER: No data available.
AUTO-IGNITION TEMPERATURE: No data available.
DECOMPOSITION TEMPERATURE: No data available.
VISCOSITY: (Dynamic): No data available.
SPECIFIC GRAVITY (Water = 1): 0.562 g/ml
BULK DENSITY: 35 lbs./ft^3. / 560.65 kg/cm^3

Note: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.

10. STABILITY AND REACTIVITY

10.1 REACTIVITY
Stable

10.2 CHEMICAL STABILITY
Stable under normal temperature conditions

10.3 POSSIBILITY OF HAZARDOUS REACTIONS
May decompose if heated. Will not polymerize.

10.4 CONDITIONS TO AVOID
Extreme heat. Avoid moisture.

10.5 INCOMPATIBILE MATERIALS
Alkaline materials. Acidic materials.

10.6 HAZARDOUS DECOMPOSITION PRODUCTS
Thermal decomposition products include, but are not limited to, hydrogen chloride, hydrogen cyanide, oxides of carbon and oxides of nitrogen.

11 TOXICOLOGICAL INFORMATION

11.3 LIKELY ROUTES OF EXPOSURE

Eye contact. Inhalation. Skin contact.
LC_{50} (rat): 1.0 mg/L (4 HR)
LD_{50} Oral (rat): > 5,000 mg/kg
LD_{50} Dermal (rat): > 2,000 mg/kg
Acute Toxicity Estimates: No data available
Skin Irritation (rabbit): May cause an allergic skin reaction.
Eye Irritation (rabbit): Causes serious eye damage.
Specific Target Organ Toxicity: No data available.
Aspiration: No data available
Skin Sensitization (guinea pig): Potential sensitizer.
Carcinogenicity: NIOSH-Ca (Potential occupational carcinogen, with no further categorization). IARC-3 (Unclassifiable as to Carcinogenicity in Humans). TLV-A3 (Confirmed Animal Carcinogen with Unknown Relevance to Humans).
Germ Cell Mutagenicity: No data available
Interactive Effects: None known

12 ECOLOGICAL INFORMATION

12.3 ECOTOXICITY

Ecotoxicological Data

	Species	Test Results
Captan	Onchorynchus mykiss	0.186 mg/L – 96-hour LC_{50}
	Daphnia Magna	7.1 mg/L – 48-hour EC_{50}

Drift or runoff may adversely affect non-target plants.
Do not apply directly to water.
Do not contaminate water when disposing of equipment wash water.
Do not apply when weather conditions favor drift from target area.

12.2 PERSISTENCE AND DEGRADABILITY
Biodegradability: No data available.
12.3 BIOACCUMULATIVE POTENTIAL
Bioaccumulation: No data available.
12.4 MOBILITY IN SOIL
No data available.
12.5 OTHER ADVERSE EFFECTS
Assessment: No data available.

13 DISPOSAL CONSIDERATIONS

13.1 WASTE TREATMENT METHODS

PESTICIDE DISPOSAL: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.
CONTAINER DISPOSAL: Nonrefillable Container: Do not reuse or refill this container. *Completely empty bag into application equipment by shaking and tapping sides and bottom to loosen clinging particles.* Offer for recycling if available or dispose of empty bag in a sanitary landfill or by incineration. Do not burn unless allowed by state and local ordinances.

14 TRANSPORT INFORMATION

14.3 LAND TRANSPORT
DOT Shipping Description: RQ UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE SOLID, N.O.S. (CAPTAN), 9, III ERG GUIDE 171
U.S. Surface Freight Classification: INSECTICIDES OR FUNGICIDES, INSECT OR ANIMAL REPELLENTS; NOI; OTHER THAN POISON (NMFC 102120; CLASS: 60)

15 REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS

NFPA & HMIS Hazard Ratings:

NFPA			HMIS
3 Health	0 Least		3 Health
0 Flammability	1 Slight		0 Flammability
1 Instability	2 Moderate		1 Reactivity
	3 High		h PPE
	4 Severe		

SARA Hazard Notification/Reporting
SARA Title III Hazard Category:

Immediate	Y	Fire	N	Sudden Release of Pressure	N
Delayed	Y	Reactive	N		

Reportable Quantity (RQ) under U.S. CERCLA: Captan (CAS: 133-06-2) 10 lbs.
SARA, Title III, Section 313: Captan (CAS: 133-06-2)
RCRA Waste Code: Not listed
CA Proposition 65: WARNING: This product contains chemicals known to the State of California to cause cancer or birth defects or other reproductive harm.

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

DANGER
Causes irreversible eye damage
Harmful if swallowed or inhaled.
Prolonged or frequently repeated skin contact may cause allergic skin reactions in some individuals.
Do not get in eyes.
Avoid contact with skin and clothing.
Avoid inhalation of dust or spray mist.

16 OTHER INFORMATION

SDS STATUS: Format revised.
PREPARED BY: Registrations and Regulatory Affairs **REVIEWED BY:** Environmental Health and Safety
EPA REG. NO.: 34704-1075

Disclaimer and Limitation of Liability: This data sheet was developed from information on the constituent materials identified herein and does not relate to the use of such materials in combination with any other material or process. No warranty is expressed or implied with respect to the completeness or ongoing accuracy of the information contained in this data sheet, and LOVELAND PRODUCTS, INC. disclaims all liability for reliance on such information. This data sheet is not a guarantee of safety. Users are responsible for ensuring that they have all current information necessary to safely use the product described by this data sheet for their specific purpose.

Safety Data Sheet

United Phosphorus, Inc.

Preparation Date 01-May-2015 **Revision date** 01-May-2015 **Revision Number:** 1

1. Identification of the Substance/Preparation and of the Company/Undertaking

Product identifier

Product Description: Microthiol® Disperss®

Other means of identification

Item#: 12-373
Synonyms Not Available
Registration number(s) 70506-187

Recommended use of the chemical and restrictions on use

Recommended use Micronized Wettable Sulfur.
Uses advised against Activties contrary to label recomendation

Details of the Supplier of the Safety Data Sheet

Supplier Address
UPI
630 Freedom Business Center
Suite 402
King of Prussia, PA 19406

Emergency telephone number

Company Phone Number 1-800-438-6071
Emergency telephone number Chemtrec: (800) 424-9300 (24hrs) or (703) 527-3887
Medical: Rocky Mountain Poison Control Center
(866) 673-6671 (24hrs)

2. Hazards Identification

Classification

OSHA Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute toxicity - Oral	Category 4
Acute toxicity - Dermal	Category 4
Acute toxicity - Inhalation (Vapors)	Category 2
Skin Corrosion/Irritation	Category 2

Label elements

EMERGENCY OVERVIEW

DANGER

hazard statements
HARMFUL IF SWALLOWED
Harmful in contact with skin
Fatal if inhaled
CAUSES SKIN IRRITATION

appearance amber **Physical state** solid **Odor** Rotten egg-like

Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Wear protective gloves/protective clothing/eye protection/face protection
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
In case of inadequate ventilation wear respiratory protection

IF ON SKIN: Wash with plenty of soap and water
Call a POISON CENTER or doctor if you feel unwell
If skin irritation occurs: Get medical advice/attention
Take off contaminated clothing and wash before reuse
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Immediately call a POISON CENTER or doctor/physician
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth

Precautionary Statements - Storage
Store in a well-ventilated place. Keep container tightly closed
Store locked up

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Hazards Not Otherwise Classified (HNOC)
OTHER INFORMATION
• Harmful to aquatic life with long lasting effects
• Toxic to aquatic life

3. Composition/information on Ingredients

Chemical name	CAS-No	Weight %	Trade secret
Sulfur	7704-34-9	80	

If CAS number is "proprietary", the specific chemical identity and percentage of composition has been withheld as a trade secret.

4. First aid measures

FIRST AID MEASURES

Eye contact Hold eye open and rinse slowly and gently with water for 15 - 20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

Skin contact Rinse skin immediately with plenty of water for 15-20 minutes. Call poison control center or doctor for treatment advice. Remove contaminated clothing and shoes.

Inhalation Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a physician or poison

control center immediately.

Ingestion Call a physician or poison control center immediately. Never give anything by mouth to an unconscious person. Do not induce vomiting without medical advice.

Most Important Symptoms and Effects, Both Acute and Delayed

Most Important Symptoms and Effects No information available.

Indication of Any Immediate Medical Attention and Special Treatment Needed

Notes to physician No information available. Treat symptomatically.

5. Fire-fighting measures

Suitable extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media No information available.

Specific hazards arising from the chemical
No information available.

Explosion data
Protective equipment and precautions for firefighters
Use personal protective equipment. As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal Precautions Use personal protective equipment. Avoid contact with skin, eyes and clothing.

Environmental Precautions

Environmental precautions Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinenet environmental permits. Do not flush into surface water or sanitary sewer system. Local authorities should be advised if significant spillages cannot be contained.

Methods and material for containment and cleaning up

Methods for Clean-Up Sweep up and shovel into suitable containers for disposal. Shovel or sweep up.

7. Handling and Storage

Precautions for safe handling

Handling Avoid breathing dust. Keep away from heat, sparks and open flame. - No smoking. Avoid contact with skin, eyes and clothing. In case of insufficient ventilation, wear suitable respiratory equipment.

Conditions for safe storage, including any incompatibilities

Storage Store in an area where cross-contamination with pesticides, fertilizers, food or feed could not occur. Store in a dry place and/or in closed container. Keep containers tightly closed in a cool, well-ventilated place.

incompatible materials Strong oxidizing agents.

8. Exposure Controls/Personal Protection

Exposure guidelines
This product does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Engineering controls
Investigate engineering techniques to reduce exposures. Local mechanical exhaust ventilation is preferred. Consult ACGIH ventilation manual or NFPA Standard 91 for design of exhaust systems. PESTICIDE APPLICATORS & WORKERS. THESE WORKERS MUST REFER TO PRODUCT LABELING AND DIRECTIONS FOR USE IN ACCORDANCE WITH EPA WORKER PROTECTION STANDARD 40 CFR PART 170.

Personal protective equipment

Eye/Face Protection
Avoid contact with eyes. Goggles.

Skin protection
Long sleeved clothing. Long pants. Chemical resistant gloves. waterproof gloves. Socks and footwear.

Respiratory protection
Where airborne exposure is likely, use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. Full facepiece equipment is recommended and, if used, replaces need for face shield and/or chemical goggles. If exposures cannot be kept at a minimum with engineering controls, consult respirator manufacturer to determine appropriate type equipment for given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where there may be a potential for significant exposure, use an approved full face positive-pressure, self-contained breathing apparatus. Respiratory protection programs must comply with 29 CFR 1910.134.

General hygiene considerations
Avoid contact with skin, eyes and clothing.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Physical state	solid		
appearance	amber	**Odor**	Rotten egg-like
color	No information available		

Property	VALUES	Remarks/ • Method
pH	No information available	
Melting point/freezing point	115 °C / 239 °F	
Boiling Point/Range	No information available	
Flash Point	207 C	
Evaporation Rate	No information available	
flammability (solid, gas)	No information available	
Flammability limit in air		
Upper Flammability Limit	No information available	
Lower Flammability Limit	No information available	
vapor pressure	0.0086 mbar	
Vapor Density	No information available	
Specific gravity	No information available	
Water solubility	No information available	
Solubility in Other Solvents	No information available	
Partition coefficient: n-octanol/water	No information available	
Autoignition temperature	232 C	
decomposition temperature	No information available	
Viscosity, kinematic	No information available	
Dynamic viscosity	No information available	
Explosive properties	No information available	
Oxidizing properties	No information available	

OTHER INFORMATION

Softening point	No information available
molecular weight	No information available
VOC Content	No information available
density	No information available
Bulk density	0.86-1.00 (Tap) g/ml

10. Stability and Reactivity

Reactivity
no data available

Chemical stability
Stable under recommended storage conditions.
Possibility of hazardous reactions
None under normal processing.
Conditions to avoid
Extremes of temperature and direct sunlight.
incompatible materials
Strong oxidizing agents.
Hazardous decomposition products
No information available.

11. Toxicological Information

Information on Likely Routes of Exposure

Product information SIngle exposure studies indicate:
Oral : No more than slightly toxic to rats (LD50 >2,000 mg/kg)
Dermal: Slightly toxic to rats (LD50 2,000 mg/kg)
Inhalation: Slightly toxic to rats (4hr LC50 1.35 mg/l)
Eye Irritation: Non irritating to rabbits
Skin Irritation: Non irritating to rabbits
No skin allergy was observed in guinea pigs following repeated exposure.

Inhalation Harmful by inhalation.

Eye contact May cause irritation.

Skin contact May be harmful if absorbed through the skin.

Ingestion HARMFUL IF SWALLOWED.

Chemical name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Sulfur 7704-34-9	LD50 > 2000 mg/kg bw (rat - OECD 401)	LD50 > 2000 mg/kg bw (rat - OECD 402)	LC50 (4h) > 5.43 g/m³ (dust) (rat - EPA OPP 81-3)

Information on Toxicological Effects

Symptoms No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

sensitization	No information available.
Mutagenic effects	No information available.
Carcinogenicity	There are no known carcinogenic chemicals in this product.
Reproductive effects	Not Available.
STOT - Single Exposure	No information available.
STOT - repeated exposure	No information available.
Aspiration hazard	No information available.

Numerical Measures of Toxicity - Product information

LD50 Oral	> 2000 mg/kg (rat)
LD50 Dermal	2000 mg/kg (rat)
LC50 Inhalation:	Inhalation LC50 1.35 mg/l (4-hr)

12. Ecological Information

ecotoxicity

Do not apply directly to water to areas where surface water is present or to intertidal areas below the mean high water mark. Do not clean equipment or dispose of equipment washwater in a manner that will contaminate water resources or areable land. Do not apply when weather conditions favor drift from treated areas.

Persistence/Degradability
No information available.

Bioaccumulation/ Accumulation
No information available.

Other Adverse Effects
No information available

13. Disposal Considerations

Waste Treatment Methods

Waste Disposal Method	Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide or rinsate is a violation of Federal law. If the wastes cannot be disposed of by use or according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.
Contaminated packaging	Refer to product label.

14. Transport Information

DOT	NOT REGULATED
TDG	NOT REGULATED
IATA	NOT REGULATED
IMDG/IMO	NOT REGULATED

15. Regulatory Information

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

signal word	CAUTION
Ventilation Control	PESTICIDE APPLICATORS & WORKERS THESE WORKERS MUST REFER TO

PRODUCT LABELING AND DIRECTIONS FOR USE IN ACCORDANCE WITH EPA WORKER PROTECTION STANDARD 40 CFR PART 170.

Keep out of Reach of Children. Harmful if swallowed or absorbed through the skin.

International Inventories

USINV	Not determined
DSL/NDSL	Not determined
EINECS/ ELINCS	Does not comply
ENCS	Does not comply
China	Complies
KECL	Complies
PICCS	Complies
AICS	Complies
TSCA	Complies

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and and Title 40n of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazardous Categorization

Acute health hazard	yes
Chronic health hazard	NO
Fire hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

CERCLA

SARA Product RQ 0

RCRA

Pesticide Information

Component	FIFRA - Restricted Use	FIFRA - Pesticide Product Other Ingredients	FIFRA - Listing of Pesticide Chemicals	California Pesticides - Restricted Materials
Sulfur 7704-34-9 (80)			X	

State Regulations

State Right-to-Know

Chemical name	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Sulfur	X	X	X		

International regulations

U.S. EPA Label information

EPA Pesticide registration number 70506-187

16. Other Information

NFPA	HEALTH 2	flammability 1	Instability 0	Physical hazard -

Preparation Date 01-May-2015
Revision date 01-May-2015
Revision Summary
Update to GHS format

End of MSDS

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 PRODUCT IDENTIFIER:
TRADE NAME: WATERMAXX® 2
1.2 RECOMMENDED USE: AGRICULTURAL SOIL SURFACTANT
1.3 SUPPLIER DETAILS:
LOVELAND PRODUCTS, INC.
P.O. Box 1286 • Greeley, CO 80632-1286
1.4 24-Hour Emergency Phone: 1-800-424-9300 - **Medical Emergencies:** 1-866-944-8565
U.S. Coast Guard National Response Center: 1-800-424-8802

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to 29 CFR 1910.1200

Eye irritation	Category 1	H318

2.2 Label elements

Signal word: DANGER
Hazard Statements: H318 – Causes serious eye damage.

Precautionary Statements: (Prevention):
P102 – Keep out of reach of children.
P103 – Read label before use.
P233 – Keep container tightly closed.
P234 – Keep only in original container.
P260 – Do not breathe dust / fume / gas / mist / vapors / spray.
P264 – Wash thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P280 - Wear protective gloves / protective clothing / eye protection / face protection.

Precautionary Statement:
P305+P351+P338 – IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P302+P352 – IF ON SKIN: Wash with plenty of water for 15 to 20 minutes
P301+P310 – IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P331 – Do not induce vomiting.
P304+P340 – IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

Precautionary Statement: (Storage):
P401+P404 – Store in a cool, dry place. Store in a closed container.

Precautionary Statement: (Disposal):
P501 – Dispose of contents in container at an approved waste disposal facility in accordance with all local/regional/national regulations.

2.3 Other hazards
None known

3. COMPOSITION, INFORMATION ON INGREDIENTS

3.2 Mixtures

Chemical Name:	CAS No.	Classification	Concentration [%]
D-Glucopyranose, oligomeric, decyl octyl glycosides	68515-73-1	Eye irrit. 1; H318	15 - 40%

(The specific chemical identity and/or exact percentages of composition have been withheld as a trade secret)

Non-Hazardous Ingredients Water	7732-18-5	5%

4. FIRST AID MEASURES

4.1 Description of First Aid Measures

General Advice: Get medical attention if symptoms occur.

Eye contact: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

Skin contact: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Ingestion: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

Inhalation: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferable by mouth-to-mouth, if possible. Call a poison control center or doctor for treatment advice.

4.2 Most Important Symptoms and Effects, Acute and Delayed

Symptoms : Causes serious eye damage. May cause skin irritation. May be irritating to mucous membranes and upper respiratory tract. May be harmful if inhaled.

4.3 Immediate Medical Attention and Special Treatment

Treatment : Treat symptomatically. Symptoms may be delayed.

FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: 1-866-944-8565

Take container, label or product name with you when seeking medical attention.

NOTES TO PHYSICIAN: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE FIGHTING MEASURES

5.1 EXTINGUISHING MEDIA:

Suitable Extinguishing Media: Use water fog, alcohol foam, dry chemical, or carbon dioxide extinguishing media.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE:

Specific Hazards During Firefighting: None known.

5.3 SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS

Special Protective Equipment for Firefighters: Self-contained breathing apparatus and full protective gear should be worn in fighting large fires involving chemicals. Use alcohol-type or universal-type foam on larger fires. Use water spray to keep fire exposed containers cool. Keep people away. Isolate fire and deny unnecessary entry.

6. ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Personal Precautions: Avoid inhalation of vapors, fumes, and spray mist and prolonged or repeated contact with skin and eyes. Ensure adequate ventilation. Wear suitable protective clothing.

6.2 ENVIRONMENTAL PRECAUTIONS

Environmental Precautions: Prevent further leakage or spillage if safe to do so. Do not contaminate water. Do not allow to enter drains, sewers, or watercourses.

6.3 METHODS AND MATERIALS FOR CONTAINMENT AND CLEAN-UP

Methods for Clean-Up: Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. After removal flush contaminated area thoroughly with water.
Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to Remove residual contamination.
Never return spills to original containers for re-use.

7. HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING:

Advice on Safe Handling : Avoid inhalation of vapors / spray mist or fumes and contact with eyes, skin and clothing. Do not breathe mist or vapor. Wear personal protective equipment. Do not use in areas without adequate ventilation. Avoid prolonged exposure. Wash thoroughly after handling. Do not empty into drains. Handle and open container with care. Use care in handling/storage. Wash before eating, drinking and/or smoking. Eye wash and safety shower on site are recommended.

7.2 CONDITIONS FOR SAFE STORAGE:

Requirements for Storage Areas and Containers: Store in a cool, dry place. Store in original container. Keep tightly closed. Do not reuse empty container. Do not contaminate water, food or feed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 CONTROL PARAMETERS:

OCCUPATIONAL EXPOSURE LIMITS

ACGIH TLVs TWA

Components	Type	Value
No data available		

OSHA PELs TWA

No data available

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Specimen
No data		

8.2 EXPOSURE CONTROLS:

Engineering Measures

Provide adequate general and local exhaust ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of vapors and spray mists. Provide eyewash station and safety shower.

Individual Protection Measures:

Eye / Face Protection: Chemical goggles or face shield are recommended.

Skin Protection: Wear protective clothing. Wear protective gloves.

Respiratory Protection: In case of inadequate ventilation or risk of inhalation of vapors, use suitable respiratory equipment. Wear respiratory protection during operations where spraying or misting occurs. Wear air supplied respiratory protection. In the U.S.A., if respirators are used, a program should be in place to assure compliance with 29 CFR 1910.134, the OSHA Respiratory Protection standard. Wear air supplied respiratory protection if exposure concentrations are unknown.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 APPEARANCE : Liquid
ODOR: Characteristic.
ODOR THRESHOLD: Not determined.
COLOR : Dark amber.
pH : 5.0 – 7.0 (5% solution)
MELTING POINT / FREEZING POINT: 48 °F (8 °C) [Freezing Point]
BOILING POINT: No data available
FLASH POINT: >93°C (>200 °F) – PMCC
FLAMMABILILITY (solid, gas): Will bum.
UPPER / LOWER FLAMMABILITY OR EXPLOSIVE LIMITS: No data available
VAPOR PRESSURE: No data available
SOLUBILITY: No data available
PARTITION CO-EFFICIENT, n-OCTANOL / WATER: No data available
AUTO-IGNITION TEMPERATURE: No data available.
DECOMPOSITION TEMPERATURE: No data available
VISCOSITY : 1,737 mPa.s @ 77°F (25 °C)
SPECIFIC GRAVITY (Water = 1): 1.0209 g/ml
DENSITY: 8.52 lbs./gal. / 1.02 kg/L

Note: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.

10. STABILITY AND REACTIVITY

10.1 REACTIVITY
Stable

10.2 CHEMICAL STABILITY
Stable under normal temperature conditions

10.3 POSSIBILITY OF HAZARDOUS REACTIONS
No reactions known under normal use conditions. Will not polymerize.

10.4 CONDITIONS TO AVOID
Keep away from heat and sources of ignition. Keep away from flames and sparks

10.5 INCOMPATIBILE MATERIALS
Strong acids. Strong oxidizing agents.

10.6 HAZARDOUS DECOMPOSITION PRODUCTS
Oxides of carbon.

11. TOXICOLOGICAL INFORMATION

11.1 LIKELY ROUTES OF EXPOSURE
Eye contact, skin contact, inhalation.
LC_{50} (rat): No data available
LD_{50} Oral (rat): > 2,000 mg/kg
LD_{50} Dermal (rabbit): No data available
Skin Irritation (rabbit): Slight imtant
Eye Irritation (rabbit): Causes serious eye damage.
Specific Target Organ Toxicity: Eyes
Aspiration: No data available
Skin Sensitization (guinea pig): No data available
Carcinogenicity: No data available
Germ Cell Mutagenicity: No data available
Interactive Effects: None known

12. ECOLOGICAL INFORMATION

12.1 ECOTOXICITY

No data available

Ecotoxicological Data

Components	Species	Test Results
No data available		

Drift or runoff may adversely affect non-target plants.
Do not apply directly to water.
Do not contaminate water when disposing of equipment wash water.
Do not apply when weather conditions favor drift from target area.

12.2 PERSISTENCE AND DEGRADABILITY

Biodegradability: No data available

12.3 BIOACCUMULATIVE POTENTIAL

Bioaccumulation: No data available

12.4 MOBILITY IN SOIL

No data available

12.5 OTHER ADVERSE EFFECTS

Assessment: No data available.

13. DISPOSAL CONSIDERATIONS

13.1 WASTE TREATMENT METHODS

Do not contaminate water, food or feed by storage or disposal. Wastes may be disposed of on-site or at an approved waste disposal facility. Triple rinse (or equivalent) adding rinse water to spray tank. Offer container for recycling or dispose of container in sanitary landfill, or by other procedures approved by appropriate authorities. Recycling decontaminated containers is the best option of container disposal. The Agricultural Container Recycling Council (ACRC) operates the national recycling program. To contact your state and local ACRC recycler visit the ACRC web page at www.acrecycle.org.

14. TRANSPORT INFORMATION

14.1 LAND TRANSPORT

DOT Shipping Description: NOT REGULATED
U.S. Surface Freight Classification: ADHESIVES, ADJUVANTS, SPREADERS OR STICKERS (NMFC 4610; CLASS: 60)

15. REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS

NFPA & HMIS Hazard Ratings:

NFPA		HMIS
2 Health	0 Least	2 Health
1 Flammability	1 Slight	1 Flammability
0 Instability	2 Moderate	0 Reactivity
	3 High	B PPE
	4 Severe	

SARA Hazard Notification/Reporting
SARA Title III Hazard Category:

Immediate	Y	Fire	N	Sudden Release of Pressure	N
Delayed	N	Reactive	N		

Reportable Quantity (RQ) under U.S. CERCLA: Ethylene Oxide (CAS: 75-21-8) 10 pounds; Sodium Hydroxide (CAS: 1310-73-2) 1,000 pounds; 1,4-Dioxane (CAS: 123-91-1) 100 pounds; Propylene Oxide (CAS: 75-56-9) 100 pounds; Potassium Hydroxide (CAS: 1310-58-3) 1,000 pounds; Sulfuric Acid (CAS: 7664-93-9) 1,000 pounds.
SARA, Title III, Section 313: Ethylene Oxide (CAS: 75-21-8); 1,4-Dioxane (CAS: 123-91-1); Propylene Oxide (CAS: 75-56-9)
RCRA Waste Code: U115 (Ethylene Oxide); U108 (1,4-Dioxane)
CA Proposition 65: WARNING: This product contains chemicals known to the State of California to cause cancer or birth defects or other reproductive harm.

16. OTHER INFORMATION

SDS STATUS: Format change
PREPARED BY: Registrations and Regulatory Affairs **REVIEWED BY:** Environmental Health and Safety

®WaterMaxx is a registered trademark of Loveland Products, Inc.

Disclaimer and Limitation of Liability: This data sheet was developed from information on the constituent materials identified herein and does not relate to the use of such materials in combination with any other material or process. No warranty is expressed or implied with respect to the completeness or ongoing accuracy of the information contained in this data sheet, and LOVELAND PRODUCTS, INC. disclaims all liability for reliance on such information. This data sheet is not a guarantee of safety. Users are responsible for ensuring that they have all current information necessary to safely use the product described by this data sheet for their specific purpose.

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PyGanic® Crop Protection EC 5.0 ii

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: PyGanic® Crop Protection EC 5.0 ii
PRODUCT DESCRIPTION: An Insecticide for Organic Crop Protection
PRODUCT CODE: 7444, EPA REG. NO. : 1021-1772
ACTIVE INGREDIENT(S): Pyrethrins

MANUFACTURER
McLaughlin Gormley King Company
8810 10th Avenue North
Minneapolis, MN 55427
Emergency Contact: SafetyCall®
Emergency Phone: 1(888) 740-8712
Alternate Emergency Phone: 1(952) 852-9509
Product Stewardship: 1(800) 645-6466
E-Mail: mgk-sds@mgk.com

24 HR. EMERGENCY TELEPHONE NUMBERS
FOR TRANSPORTATION:
CHEMTREC® U.S. and CANADA: 1(800) 424-9300
CHEMTREC® All Other Areas: 1(703) 527-3887

COMMENTS: MGK® Hours of operation are 8:00 am to 4:30 pm CST, 14:00 to 22:30 GMT.

For MEDICAL EMERGENCIES or PESTICIDE INCIDENTS, call 24 hours a day to 1-888-740-8712.

2. HAZARDS IDENTIFICATION

GHS CLASSIFICATIONS

Health:

Skin Sensitization, Category 1B
Acute Toxicity (Inhalation), Category 4
Acute Toxicity (Oral), Category 4

Environmental:

Acute Hazards to the Aquatic Environment, Category 1

GHS LABEL

Exclamation mark (GHS 07)

Environment (GHS 09)

SIGNAL WORD: WARNING

HAZARD STATEMENTS

H317: May cause an allergic skin reaction.
H332: Harmful if inhaled.
H302: Harmful if swallowed.
H400: Very toxic to aquatic life.

PRECAUTIONARY STATEMENT(S)

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Prevention:

P202: Do not handle until all safety precautions have been read and understood.
P261: Avoid breathing dust/fume/gas/mist/vapours/spray.
P270: Do no eat, drink, or smoke when using this product.
P273: Avoid release to the environment.
P280: Wear protective gloves/protective clothing/eye protection/face protection.

Response:

P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

Storage:

P403+P233: Store in a well-ventilated place. Keep container tightly closed.

Disposal:

P501: Dispose of contents/container to an approved waste disposal plant.

COMMENTS: This material is considered hazardous by the 2012 OSHA Hazard Communication Standard [29 CFR 1910.1200(a)(1)], and the G.H.S.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	Wt.%	CAS
Pyrethrins	5	8003-34-7

COMMENTS: Ingredients not identified are proprietary or non-hazardous. Values are not product specifications.

4. FIRST AID MEASURES

EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

SKIN: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

INGESTION: If swallowed, IMMEDIATELY call a poison control center or doctor for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or a doctor. Never give anything by mouth to an unconscious person.

INHALATION: Remove affected person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

NOTES TO PHYSICIAN: For skin effects, a highly efficient therapeutic agent for pyrethrin exposure is topical application of tocopherol acetate (Vitamin E).

5. FIRE FIGHTING MEASURES

FLAMMABLE CLASS: This product is NOT classified as flammable or combustible by OSHA.

EXTINGUISHING MEDIA: Foam, carbon dioxide or dry chemical.

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HAZARDOUS COMBUSTION PRODUCTS: Under fire conditions this product may support combustion and may decompose to give off toxic gases such as carbon monoxide, carbon dioxide, and nitrogen oxides.

FIRE FIGHTING PROCEDURES: Treat as an oil fire. Use a full-faced self-contained breathing apparatus along with full protective gear. Keep nearby containers and equipment cool with a water stream.

6. ACCIDENTAL RELEASE MEASURES

SMALL SPILL: Stop release, if possible without risk. Dike or contain release, if possible, and if immediate response can prevent further damage or danger. Isolate and control access to the release area. Take actions to reduce vapors. Absorb with appropriate absorbent such as sand, or vermiculite. Clean spill area of residues and absorbent.

LARGE SPILL: Stop release, if possible without risk. Dike or contain release, if possible, and if immediate response can prevent further damage or danger. Isolate and control access to the release area. Take actions to reduce vapors. Collect product into drums, storage tanks, etc., via drains, pumps, etc. Absorb with appropriate absorbent such as sand or vermiculite. Clean spill area of residues and absorbent.

ENVIRONMENTAL PRECAUTIONS

WATER SPILL: Contains Pyrethrins, which are toxic to fish and other aquatic invertebrates. Contaminated absorbent and wash water should be disposed of according to local, state, and federal regulations.

7. HANDLING AND STORAGE

HANDLING: Mixers, loaders, and other handlers:

Wear a long-sleeved shirt and long pants, shoes and socks.
Wear chemical-resistant gloves such as Barrier Laminate, Neoprene Rubber, Nitrile Rubber, or Viton.

Applicators using hand-held foggers in an enclosed-area must also wear the following additional PPE:

Wear a MSHA/ NIOSH-approved respirator, such as a half-face, full-face, or hood-style NIOSH-approved respirator with a dust/ mist filtering cartridge (MSHA/ NIOSH approval number prefix TC-21C), or a canister approved for pesticides (MSHA/ NIOSH approval number prefix TC-14G), or a cartridge or canister with any R, P or HE filter.

Do not contaminate water, food or feedstuffs by storage, handling, or disposal.

READ AND OBSERVE ALL PRECAUTIONS AND INSTRUCTIONS ON THE PRODUCT LABEL.

STORAGE: Store in a cool, dry (preferably locked) area that is inaccessible to children and animals. Keep this product in its tightly-closed, original container when not in use.

KEEP OUT OF REACH OF CHILDREN

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

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EXPOSURE GUIDELINES

OSHA HAZARDOUS COMPONENTS (29 CFR1910.1200)					
		EXPOSURE LIMITS			
		OSHA PEL		ACGIH TLV	
Chemical Name		ppm	mg/m³	ppm	mg/m³
Pyrethrins	TWA		5		5

ENGINEERING CONTROLS: Ventilate treatment area thoroughly before re-entry.

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: Take prudent precautions to avoid contact with eyes.

SKIN: Wear chemical-resistant gloves such as Barrier Laminate, Neoprene Rubber, Nitrile Rubber, or Viton, and wear protective clothing.

RESPIRATORY: Applicators using hand-held foggers in an enclosed-area must also wear the following additional PPE: Wear a MSHA/ NIOSH-approved respirator, such as a half-face, full-face, or hood-style NIOSH-approved respirator with a dust/ mist filtering cartridge (MSHA/ NIOSH approval number prefix TC-21C), or a canister approved for pesticides (MSHA/ NIOSH approval number prefix TC-14G), or a cartridge or canister with any R, P or HE filter.

PROTECTIVE CLOTHING: Wear a long-sleeved shirt and long pants, shoes and socks.

WORK HYGIENIC PRACTICES: DO NOT SMOKE, EAT, OR DRINK, OR APPLY COSMETICS IN WORK AREA! Wash promptly if skin becomes contaminated. Wash at the end of each work shift and before eating, smoking, or using the toilet.

OTHER USE PRECAUTIONS: AGRICULTURAL USE REQUIREMENTS:

Use this product only in accordance with its labeling and with the Woker Protection Standard, 40 CFR, Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on the label about personal protective equipment (PPE), and restricted-entry interval. The requirements listed below only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours.

PPE required for early entry to treated areas that is permitted under Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:
Long-sleeved shirt and long pants;
Chemical-resistant gloves, such as Barrier Laminate, Nitrile Rubber, Neoprene Rubber, or Viton;
Shoes plus socks.

COMMENTS: NON-AGRICULTURAL USE REQUIREMENTS:

The requirements in this section apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR, Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries or greenhouses.

Do not enter or allow others to enter until vapors, mists, and aerosols have dispersed, and the treated area has been thorough ventilated.

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Do not enter or allow others to enter until sprays have dried.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Liquid

ODOR: Sweet surfactant odor.

APPEARANCE: Clear, amber-brown colored liquid.

pH: 5.9

Notes: @ 5% in water.

FLASHPOINT AND METHOD: > 93.3°C (200°F) TAG Closed Cup

VAPOR DENSITY: Heavier than air.

FREEZING POINT: Not Available

SOLUBILITY IN WATER: Partially miscible in water.

SPECIFIC GRAVITY: 0.932 (Water = 1) at 20°C (68°F)

VISCOSITY #1: 34.8 CPS at 24°C (75.2°F) Brookfield

(VOC): 0 %

10. STABILITY AND REACTIVITY

STABLE: Yes

HAZARDOUS POLYMERIZATION: No

CONDITIONS TO AVOID: Not compatible with strong acids or bases. Not compatible with strong oxidizers.

11. TOXICOLOGICAL INFORMATION

ACUTE

DERMAL LD_{50}: > 2000 mg/kg

Notes: Albino rabbit.

ORAL LD_{50}: > 2000 mg/kg

Notes: Albino rat.

INHALATION LC_{50}: > 2.12 mg/L

Notes: Rats exposed for 4 hours to test atmosphere. The Acute Inhalation LC_{50} of this material places it in EPA Toxic Category IV.

EYE EFFECTS: Irritation clearing within 48 hours.

SKIN EFFECTS: Slight irritation at 72 hours. Primary Irritation Index = 1.3.

SENSITIZATION: Positive.

COMMENTS: None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as being carcinogens.

Carcinogenicity/ Oncogenicity - Slightly elevated incidences of benign tumors of the thyroid and liver were seen in rats following lifetime administration of high doses of Pyrethrins. Further detailed scientific studies into the mode of action responsible for these

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effects show that:
1) Because of biological species differences, the rat thyroid tumors are not relevant to humans.
2) The rat liver tumors occur in animals *only* at doses greatly exceeding human exposure levels and that cause cell proliferation (mitogenesis).
Based on these data, the USEPA has classified Pyrethrins as "Not Likely to be Carcinogenic to Humans," at doses that do not cause a mitogenic response in the liver/ cell proliferation. Thus, Pyrethrins can be considered to be non-carcinogenic at exposure levels relevant to human use of Pyrethrins-containing products.

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION: This product is toxic to aquatic organisms, including fish and invertebrates. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas. This product may contaminate water through runoff. This product has a potential for runoff for several weeks after application. Poorly draining soils and soils with shallow water tables are more prone to produce runoff that contains this product.
This product is highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds while bees are actively visiting the treatment area.
Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark.
Do not contaminate water when disposing of equipment washwaters or rinsate.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposa facility.

EMPTY CONTAINER: Non-refillable container. DO NOT reuse or refill this container.

Triple-rinse or pressure rinse (or equivalent) container promptly after emptying. Then, offer for recycling or reconditioning, or puncture and dispose of container in a sanitary landfill, or by other procedures approved by State and Local authorities.

Triple-rinse as follows for containers of 5 gallons or less (< 5 gallons): Empty the remaining contents into application equipment or a mix-tank and drain for 10 seconds after the flow begins to drip. Fill the container $^1/_4$ full with water and re-cap. Shake for 10 seconds. Pour rinsate into application equipment or a mix-tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

Triple-rinse as follows for containers greater than 5 gallons (> 5 gallons): Empty the remaining contents into application equipment or a mix-tank. Fill the container $^1/_4$ full with water. Replace and tighten closures. Tip container on its side and roll back and forth, ensuring at least one complete revolution, for 20 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix-tank or store rinsate for later use or disposal. Repeat this procedure two more times.

Pressure-rinse as follows: Empty the remaining contents into application equipment or a mix-tank. Hold container upside down over application equipment or mix-tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 p.s.i. for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

RCRA/EPA WASTE INFORMATION: This product contains the following RCRA/CERCLA Hazardous wastes/substances:

Component, RCRA ID#, CERCLA RQ:

Pyrethrins, N/A, 1 Lb.

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14. TRANSPORT INFORMATION

DOT (DEPARTMENT OF TRANSPORTATION)

PROPER SHIPPING NAME: UN3082, Environmentally Hazardous Substance, Liquid, N.O.S., RQ (Pyrethrins)

PRIMARY HAZARD CLASS/DIVISION: 9

PACKING GROUP: III

REPORTABLE QUANTITY (RQ) UNDER CERCLA: 1 Lb. (Pyrethrins/ Pyrethrum)

OTHER SHIPPING INFORMATION: This material is not regulated as a hazardous material by the DOT in quantities less than < 20 Lbs.

Shipping name for quantities more than > 20 Lbs.: UN3082, Environmentally Hazardous Substance, Liquid, N.O.S., RQ (Pyrethrins), Class 9, Packing Group III

AIR (ICAO/IATA)

SHIPPING NAME: UN3082, Environmentally Hazardous Substance, Liquid, N.O.S., RQ (Pyrethrins)

PRIMARY HAZARD CLASS/DIVISION: 9

PACKING GROUP: III

VESSEL (IMO/IMDG)

SHIPPING NAME: UN3082, Environmentally Hazardous Substance, Liquid, N.O.S.

PRIMARY HAZARD CLASS/DIVISION: 9

PACKING GROUP: III

MARINE POLLUTANT #1 : Pyrethrins/ Pyrethrum

15. REGULATORY INFORMATION

UNITED STATES

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

FIRE: No **PRESSURE GENERATING:** No **REACTIVITY:** No **ACUTE:** Yes

313 REPORTABLE INGREDIENTS: This product contains no SARA Title III Section 313 chemicals that exceed the reporting limits.

302/304 EMERGENCY PLANNING

EMERGENCY PLAN: There are no SARA Title III Section 302 extremely hazardous substances present in this formulation (40 CFR 355).

See Section 13 of this MSDS for the components that are subject to emergency requirements under CERCLA Section 103(a)(40 CFR 302.4).

TSCA (TOXIC SUBSTANCE CONTROL ACT)

TSCA STATUS: All chemical substances found in this product comply with the Toxic Substances Control Act's inventory reporting requirements.

REGULATIONS

STATE REGULATIONS:

VOLATILE ORGANIC COMPOUNDS (VOC):

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This product contains no VOC's (0%).

FIFRA (FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT):

NOTE: This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for Safety Data Sheets, and for workplace labels of non-pesticide chemicals. The following is the hazard information as required on the pesticide label:

CAUTION. Causes moderate eye irritation. Harmful if swallowed or absorbed through the skin. Avoid contact with skin, eyes, and clothing. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

Personal Protective Equipment (PPE):

Mixer's, loaders, applicators, and other handlers:
Wear a long-sleeved shirt and long pants, shoes and socks.
Wear chemical-resistant gloves such as Barrier Laminate, Neoprene Rubber, Nitrile Rubber, or Viton.

Applicators using hand-held foggers in an enclosed-area must also wear the following additional PPE:
Wear a MSHA/ NIOSH-approved respirator, such as a half-face, full-face, or hood-style NIOSH-approved respirator with a dust/ mist filtering cartridge (MSHA/ NIOSH approval number prefix TC-21C), or a canister approved for pesticides (MSHA/ NIOSH approval number prefix TC-14G), or a cartridge or canister with any R, P or HE filter.

16. OTHER INFORMATION

REVISION SUMMARY: This MSDS replaces the 2/3/2010 MSDS. Revised: **Section 1:** PRODUCT CODE. **Section 2:** EMERGENCY OVERVIEW - IMMEDIATE CONCERNS POTENTIAL HEALTH EFFECTS (SKIN, SKIN ABSORPTION, INHALATION, INGESTION). **Section 4:** CHRONIC EFFECTS. **Section 7:** HANDLING, STORAGE. **Section 8:** PERSONAL PROTECTIVE EQUIPMENT (PROTECTIVE CLOTHING). **Section 9:** (VOC). **Section 11:** ACUTE (INHALATION LC_{50} (rat), INHALATION LC_{50} (rat)). **Section 12:** ECOTOXICOLOGICAL INFORMATION. **Section 13:** DISPOSAL METHOD, EMPTY CONTAINER. **Section 14:** AIR (ICAO/IATA) - UN/NA NUMBER DOT (DEPARTMENT OF TRANSPORTATION) - UN/NA NUMBER VESSEL (IMO/IMDG) (MARINE POLLUTANT #1, PRIMARY HAZARD CLASS/DIVISION, PACKING GROUP). **Section 15:** STATE REGULATIONS.

HMIS RATING

HEALTH	2
FLAMMABILITY	1
PHYSICAL HAZARD	1
PERSONAL PROTECTION	

HMIS RATINGS NOTES: We assign HMIS ratings to this product based on the hazards of its ingredients(s). Since the customer is most aware of the applications and conditions of use, he or she must ensure that the proper Personal Protective Equipment is provided, consistent with the information contained in Section's 2, 7, and 8 of this MSDS.

COMMENTS: The data contained herein are based on information currently available to McLaughlin Gormley King Company and, to the best of our knowledge, are accurate and based on sound expert opinion. Our statements herein, however, are not to be taken as a warranty or representation for which McLaughlin Gormley King Company assumes legal responsibility.

MSDS Prepared by T. Azzivitto

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product identifier	
Trade name	ALION® HERBICIDE
Product code (UVP)	79930208
SDS Number	102000023686
EPA Registration No.	264-1106
Relevant identified uses of the substance or mixture and uses advised against	
Use	Herbicide
Restrictions on use	See product label for restrictions.
Information on supplier	
Supplier	Bayer CropScience 2 T.W. Alexander Drive Research Triangle PK, NC 27709 United States
Responsible Department	Email: SDSINFO.BCS-NA@bayer.com
Emergency telephone no.	
Emergency Telephone Number (24hr/ 7 days)	1-800-334-7577
Product Information Telephone Number	1-866-99BAYER (1-866-992-2937)

SECTION 2: HAZARDS IDENTIFICATION

Classification in accordance with regulation HCS 29CFR §1910.1200
Specific target organ toxicity - repeated exposure: Category 2

Labelling in accordance with regulation HCS 29CFR §1910.1200

Signal word: Warning

Hazard statements
May cause damage to organs (Nervous system) through prolonged or repeated exposure.

Precautionary statements
Do not breathe spray.
Get medical advice/ attention if you feel unwell.

Dispose of contents/container in accordance with local regulation.

Hazards Not Otherwise Classified (HNOC)
No physical hazards not otherwise classified.
No health hazards not otherwise classified.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Component Name	CAS-No.	Concentration % by weight
Indaziflam	950782-86-2	19.05

SECTION 4: FIRST AID MEASURES

Description of first aid measures

General advice	When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.
Inhalation	Move to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a physician or poison control center immediately.
Skin contact	Take off contaminated clothing and shoes immediately. Wash off immediately with plenty of water for at least 15 minutes. Call a physician or poison control center immediately.
Eye contact	Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a physician or poison control center immediately.
Ingestion	Call a physician or poison control center immediately. Rinse out mouth and give water in small sips to drink. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person. Do not leave victim unattended.

Most important symptoms and effects, both acute and delayed

Symptoms	No symptoms known or expected.

Indication of any immediate medical attention and special treatment needed

Treatment	Appropriate supportive and symptomatic treatment as indicated by the patient's condition is recommended. There is no specific antidote.

SECTION 5: FIREFIGHTING MEASURES

Extinguishing media

Suitable	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Unsuitable	High volume water jet
Special hazards arising from the substance or mixture	In the event of fire the following may be released:, Hydrogen cyanide (hydrocyanic acid), Hydrogen fluoride, Carbon monoxide (CO), Nitrogen oxides (NOx)

Advice for firefighters

Special protective equipment for firefighters	Firefighters should wear NIOSH approved self-contained breathing apparatus and full protective clothing.
Further information	Keep out of smoke. Fight fire from upwind position. Cool closed containers exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water courses.
Flash point	> 100 °C Not relevant; aqueous solution
Auto-ignition temperature	No data available
Lower explosion limit	No data available
Upper explosion limit	No data available
Explosivity	Not applicable

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Precautions	Keep unauthorized people away. Isolate hazard area. Avoid contact with spilled product or contaminated surfaces.

Methods and materials for containment and cleaning up

Methods for cleaning up	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Collect and transfer the product into a properly labelled and tightly closed container. Clean contaminated floors and objects thoroughly, observing environmental regulations.
Additional advice	Use personal protective equipment. Do not allow to enter soil, waterways or waste water canal. Do not allow product to contact non-target plants.
Reference to other sections	Information regarding safe handling, see section 7. Information regarding personal protective equipment, see section 8. Information regarding waste disposal, see section 13.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling
Handle and open container in a manner as to prevent spillage. Maintain exposure levels below the exposure limit through the use of general and local exhaust ventilation.

Advice on protection against fire and explosion
No special precautions required.

Hygiene measures
Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics.
Remove Personal Protective Equipment (PPE) immediately after handling this product. Before removing gloves clean them with soap and water. Remove soiled clothing immediately and clean thoroughly before using again. Wash thoroughly and put on clean clothing.

Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers
Store in a cool, dry place and in such a manner as to prevent cross contamination with other crop protection products, fertilizers, food, and feed. Store in original container and out of the reach of children, preferably in a locked storage area. Protect from freezing.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Components	CAS-No.	Control parameters	Update	Basis
Indaziflam	950782-86-2	0.14 mg/m³ (TWA)		OES BCS*
1,2-Propanediol	57-55-6	500ppb (ST ESL)	03 2014	TX ESL
1,2-Propanediol	57-55-6	100ug/m3 (AN ESL)	03 2014	TX ESL
1,2-Propanediol	57-55-6	1000ug/m3 (ST ESL)	03 2014	TX ESL
1,2-Propanediol	57-55-6	50ppb (AN ESL)	03 2014	TX ESL
1,2-Propanediol (Aerosol.)	57-55-6	10 mg/m³ (TWA)	2010	WEEL

*OES BCS: Internal Bayer CropScience "Occupational Exposure Standard"

Exposure controls

Personal protective equipment
In normal use and handling conditions please refer to the label and/or leaflet. In all other cases the following recommendations would apply.

Respiratory protection	When respirators are required, select NIOSH approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industry recommendations.
Hand protection	Chemical-resistant gloves (barrier laminate, butyl rubber, nitrile rubber or Viton)
Eye protection	Safety glasses with side-shields
Skin and body protection	Wear long-sleeved shirt and long pants and shoes plus socks.
General protective measures	Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and warm/tepid water. Keep and wash PPE separately from other laundry.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	white
Physical State	suspension
Odor	characteristic
Odour Threshold	No data available
pH	7.0 - 8.5 at 1 % (23 °C) (deionized water)
Vapor Pressure	No data available
Vapor Density (Air = 1)	No data available
Density	ca. 1.05 g/cm³ at 20 °C
Evaporation rate	No data available
Boiling Point	No data available
Melting / Freezing Point	No data available
Water solubility	dispersible
Minimum Ignition Energy	Not applicable
Decomposition temperature	Stable under normal conditions.
Partition coefficient: n-octanol/water	No data available
Flash point	> 100 °C Not relevant; aqueous solution
Auto-ignition temperature	No data available
Lower explosion limit	No data available
Upper explosion limit	No data available
Explosivity	Not applicable

Other information	Further safety related physical-chemical data are not known.

SECTION 10: STABILITY AND REACTIVITY

Reactivity	
Thermal decomposition	Stable under normal conditions.
Chemical stability	Stable under recommended storage conditions.
Possibility of hazardous reactions	No hazardous reactions when stored and handled according to prescribed instructions.
Conditions to avoid	Extremes of temperature and direct sunlight.
Incompatible materials	Store only in the original container.
Hazardous decomposition products	No decomposition products expected under normal conditions of use.

SECTION 11: TOXICOLOGICAL INFORMATION

Exposure routes	Eye contact, Inhalation, Skin Absorption, Ingestion
Immediate Effects	
Skin	Harmful if absorbed through skin.
Ingestion	Harmful if swallowed.
Inhalation	Harmful if inhaled.
Information on toxicological effects	
Acute oral toxicity	LD50 (Rat) >= 5,000 mg/kg
Acute inhalation toxicity	LC50 (Rabbit) > 3.624 mg/l Exposure time: 4 h Determined in the form of a respirable aerosol. Highest attainable concentration.
Acute dermal toxicity	LD50 (Rat) > 2,000 mg/kg
Skin irritation	No skin irritation (Rabbit)
Eye irritation	No eye irritation (Rabbit)
Sensitisation	Non-sensitizing. (Guinea pig) OECD Test Guideline 406, Buehler test

Assessment repeated dose toxicity

Indaziflam caused neurobehavioral effects and/or neuropathological changes in subchronic studies in rats and dogs.

Assessment mutagenicity

Indaziflam was not mutagenic or genotoxic in a battery of in vitro and in vivo tests.

Assessment carcinogenicity

Indaziflam was not carcinogenic in lifetime feeding studies in rats and mice.

ACGIH

None.

NTP

None.

IARC

None.

OSHA

None.

Assessment toxicity to reproduction

Indaziflam was not a primary reproductive toxicant in a two-generation study in rats.

Assessment developmental toxicity

Indaziflam did not cause developmental toxicity in rats and rabbits.

Further information

Acute toxicity studies have not been performed on this product as formulated.
Acute toxicity studies have been bridged from a similar formulation(s).
The non-acute information pertains to the active ingredient(s).

SECTION 12: ECOLOGICAL INFORMATION

Toxicity to aquatic invertebrates	EC50 (Daphnia magna (Water flea)) 149 mg/l Exposure time: 48 h
Toxicity to aquatic plants	EC50 (Raphidocelis subcapitata (freshwater green alga)) 0.75 mg/l Exposure time: 72 h
Biodegradability	Indaziflam: Not rapidly biodegradable
Koc	Indaziflam: Koc: 496
Bioaccumulation	Indaziflam: Bioconcentration factor (BCF) 66 Does not bioaccumulate.
Mobility in soil	Indaziflam: Moderately mobile in soils
Additional ecological information	No other effects to be mentioned.

Environmental precautions	Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate surface or ground water by cleaning equipment or disposal of wastes, including equipment wash water. Drift and runoff from treated areas may be hazardous to aquatic organisms in adjacent sites. Apply this product as specified on the label.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods

Product	Do not contaminate water, food, or feed by disposal. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.
Contaminated packaging	Do not re-use empty containers. Triple rinse containers. Puncture container to avoid re-use. Dispose of empty container in a sanitary landfill or by incineration, or, if allowed by State/Provincial and local authorities, by burning. If burned, stay out of smoke. Follow advice on product label and/or leaflet.
RCRA Information	Characterization and proper disposal of this material as a special or hazardous waste is dependent upon Federal, State and local laws and are the user's responsibility. RCRA classification may apply.

SECTION 14: TRANSPORT INFORMATION

49CFR	Not dangerous goods / not hazardous material
IMDG	
UN number	**3082**
Class	9
Packaging group	III
Marine pollutant	YES
Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (INDAZIFLAM SOLUTION)
IATA	
UN number	**3082**
Class	9
Packaging group	III

Environm. Hazardous Mark	YES
Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (INDAZIFLAM SOLUTION)

This transportation information is not intended to convey all specific regulatory information relating to this product. It does not address regulatory variations due to package size or special transportation requirements.

SECTION 15: REGULATORY INFORMATION

EPA Registration No. 264-1106
US Federal Regulations
TSCA list
None.
US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)
None.
SARA Title III - Section 302 - Notification and Information
None.
SARA Title III - Section 313 - Toxic Chemical Release Reporting
None.
US States Regulatory Reporting
CA Prop65
This product does not contain any substances known to the State of California to cause cancer.

This product does not contain any substances known to the State of California to cause reproductive harm.

US State Right-To-Know Ingredients
None.

Canadian Regulations
Canadian Domestic Substance List
None.

Environmental
CERCLA
None.
Clean Water Section 307 Priority Pollutants
None.
Safe Drinking Water Act Maximum Contaminant Levels
None.

EPA/FIFRA Information:
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information required on the pesticide label:

Signal word: Caution!

Hazard statements: Harmful if swallowed, inhaled or absorbed through the skin.
Avoid contact with skin, eyes and clothing.
Avoid breathing spray mist.

SECTION 16: OTHER INFORMATION

Abbreviations and acronyms

49CFR	Code of Federal Regulations, Title 49
ACGIH	US. ACGIH Threshold Limit Values
ATE	Acute toxicity estimate
CAS-Nr.	Chemical Abstracts Service number
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
EINECS	European inventory of existing commercial substances
ELINCS	European list of notified chemical substances
IARC	US. IARC Monographs on Occupational Exposures to Chemical Agents
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
N.O.S.	Not otherwise specified
NTP	US. National Toxicology Program (NTP) Report on Carcinogens
OECD	Organization for Economic Co-operation and Development
TDG	Transportation of Dangerous Goods
TWA	Time weighted average
UN	United Nations
WHO	World health organisation

NFPA 704 (National Fire Protection Association):
Health - 1 Flammability - 1 Instability - 0 Others - none

HMIS (Hazardous Materials Identification System, based on the Third Edition Ratings Guide)
Health - 1 Flammability - 1 Physical Hazard - 0 PPE -

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

Reason for Revision: The following sections have been revised: Section 11: Toxicological Information.

Revision Date: 06/14/2016

This information is provided in good faith but without express or implied warranty. The customer assumes all responsibility for safety and use not in accordance with label instructions. The product names are registered trademarks of Bayer.

Safety Data Sheet

syngenta®

RIDOMIL GOLD® SL

Date: 6/23/2015

Replaces: 1/29/2015

1. PRODUCT IDENTIFICATION

Product identifier on label: **RIDOMIL GOLD® SL**

Product No.: A13947A

Use: Fungicide

Manufacturer: Syngenta Crop Protection, LLC
Post Office Box 18300
Greensboro NC 27419

Manufacturer Phone: 1-800-334-9481

Emergency Phone: 1-800-888-8372

2. HAZARDS IDENTIFICATION

Classifications: Oral: Category 4
Eye Damage/Irritation: Category 2B

Signal Word (OSHA): Warning

Hazard Statements: Harmful if swallowed
Causes eye irritation

Hazard Symbols:

Precautionary Statements: Wash hands and face thoroughly after handling.

Do not eat, drink or smoke when using this product.

If swallowed: Call a poison center, doctor or Syngenta if you feel unwell. Rinse mouth.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical advice.

Dispose of contents and container in accordance with local regulations.

Other Hazard Statements: None

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Common Name	CAS Number	Concentration
1,2-Propanediol	Propylene Glycol	57-55-6	Trade Secret
Acetophenone	Acetophenone	98-86-2	<20.0%

2-Heptanone	2-Heptanone	110-43-0	Trade Secret
Other ingredients	Other ingredients	Trade Secret	>34.7%
(R,S)-2-[(2,6-dimethylphenyl)-methoxyacetylamino]-propionic acid methyl ester	Mefenoxam	70630-17-0 & 69516-34-3	45.3%

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.

4. FIRST AID MEASURES

Have the product container, label or Safety Data Sheet with you when calling Syngenta (800-888-8372), a poison contol center or doctor, or going for treatment.

Ingestion: If swallowed: Call Syngenta (800-888-8372), a poison control center or doctor immediately for treatment advice. Do not give any liquid to the person. Do not induce vomiting unless told to do so after calling 800-888-8372 or by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

Eye Contact: If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.

Skin Contact: If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.

Inhalation: If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call Syngenta (800-888-8372), a poison control center or doctor for further treatment advice.

Most important symptoms/effects:

Eye irritation

Indication of immediate medical attention and special treatment needed:

There is no specific antidote if this product is ingested.

Treat symptomatically.

5. FIRE FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media:

Use dry chemical, foam or CO2 extinguishing media. If water is used to fight fire, dike and collect runoff.

Specific Hazards:

Combustible liquid. Can release vapors that form explosive mixtures at temperatures at or above the flash point. Heavy vapors can flow along surfaces to distant ignition sources and flash back.

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

Special protective equipment and precautions for firefighters:

Wear full protective clothing and self-contained breathing apparatus. Evacuate nonessential personnel from the area to prevent human exposure to fire, smoke, fumes or products of combustion.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures:

Follow exposure controls/personal protection outlined in Section 8.

Methods and materials for containment and cleaning up:

Control the spill at its source. Contain the spill to prevent from spreading or contaminating soil or from entering sewage and

drainage systems or any body of water. Clean up spills immediately, observing precautions outlined in Section 8. Cover entire spill with absorbing material and place into compatible disposal container. Scrub area with hard water detergent (e.g. commercial products such as Tide, Joy, Spic and Span). Pick up wash liquid with additional absorbent and place into compatible disposal container. Once all material is cleaned up and placed in a disposal container, seal container and arrange for disposition.

7. HANDLING AND STORAGE

Precautions for safe handling:

Store the material in a well-ventilated, secure area out of reach of children and domestic animals. Do not store food, beverages or tobacco products in the storage area. Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

Conditions for safe storage, including any incompatibilities:

Store locked up.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION AND PACKAGING OF THIS PRODUCT.

FOR COMMERCIAL APPLICATIONS AND/OR ON-FARM APPLICATIONS CONSULT THE PRODUCT LABEL.

Occupational Exposure Limits:

Chemical Name	OSHA PEL	ACGIH TLV	Other	Source
Propylene Glycol	Not Established	Not Established	10 mg/m³ TWA	AIHA
Acetophenone	Not Established	10 ppm TWA	Not Established	Not Applicable
2-Heptanone	100 ppm TWA	50 ppm TWA	100 ppm TWA	NIOSH
Other ingredients	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Mefenoxam	Not Established	Not Established	5 mg/m³ TWA	Syngenta

Appropriate engineering controls:

Use effective engineering controls to comply with occupational exposure limits (if applicable).

Individual protection measures:

Ingestion:

Prevent eating, drinking, tobacco usage and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

Eye Contact:

Where eye contact is likely, use chemical splash goggles.

Skin Contact:

Where contact is likely, wear chemical-resistant gloves (such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, polyvinyl chloride [PVC] or Viton), coveralls, socks and chemical-resistant footwear.

Inhalation:

A respirator is not normally required when handling this substance. Use effective engineering controls to comply with occupational exposure limits.

In case of emergency spills, use a NIOSH approved respirator with any N, R, P or HE filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Yellow to orange clear liquid

Odor: Ketone-like

Odor Threshold: Not Available

pH: 6.5 - 9.5 (1% in deionized water)

Melting point/freezing point: Not Available

Initial boiling point and boiling range: Not Available

Flash Point (Test Method): > 158°F (Pensky-Martens CC)

Flammable Limits (% in Air): Not Available

Flammability: Combustible liquid

Vapor Pressure: Mefenoxam 2.5 x 10(-5) mmHg @ 77°F (25°C)

Vapor Density: Not Available

Relative Density: 1.05 - 1.07 g/cm³ @ 68°F (20°C)

Solubility (ies): Mefenoxam 26 g/l @ 77°F (25°C)

Partition coefficient: n-octanol/water: Not Available

Autoignition Temperature: Not Available

Decomposition Temperature: Not Available

Viscosity: Not Available

Other: None

10. STABILITY AND REACTIVITY

Reactivity: Not reactive.

Chemical stability: Stable under normal use and storage conditions.

Possibility of hazardous reactions: Will not occur.

Conditions to Avoid: Not Available

Incompatible materials: None known.

Hazardous Decomposition Products: Not Available

11. TOXICOLOGICAL INFORMATION

Health effects information

Likely routes of exposure: Dermal, Inhalation

Symptoms of exposure: Eye irritation

Delayed, immediate and chronic effects of exposure: Eye irritation

Numerical measures of toxicity (acute toxicity/irritation studies (finished product))

Ingestion: Oral (LD50 Female Rat) : 550 mg/kg body weight

Dermal:	Dermal (LD50 Rat) :	> 2000 mg/kg body weight
Inhalation:	Inhalation (LC50 Rat) :	> 5.58 mg/l air - 4 hours
Eye Contact:	Moderate Irritant	
Skin Contact:	Non-Irritating (Rabbit)	
Skin Sensitization:	Not a Sensitizer (Guinea Pig)	

Reproductive/Developmental Effects

Mefenoxam: None observed.

Chronic/Subchronic Toxicity Studies

Mefenoxam: Liver effects at high dose animal tests.

Carcinogenicity

Mefenoxam: None observed.

Chemical Name	NTP/IARC/OSHA Carcinogen
1,2-Propanediol	No
Acetophenone	No
2-Heptanone	No
Other ingredients	No
(R,S)-2-[(2,6-dimethylphenyl)-methoxyacetylamino]-propionic acid methyl ester	No

Other Toxicity Information

None

Toxicity of Other Components

2-Heptanone

May cause eye, skin and respiratory tract irritation. Ingestion of large amounts may cause gastrointestinal irritation.

Acetophenone

Exposure causes severe eye and skin irritation. Prolonged contact may cause defatting of the skin and dermatitis or burns. Inhalation of high concentrations may cause central nervous system effects characterized by headache, dizziness, unconsciousness and coma. May cause irritation of the respiratory tract with burning, pain in the nose and throat, coughing, wheezing, shortness of breath and pulmonary edema. Ingestion may cause gastrointestinal irritation with nausea, vomiting and diarrhea.

Other ingredients

Not Applicable

Propylene Glycol

Reported to cause central nervous system depression (anesthesia, dizziness, confusion), headache and nausea. Also, eye irritation may occur with lacrimation but no residual discomfort or injury. Prolonged contact to skin may cause mild to moderate irritation and possible allergic reactions. Chronic dietary exposure caused kidney and liver injury in experimental animals.

Target Organs

Active Ingredients

Mefenoxam: Liver

Inert Ingredients

2-Heptanone:	Eye
Acetophenone:	CNS, skin, eye
Other ingredients:	Not Applicable
Propylene Glycol:	CNS, kidney, liver

12. ECOLOGICAL INFORMATION

Eco-Acute Toxicity

Mefenoxam:

Fish (Rainbow Trout) 96-hour LC50 > 121 ppm

Invertebrate (Water Flea) Daphnia Magna 48-hour EC50 > 113 ppm

Bird (Bobwhite Quail) 14-day LD50 981 mg/kg

Environmental Fate

Mefenoxam:

The information presented here is for the active ingredient, mefenoxam.
Does not bioaccumulate. Not persistent in soil or water. Moderate mobility in soil. Mixes/sinks (after 24 h).

13. DISPOSAL CONSIDERATIONS

Disposal:

Do not reuse product containers. Dispose of product containers, waste containers, and residues according to local, state, and federal health and environmental regulations.

Characteristic Waste: Not Applicable

Listed Waste: Not Applicable

14. TRANSPORT INFORMATION

DOT Classification

Ground Transport - NAFTA
Containers < 119 gallons: Not regulated.
Containers > 119 gallons:
Proper Shipping Name: Combustible Liquid, N.O.S. (n-Amyl Methyl Ketone)
Hazard Class: Combustible Liquid
Identification Number: NA 1993
Packing Group: PG III
> 3500 gallons:
Proper Shipping Name: RQ, Combustible Liquid, N.O.S. (n-Amyl Methyl Ketone) (Acetophenone)
Hazard Class: Combustible Liquid
Identification Number: NA 1993
Packing Group: PG III

Comments

Water Transport - International
Not regulated.
Comments: Shipments to/from the US must comply with classification above.

Air Transport
< 119 gallons:
Not regulated.

15. REGULATORY INFORMATION

Pesticide Registration:

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

Caution: Causes moderate eye irritation. Harmful if swallowed or absorbed through skin. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet.

EPA Registration Number(s):
100-1202

EPCRA SARA Title III Classification:

Section 311/312 Hazard Classes:	Acute Health Hazard Fire Hazard
Section 313 Toxic Chemicals:	Acetophenone <20.0% (CAS No. 98-86-2)

CERCLA/SARA 304 Reportable Quantity (RQ):
Report product spills > 3500 gal. (based on acetophenone [RQ = 5000 lbs.] content in the formulation) (CERCLA)

RCRA Hazardous Waste Classification (40 CFR 261):
Not Applicable

TSCA Status:
Exempt from TSCA, subject to FIFRA

16. OTHER INFORMATION

NFPA Hazard Ratings		HMIS Hazard Ratings	
Health:	1	Health:	1
Flammability:	2	Flammability:	2
Instability:	0	Reactivity:	0

Syngenta Hazard Category: B,S

0	Minimal
1	Slight
2	Moderate
3	Serious
4	Extreme
*	Chronic

For non-emergency questions about this product call:

1-800-334-9481

Original Issued Date: 7/13/2005
Revision Date: 6/23/2015 Replaces: 1/29/2015
Section(s) Revised: 2, 4, 11, 16

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.

Dow AgroSciences

SAFETY DATA SHEET
DOW AGROSCIENCES LLC

Product name: LORSBAN™ Advanced Insecticide

Issue Date: 10/09/2015
Print Date: 10/09/2015

DOW AGROSCIENCES LLC encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: LORSBAN™ Advanced Insecticide

Recommended use of the chemical and restrictions on use
Identified uses: End use insecticide product

COMPANY IDENTIFICATION
DOW AGROSCIENCES LLC
9330 ZIONSVILLE RD
INDIANAPOLIS IN 46268-1053
UNITED STATES

Customer Information Number: 800-992-5994
info@dow.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 800-992-5994
Local Emergency Contact: 352-323-3500

2. HAZARDS IDENTIFICATION

Hazard classification
This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.
Acute toxicity - Category 4 - Oral
Skin irritation - Category 2
Skin sensitisation - Sub-category 1B
Specific target organ toxicity - single exposure - Category 3
Aspiration hazard - Category 1

Label elements
Hazard pictograms

Signal word: **DANGER!**

Hazards
Harmful if swallowed.
May be fatal if swallowed and enters airways.
Causes skin irritation.
May cause an allergic skin reaction.
May cause respiratory irritation.
May cause drowsiness or dizziness.

Precautionary statements

Prevention
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves.

Response
IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
IF ON SKIN: Wash with plenty of soap and water.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.
Do NOT induce vomiting.
If skin irritation or rash occurs: Get medical advice/ attention.
Take off contaminated clothing and wash before reuse.

Storage
Store in a well-ventilated place. Keep container tightly closed.
Store locked up.

Disposal
Dispose of contents/ container to an approved waste disposal plant.

Other hazards
No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a mixture.

Component	CASRN	Concentration

Chlorpyrifos	2921-88-2	40.18%
Glycerol	56-81-5	2.5%
Solvent naphtha (petroleum), light arom	64742-95-6	20.0%
1,2,4-Trimethylbenzene	95-63-6	6.0%
1,3,5-Trimethylbenzene	108-67-8	1.6%
Cumene	98-82-8	0.8%
Xylene	1330-20-7	0.2%
Balance	Not available	28.72%

4. FIRST AID MEASURES

Description of first aid measures
General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air. If not breathing, give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask, etc). If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility. If breathing is difficult, oxygen should be administered by qualified personnel.

Skin contact: Take off contaminated clothing. Wash skin with soap and plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. Wash clothing before reuse. Shoes and other leather items which cannot be decontaminated should be disposed of properly. Suitable emergency safety shower facility should be available in work area.

Eye contact: Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice. Suitable emergency eye wash facility should be available in work area.

Ingestion: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed: Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed
Notes to physician: Chlorpyrifos is a cholinesterase inhibitor. Treat symptomatically. In case of severe acute poisoning, use antidote immediately after establishing an open airway and respiration. Atropine, only by injection, is the preferable antidote. Oximes, such as 2-PAM/protopam, may be

therapeutic if used early; however, use only in conjunction with atropine. Attempt seizure control with diazepam 5-10 mg (adults) intravenous over 2-3 minutes. Repeat every 5-10 minutes as needed. Monitor for hypotension, respiratory depression, and need for intubation. Consider second agent if seizures persist after 30 mg. If seizures persist or recur administer phenobarbital 600-1200 mg (adults) intravenous diluted in 60 ml 0.9% saline given at 25-50 mg/minute. Evaluate for hypoxia, dysrhythmia, electrolyte disturbance, hypoglycemia (treat adults with dextrose 100 mg intravenous). Maintain adequate ventilation and oxygenation of the patient. May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants, antitussives and corticosteroids may be of help. If exposed, plasma and red blood cell cholinesterase tests may indicate significance of exposure (baseline data are useful). If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. The decision of whether to induce vomiting or not should be made by a physician. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment. Repeated excessive exposure may aggravate preexisting lung disease.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam.

Unsuitable extinguishing media: No data available

Special hazards arising from the substance or mixture
Hazardous combustion products: Under fire conditions some components of this product may decompose. The smoke may contain unidentified toxic and/or irritating compounds. Combustion products may include and are not limited to: Sulfur oxides. Phosphorous compounds. Nitrogen oxides. Hydrogen chloride. Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: This material will not burn until the water has evaporated. Residue can burn. Container may rupture from gas generation in a fire situation.

Advice for firefighters
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Keep upwind of spill. Ventilate area of leak or spill. Refer to section 7, Handling, for additional precautionary measures. Use appropriate

safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. Spills or discharge to natural waterways is likely to kill aquatic organisms.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling: Keep out of reach of children. Do not swallow. Avoid contact with eyes, skin, and clothing. Avoid breathing vapor or mist. Avoid prolonged or repeated contact with skin. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage: Store in a dry place. Store in original container. Keep container tightly closed when not in use. Do not store near food, foodstuffs, drugs or potable water supplies.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Chlorpyrifos	ACGIH	TWA Inhalable fraction and vapor	0.1 mg/m3
	NIOSH REL	TWA	0.2 mg/m3
	NIOSH REL	ST	0.6 mg/m3
	ACGIH	TWA	SKIN, BEI
Glycerol	OSHA Z-1	TWA mist, respirable fraction	5 mg/m3
	OSHA Z-1	TWA mist, total dust	15 mg/m3
Solvent naphtha (petroleum), light arom	OSHA Z-1	TWA	2,000 mg/m3 500 ppm
	ACGIH	TWA	200 mg/m3 , total hydrocarbon vapor
1,2,4-Trimethylbenzene	ACGIH	TWA	25 ppm
1,3,5-Trimethylbenzene	ACGIH	TWA	25 ppm
Cumene	ACGIH	TWA	50 ppm
	OSHA Z-1	TWA	245 mg/m3 50 ppm
	OSHA Z-1	TWA	SKIN
	OSHA P0	TWA	245 mg/m3 50 ppm
Xylene	ACGIH	TWA	BEI
	ACGIH	STEL	BEI
	OSHA Z-1	TWA	435 mg/m3 100 ppm
	ACGIH	TWA	100 ppm
	ACGIH	STEL	150 ppm

Exposure controls

Engineering controls: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use chemical goggles.

Skin protection

Hand protection: Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Chlorinated polyethylene. Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Butyl rubber. Natural rubber ("latex"). Polyvinyl chloride ("PVC" or "vinyl"). Viton. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator.
The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	Liquid.
Color	White
Odor	Mild
Odor Threshold	No test data available
pH	4.44 1% *pH Electrode*
Melting point/range	Not applicable
Freezing point	No test data available
Boiling point (760 mmHg)	No test data available
Flash point	**closed cup** > 100 °C (> 212 °F) *Closed Cup*
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammability (solid, gas)	No data available
Lower explosion limit	No test data available
Upper explosion limit	No test data available

Vapor Pressure	No test data available
Relative Vapor Density (air = 1)	No test data available
Relative Density (water = 1)	1.1253
Water solubility	emulsifiable
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	No test data available
Decomposition temperature	No test data available
Kinematic Viscosity	No test data available
Explosive properties	No
Oxidizing properties	No significant increase (>5C) in temperature.
Liquid Density	1.12 g/cm3 at 20 °C (68 °F)
Molecular weight	No data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: No data available

Chemical stability: Unstable at elevated temperatures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Avoid temperatures above 50 °C
Active ingredient decomposes at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible materials: Avoid contact with: Bases.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Hydrogen chloride. Organic sulfides. Sulfur dioxide. Toxic gases are released during decomposition.

11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Acute toxicity

Acute oral toxicity
Moderate toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

For similar material(s):
LD50, Rat, female, 439 mg/kg Estimated.

Acute dermal toxicity
Prolonged skin contact is unlikely to result in absorption of harmful amounts.

For similar material(s):
LD50, Rat, male and female, > 5,000 mg/kg

Acute inhalation toxicity
No adverse effects are anticipated from single exposure to mist. Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs. Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed.

For similar material(s): Maximum attainable concentration.
LC50, Rat, male and female, 4 Hour, dust/mist, > 1.91 mg/l No deaths occurred at this concentration.

Skin corrosion/irritation
Brief contact may cause moderate skin irritation with local redness.

Serious eye damage/eye irritation
May cause moderate eye irritation.
May cause slight corneal injury.

Sensitization
For similar material(s):
Has demonstrated the potential for contact allergy in mice.
Has caused allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)
May cause respiratory irritation.
May cause drowsiness or dizziness.
Route of Exposure: Inhalation

Specific Target Organ Systemic Toxicity (Repeated Exposure)
For the active ingredient(s):
Excessive exposure may produce organophosphate type cholinesterase inhibition.
Signs and symptoms of excessive exposure to active ingredient may be headache, dizziness, incoordination, muscle twitching, tremors, nausea, abdominal cramps, diarrhea, sweating, pinpoint pupils, blurred vision, salivation, tearing, tightness in chest, excessive urination, convulsions.
In animals, effects have been reported on the following organs:
Adrenal gland.
Dose levels producing these effects were many times higher than any dose levels expected from exposure due to use.
For the solvent(s):
In animals, effects have been reported on the following organs:
Kidney.
Liver.
Respiratory tract.

Carcinogenicity

Active ingredient did not cause cancer in laboratory animals.

For the minor component(s): Has caused cancer in laboratory animals. However, the relevance of this to humans is unknown.

Teratogenicity
For the active ingredient(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.

For the solvent(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Has caused birth defects in lab animals only at doses producing severe toxicity in the mother.

Reproductive toxicity
Chlorpyrifos did not interfere with fertility in reproduction studies in laboratory animals. Some evidence of toxicity to the offspring occurred, but only at a dose high enough to produce significant toxicity to the parent animals.

For the solvent(s): In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals. For the minor component(s): Reproductive effects seen in female animals are believed to be due to altered nutritional states resulting from extremely high doses of glycerine given in the diet. Similar effects have been seen in animals fed synthetic diets.

Mutagenicity
Based on a majority of negative data and some equivocal or marginally positive results, active ingredient is considered to have minimal genetic toxicity potential. For the solvent(s): In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Aspiration Hazard
May be fatal if swallowed and enters airways.

Carcinogenicity

Component	List	Classification
Solvent naphtha (petroleum), light arom	ACGIH	A3: Confirmed animal carcinogen with unknown relevance to humans.
Cumene	IARC	Group 2B: Possibly carcinogenic to humans

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

Toxicity

Chlorpyrifos

Acute toxicity to fish
Material is very highly toxic to aquatic organisms on an acute basis (LC50/EC50 <0.1 mg/L in the most sensitive species).
LC50, Oncorhynchus mykiss (rainbow trout), 96 Hour, 0.003 mg/l

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), 48 Hour, 0.00068 mg/l

Acute toxicity to algae/aquatic plants
EC50, Skeletonema costatum (marine diatom), 96 Hour, Growth inhibition (cell density reduction), 0.255 - 0.328 mg/l

Toxicity to bacteria
EC50, activated sludge, > 100 mg/l

Chronic toxicity to fish
NOEC, Pimephales promelas (fathead minnow), 216 d, 0.000568 mg/l
MATC (Maximum Acceptable Toxicant Level), Pimephales promelas (fathead minnow), 216 d, 0.00226 - 0.00325 mg/l

Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), number of offspring, 0.000056 mg/l
MATC (Maximum Acceptable Toxicant Level), Daphnia magna (Water flea), number of offspring, 0.000075 mg/l

Toxicity to Above Ground Organisms
Material is highly toxic to birds on a dietary basis (LC50 between 50 and 500 ppm).
oral LD50, Other, 122mg/kg bodyweight.
dietary LC50, Colinus virginianus (Bobwhite quail), 8 d, 423mg/kg diet.
oral LD50, Apis mellifera (bees), 48 Hour, 0.36micrograms/bee
contact LD50, Apis mellifera (bees), 48 Hour, 0.070micrograms/bee

Toxicity to soil-dwelling organisms
LC50, Eisenia fetida (earthworms), 14 d, 129 mg/kg

Glycerol

Acute toxicity to fish
Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).
LC50, Pimephales promelas (fathead minnow), static test, 96 Hour, >= 885 mg/l, Method Not Specified.

Acute toxicity to aquatic invertebrates
LC50, Daphnia magna (Water flea), static test, 48 Hour, 1,955 mg/l, Method Not Specified.

Acute toxicity to algae/aquatic plants
EC50, Other, static test, 192 Hour, Growth inhibition (cell density reduction), 2,900 mg/l, Method Not Specified.

Toxicity to bacteria
EC50, activated sludge, 3 Hour, > 1,000 mg/l, OECD 209 Test

Solvent naphtha (petroleum), light arom

Acute toxicity to fish
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).
LC50, Oncorhynchus mykiss (rainbow trout), static test, 96 Hour, 9.22 mg/l, OECD Test Guideline 203 or Equivalent

Toxicity to Above Ground Organisms
Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).

Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).
dietary LC50, Colinus virginianus (Bobwhite quail), 8 d, > 6500mg/kg diet.
oral LD50, Colinus virginianus (Bobwhite quail), 21 d, > 2150mg/kg bodyweight.

1,2,4-Trimethylbenzene

Acute toxicity to fish
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).
LC50, Pimephales promelas (fathead minnow), flow-through test, 96 Hour, 7.7 mg/l

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), 48 Hour, 3.6 mg/l

1,3,5-Trimethylbenzene

Acute toxicity to fish
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).
LC50, Carassius auratus (goldfish), flow-through test, 96 Hour, 12.5 mg/l, Method Not Specified.

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), Static, 48 Hour, 6 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
EbC50, Desmodesmus subspicatus (green algae), 48 Hour, Biomass, 25 mg/l, OECD Test Guideline 201 or Equivalent

Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), semi-static test, 21 d, number of offspring, 0.4 mg/l

Cumene

Acute toxicity to fish
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).
LC50, Oncorhynchus mykiss (rainbow trout), semi-static test, 96 Hour, 2.7 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), static test, 48 Hour, 4.0 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
EbC50, Pseudokirchneriella subcapitata (green algae), static test, 72 Hour, Biomass, 2.6 mg/l, OECD Test Guideline 201 or Equivalent

Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), semi-static test, 21 d, number of offspring, 0.35 mg/l

Toxicity to Above Ground Organisms
oral LD50, redwing blackbird (Agelaius phoeniceus), > 98 mg/kg

Xylene

Acute toxicity to fish

Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).
LC50, Oncorhynchus mykiss (rainbow trout), semi-static test, 96 Hour, 2.6 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates
IC50, Daphnia magna (Water flea), 24 Hour, 1 - 4.7 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
ErC50, Pseudokirchneriella subcapitata (algae), Static, 73 Hour, Growth rate, 4.36 mg/l, OECD Test Guideline 201 or Equivalent
NOEC, Pseudokirchneriella subcapitata (green algae), 73 Hour, Growth rate, 0.44 mg/l, OECD Test Guideline 201 or Equivalent

Chronic toxicity to fish
NOEC, Oncorhynchus mykiss (rainbow trout), flow-through, 56 d, mortality, > 1.3 mg/l

Balance

Acute toxicity to fish
No relevant data found.

Persistence and degradability

Chlorpyrifos

Biodegradability: Biodegradation under aerobic laboratory conditions is below detectable limits (BOD20 or BOD28/ThOD < 2.5%).
10-day Window: Fail
Biodegradation: 22 %
Exposure time: 28 d
Method: OECD Test Guideline 301D or Equivalent

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	0.000 %

Stability in Water (1/2-life)
Hydrolysis, half-life, 72 d

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 1.4 Hour
Method: Estimated.

Glycerol

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Not applicable
Biodegradation: 63 %
Exposure time: 14 d
Method: OECD Test Guideline 301C or Equivalent

Theoretical Oxygen Demand: 1.22 mg/mg

Solvent naphtha (petroleum), light arom

Biodegradability: For the major component(s): Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%). For some component(s): Biodegradation under aerobic static laboratory conditions is low (BOD20 or BOD28/ThOD between 2.5 and 10%).

1,2,4-Trimethylbenzene

Biodegradability: Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.
10-day Window: Not applicable
Biodegradation: 4 - 18 %
Exposure time: 28 d
Method: OECD Test Guideline 301C or Equivalent

Theoretical Oxygen Demand: 3.19 mg/mg

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 0.641 d
Method: Estimated.

1,3,5-Trimethylbenzene

Biodegradability: Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.
10-day Window: Not applicable
Biodegradation: 0 %
Exposure time: 28 d
Method: OECD Test Guideline 301C or Equivalent
10-day Window: Not applicable
Biodegradation: 50 %
Exposure time: 4.4 d
Method: Calculated.

Theoretical Oxygen Demand: 3.19 mg/mg

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 3.7 Hour
Method: Estimated.

Cumene

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Pass
Biodegradation: 86 %
Exposure time: 28 d
Method: OECD Test Guideline 301D or Equivalent

Theoretical Oxygen Demand: 3.20 mg/mg Estimated.

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	40%
10 d	62%
20 d	70%

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 1.55 d
Method: Estimated.

Xylene

Biodegradability: Material is expected to be readily biodegradable.
10-day Window: Pass
Biodegradation: > 60 %
Exposure time: 10 d
Method: OECD Test Guideline 301F or Equivalent

Theoretical Oxygen Demand: 3.17 mg/mg

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	37.000 %
10 d	58.000 %
20 d	72.000 %

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 19.7 Hour
Method: Estimated.

Balance

Biodegradability: No relevant data found.

Bioaccumulative potential

Chlorpyrifos

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water(log Pow): 4.7 at 20 °C Estimated.

Glycerol

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): -1.76 at 20 °C Measured

Solvent naphtha (petroleum), light arom

Bioaccumulation: For the major component(s): Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5). For the minor component(s): Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

1,2,4-Trimethylbenzene

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water(log Pow): 3.63 Measured
Bioconcentration factor (BCF): 33 - 275 Cyprinus carpio (Carp) 56 d Measured

1,3,5-Trimethylbenzene

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water(log Pow): 3.42 Measured
Bioconcentration factor (BCF): 161 Pimephales promelas (fathead minnow) Measured

Cumene

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): 3.4 - 3.7 Measured
Bioconcentration factor (BCF): 35.5 Fish Measured

Xylene

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): 3.12 Measured
Bioconcentration factor (BCF): 25.9 Rainbow trout (Salmo gairdneri) Measured

Balance

Bioaccumulation: No relevant data found.

Mobility in soil

Chlorpyrifos

Expected to be relatively immobile in soil (Koc > 5000).
Partition coefficient(Koc): 8151

Glycerol

Potential for mobility in soil is very high (Koc between 0 and 50).
Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.
Partition coefficient(Koc): 1 Estimated.

Solvent naphtha (petroleum), light arom

For the major component(s):
Potential for mobility in soil is low (Koc between 500 and 2000).

1,2,4-Trimethylbenzene

Potential for mobility in soil is low (Koc between 500 and 2000).
Partition coefficient(Koc): 720 Estimated.

1,3,5-Trimethylbenzene

Potential for mobility in soil is low (Koc between 500 and 2000).
Partition coefficient(Koc): 741.65 Estimated.

Cumene

Potential for mobility in soil is low (Koc between 500 and 2000).
Partition coefficient(Koc): 800 - 2800 Estimated.

Xylene

Potential for mobility in soil is medium (Koc between 150 and 500).
Partition coefficient(Koc): 443 Estimated.

Balance

No relevant data found.

13. DISPOSAL CONSIDERATIONS

Disposal methods: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

14. TRANSPORT INFORMATION

DOT

Proper shipping name	Environmentally hazardous substance, liquid, n.o.s.(Chlorpyrifos, Xylene)
UN number	UN 3082
Class	9
Packing group	III
Marine pollutant	Chlorpyrifos
Reportable Quantity	Chlorpyrifos, Xylene

Classification for SEA transport (IMO-IMDG):

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(Chlorpyrifos)
UN number	UN 3082
Class	9
Packing group	III
Marine pollutant	Chlorpyrifos
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Proper shipping name	Environmentally hazardous substance, liquid, n.o.s.(Chlorpyrifos)
UN number	UN 3082
Class	9

Packing group III

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312
Acute Health Hazard
Chronic Health Hazard

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

Components	CASRN
1,2,4-Trimethylbenzene	95-63-6

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

Pennsylvania (Worker and Community Right-To-KnowAct): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:

Components	CASRN
Chlorpyrifos	2921-88-2
1,2,4-Trimethylbenzene	95-63-6
Glycerol	56-81-5
1,3,5-Trimethylbenzene	108-67-8

Pennsylvania (Worker and Community Right-To-KnowAct): Pennsylvania Special Hazardous Substances List:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

United States TSCA Inventory (TSCA)
This product contains chemical substance(s) exempt from U.S. EPA TSCA Inventory requirements. It is regulated as a pesticide subject to Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requirements.

Federal Insecticide, Fungicide and Rodenticide Act

EPA Registration Number: 62719-591
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

WARNING

May be fatal if swallowed.
Causes skin irritation
Causes moderate eye irritation
Harmful if inhaled
Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

16. OTHER INFORMATION

Hazard Rating System
NFPA

Health	Fire	Reactivity
2	1	1

Revision
Identification Number: 101206132 / A211 / Issue Date: 10/09/2015 / Version: 5.1
DAS Code: GF-2729
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

ACGIH	USA. ACGIH Threshold Limit Values (TLV)
BEI	Biological Exposure Indices
NIOSH REL	USA. NIOSH Recommended Exposure Limits
OSHA P0	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
OSHA Z-1	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
SKIN	Absorbed via skin
SKIN, BEI	Absorbed via Skin, Biological Exposure Indice
ST	STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday
STEL	Short-term exposure limit
TWA	8-hour, time-weighted average

Information Source and References
This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

DOW AGROSCIENCES LLC urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no

warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 PRODUCT IDENTIFIER:
TRADE NAME: **MAKAZE®**
1.2 RECOMMENDED USE: GROUP 9 HERBICIDE – LICENSED FOR ROUNDUP READY ALFALFA, COTTON, CORN, SOYBEANS, CANOLA, FLAX COTTON, SUGARBEETS
1.3 SUPPLIER DETAILS:
LOVELAND PRODUCTS, INC.
P.O. Box 1286 • Greeley, CO 80632-1286
1.4 24 Hour Emergency Phone: 1-800-424-9300 - **Medical Emergencies:** 1-866-944-8565 – **Product Information:** 1-888-574-2878 (LPI-CUST)
U.S. Coast Guard National Response Center: 1-800-424-8802

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to 29 CFR 1910.1200

Acute Toxicity - Dermal	Category 4	H312
Eye Damage/Irritation	Category 2B	H320

2.2 Label elements

Signal word: WARNING
Hazard Statement: H312 – Harmful in contact with skin.
H320 – Causes eye irritation.

Precautionary Statement: (Prevention): P280 – Wear protective gloves/protective clothing/eye protection/face protection.
P264 – Wash hands and face thoroughly after handling.

Precautionary Statement: (Response): P302+P352: IF ON SKIN: Wash with plenty of soap and water.
P331 – Call a Poison Center or doctor/physician if you feel unwell.
P320 – Specific treatment (see First Aid on the product label).
P362 – Take off contaminated clothing and wash it before reuse.
P305+P351+P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313 – If eye irritation persists: Get medical advice/attention.

Precautionary Statement: (Disposal): P501 – Dispose of contents/container resulting from the use of this product that cannot be used or chemically reprocessed in a landfill approved for pesticide disposal or in accordance with applicable Federal, state, or local procedures. Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleansed, reconditioned, or destroyed.

2.3 Other hazards
None known

3. COMPOSITION, INFORMATION ON INGREDIENTS

3.1 Substances

3.2 Mixtures

Classification according to 29 CFR 1910.1200

Chemical Name:	CAS No.	Concentration [%]
Isopropylamine salt of Glyphosate	38641-94-0	41.00
Other ingredients	n/a	Balance

4. FIRST AID MEASURES

4.1 Description of First Aid Measures

General Advice: Get medical attention if symptoms occur.

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

4.2 Most Important Symptoms and Effects, Acute and Delayed

Symptoms: Harmful in contact with skin. Causes eye irritation.

4.3 Immediate Medical Attention and Special Treatment

Treatment: Treat symptomatically. Symptoms may be delayed.
FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: 1-866-944-8565
Take container, label or product name with you when seeking medical attention.

NOTES TO PHYSICIAN: Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE FIGHTING MEASURES

5.1 EXTINGUISHING MEDIA:

Suitable Extinguishing Media: Dry chemical, carbon dioxide (CO_2), alcohol foam, foam, water spray or fog. Do not use water jet as this will spread the fire.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE:

Specific Hazards During Firefighting: During a fire, hazardous by-products can be released.

5.3 SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS

Special Protective Equipment for Firefighters: Self-contained breathing apparatus and full protective gear should be worn in fighting large fires involving chemicals. Use water spray to keep fire exposed containers cool. Keep people away. Isolate fire and deny unnecessary entry.

6. ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Personal Precautions: Avoid inhalation of vapors and spray mist and contact with skin and eyes. Ensure adequate ventilation. Wear suitable protective clothing.

6.2 ENVIRONMENTAL PRECAUTIONS

Environmental Precautions: Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters or rinsate.

6.3 METHODS AND MATERIALS FOR CONTAINMENT AND CLEAN-UP

Methods for Clean-Up: Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. After removal flush contaminated area thoroughly with water.
Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to Remove residual contamination.
Never return spills to original containers for re-use.

7. HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING:

Advice on Safe Handling: Avoid inhalation of mists, vapors / spray and contact with eyes, skin and clothing. Do not breathe mists or vapor. Wear personal protective equipment. Do not use in areas without adequate ventilation. Avoid prolonged exposure. Wash thoroughly after handling. Do not empty into drains. Handle and open container with care. Use care in handling/storage. Wash before eating, drinking and/or smoking.

7.2 CONDITIONS FOR SAFE STORAGE:

Requirements for Storage Areas and Containers: Store above 10°F (-12.2°C) to keep product from crystallizing. Crystals will settle to the bottom of the container. If allowed to crystallize, place in a warm room at 68°F (20°C) for several days to redissolve and roll or shake container or recirculate in mini-bulk or bulk containers to mix well before using. Do not contaminate water, foodstuffs, feed or seed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 CONTROL PARAMETERS:

OCCUPATIONAL EXPOSURE LIMITS

U.S. Workplace Exposure Level (ACGIH) TLVs

Components	Type	Value
No data available.		

U.S. Workplace Exposure Level (OSHA) PELs

Components	Type	Value
No data available.		

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Specimen
No listings		

8.2 EXPOSURE CONTROLS:

Engineering Measures

Provide adequate general and local exhaust ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of vapors and spray mists. Provide eyewash station and safety shower.

Individual Protection Measures:

Eye / Face Protection: Goggles or shielded safety glasses are recommended.

Skin Protection: Coveralls worn over long-sleeved shirt and long pants. Chemical-resistant gloves. Chemical-resistant footwear plus socks.

Respiratory Protection: In case of inadequate ventilation or risk of inhalation of mists or vapors, use suitable respiratory equipment such as MSHA/NIOSH TC-21C or NIOSH approved respirator with N, R, P or HE filter. Wear respiratory protection during operations where spraying or misting occurs. If respirators are used, a program should be in place to assure compliance with 29 CFR 1910.134, the OSHA Respiratory Protection standard. Wear air supplied respiratory protection if exposure concentrations are unknown.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 APPEARANCE : Clear viscous liquid
ODOR: Amine.
ODOR THRESHOLD: No data available.
COLOR: Yellow.
pH: 4.6 – 5.1 (1% solution)
MELTING POINT / FREEZING POINT: No data available
BOILING POINT: No data available
FLASH POINT: Does not flash.
FLAMMABILILITY (solid, gas): No data available.
UPPER / LOWER FLAMMABILITY OR EXPLOSIVE LIMITS: No data available.
VAPOR PRESSURE: 25 mmHg @ 24°C
SOLUBILITY: Emulsifies
PARTITION CO-EFFICIENT, n-OCTANOL / WATER: <3.2 @ 25°C (Glyphosate).
AUTO-IGNITION TEMPERATURE: No data available.
DECOMPOSITION TEMPERATURE: No data available
VISCOSITY: (kinematic): 22.42 cST @ 24°C
SPECIFIC GRAVITY (Water = 1): 1.169 – 1.178 g/ml
DENSITY: 9.75 – 9.83 lbs./gal / 1.04 kg/L

Note: These physical data are typical values based on material tested but may vary from sample to sample.
Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.

10. STABILITY AND REACTIVITY

10.1 REACTIVITY
Stable

10.2 CHEMICAL STABILITY
Stable under normal temperature conditions

10.3 POSSIBILITY OF HAZARDOUS REACTIONS
No data available. Will not polymerize.

10.4 CONDITIONS TO AVOID
Use of galvanized or unlined steel.

10.5 INCOMPATIBILE MATERIALS
This product and its spray solutions will react with galvanized or unlined steel to produce hydrogen gas that may form a highly combustible gas mixture, which could flash or explode if ignited. Acids and bases.

10.6 HAZARDOUS DECOMPOSITION PRODUCTS
Will emit toxic fumes as it burns.

11 TOXICOLOGICAL INFORMATION

11.3 LIKELY ROUTES OF EXPOSURE
Eye contact. Skin contact.
LC_{50} (rat): >2.2 mg/L (4 HR)
LD_{50} Oral (rat): > 5,000 mg/kg
LD_{50} Dermal (rat): > 5,000 mg/kg
Acute Toxicity Estimates: No data available
Skin Irritation (rabbit): Harmful if absorbed.
Eye Irritation (rabbit): Causes moderate eye irritation
Specific Target Organ Toxicity: Single exposure: No data available.
Aspiration: No data available
Skin Sensitization (guinea pig): Not a sensitizer
Carcinogenicity: No data available
Germ Cell Mutagenicity: No data available
Interactive Effects: None known

12 ECOLOGICAL INFORMATION

12.3 ECOTOXICITY

The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Ecotoxicological Data

	Species	Test Results
Glyphosate acid	Rainbow trout	5.4 mg/L – 96-hour LC_{50}
	Bluegill	7.3 mg/L – 96-hour LC_{50}
	Bee	>100µ/bee – Contact LD_{50}

Drift or runoff may adversely affect non-target plants.
Do not apply directly to water.
Do not contaminate water when disposing of equipment wash water.
Do not apply when weather conditions favor drift from target area.

12.2 PERSISTENCE AND DEGRADABILITY

Biodegradability: No data available

12.3 BIOACCUMULATIVE POTENTIAL

Bioaccumulation: No data available.

12.4 MOBILITY IN SOIL

No data available.

12.5 OTHER ADVERSE EFFECTS

Assessment: No data available.

13 DISPOSAL CONSIDERATIONS

13.1 WASTE TREATMENT METHODS

Wastes may be disposed of on site or at an approved waste disposal facility. Triple rinse (or equivalent), adding rinse water to spray tank. Offer container for recycling or dispose of in a sanitary landfill or by other procedures approved by appropriate authorities. Recycling decontaminated containers is the best option of container disposal. The Agricultural Container Recycling Council (ACRC) operates the national recycling program. To contact your state and local ACRC recycler visit the ACRC web page at http://www.acrecycle.org/. Do not contaminate water, food or feed by storage or disposal.

14 TRANSPORT INFORMATION

14.3 LAND TRANSPORT

DOT Shipping Description: NOT REGULATED BY USDOT
U.S. Surface Freight Classification: COMPOUND, TREE OR WEED KILLING, NOI (NMFC 50320, SUB 2: CLASS 60)

15 REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS

NFPA & HMIS Hazard Ratings:

NFPA			HMIS	
1	Health	0 Least	1	Health
0	Flammability	1 Slight	0	Flammability
0	Instability	2 Moderate	0	Reactivity
		3 High	B	PPE
		4 Severe		

SARA Hazard Notification/Reporting
SARA Title III Hazard Category:

Immediate	Y	Fire	N	Sudden Release of Pressure	N
Delayed	N	Reactive	N		

Reportable Quantity (RQ) under U.S. CERCLA: Not listed.
SARA, Title III, Section 313: Not listed.
RCRA Waste Code: Not listed.
CA Proposition 65: Not applicable

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

CAUTION
Harmful if absorbed through skin.
Causes moderate eye irritation.
Avoid contact with eyes, skin, or clothing.

16 OTHER INFORMATION

SDS STATUS: Section 2 revised.

PREPARED BY: Registrations and Regulatory Affairs **REVIEWED BY:** Environmental Health and Safety

®Makaze is a registered trademark of Loveland Products, Inc.

®Roundup Ready is a registered trademark of Monsanto Technology, LLC

EPA REG. NO.: 34704-890

Disclaimer and Limitation of Liability: This data sheet was developed from information on the constituent materials identified herein and does not relate to the use of such materials in combination with any other material or process. No warranty is expressed or implied with respect to the completeness or ongoing accuracy of the information contained in this data sheet, and LOVELAND PRODUCTS, INC. disclaims all liability for reliance on such information. This data sheet is not a guarantee of safety. Users are responsible for ensuring that they have all current information necessary to safely use the product described by this data sheet for their specific purpose.

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 PRODUCT IDENTIFIER:
TRADE NAME: **MAKAZE YIELD PRO®**
1.2 RECOMMENDED USE: HERBICIDE – LICENSED FOR ROUNDUP READY® ALFALFA, COTTON, CORN, SOYBEANS, CANOLA, FLAX COTTON, SUGARBEETS
1.3 SUPPLIER DETAILS:
LOVELAND PRODUCTS, INC.
P.O. Box 1286 • Greeley, CO 80632-1286
1.4 24 Hour Emergency Phone: 1-800-424-9300 - **Medical Emergencies:** 1-866-944-8565 – **Product Information:** 1-888-574-2878 (LPI-CUST)
U.S. Coast Guard National Response Center: 1-800-424-8802

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to 29 CFR 1910.1200

Acute Toxicity – Oral	Category 4	H302
Acute Toxicity – Dermal	Category 4	H312

2.2 Label elements

Signal word: WARNING
Hazard Statement: H302 – Harmful if swallowed.
H312 – Harmful in contact with skin.

Precautionary Statement: (Prevention):
P264 – Wash hands and face thoroughly after handling.
P270 – Do not eat, drink or smoke when using this product.
P280 – Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary Statement: (Response):
P301+P312 – IF SWALLOWED: Call a poison center or doctor/physician if you feel unwell.
P320 – Rinse mouth.
P302+P352 – IF ON SKIN: Wash with plenty of soap and water.
P312 – Call a poison center or doctor/physician if you feel unwell.
P321 – Specific treatment (see First Aid information on the product label).
P362 – Take off contaminated clothing and wash it before reuse.

Precautionary Statement: (Disposal):
P501 – Dispose of contents/container resulting from the use of this product that cannot be used or chemically reprocessed in a landfill approved for pesticide disposal or in accordance with applicable Federal, state, or local procedures. Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleansed, reconditioned, or destroyed.

2.3 Other hazards
None known

3. COMPOSITION, INFORMATION ON INGREDIENTS

3.1 Substances

3.2 Mixtures

Classification according to 29 CFR 1910.1200

Chemical Name:	CAS No.	Concentration [%]
Isopropylamine salt of Glyphosate	38641-94-0	41.0000
3-Indolebutyric Acid	133-32-4	0.0500
Cytokinin, as Kinetin	525-79-1	0.0088
Other ingredients	n/a	58.9412

4. FIRST AID MEASURES

4.1 Description of First Aid Measures

General Advice: Get medical attention if symptoms occur.

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

If swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

4.2 Most Important Symptoms and Effects, Acute and Delayed

Symptoms: Harmful in contact with skin. Harmful if swallowed.

4.3 Immediate Medical Attention and Special Treatment

Treatment: Treat symptomatically. Symptoms may be delayed.
FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: 1-866-944-8565
Take container, label or product name with you when seeking medical attention.

NOTES TO PHYSICIAN: Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE FIGHTING MEASURES

5.1 EXTINGUISHING MEDIA:

Suitable Extinguishing Media: Dry chemical, carbon dioxide (CO_2), alcohol foam, foam, water spray or fog. Do not use water jet as this will spread the fire.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE:

Specific Hazards During Firefighting: During a fire, hazardous by-products can be released.

5.3 SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS

Special Protective Equipment for Firefighters: Self-contained breathing apparatus and full protective gear should be worn in fighting large fires involving chemicals. Use water spray to keep fire exposed containers cool. Keep people away. Isolate fire and deny unnecessary entry.

6. ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Personal Precautions: Avoid inhalation of vapors and spray mist and contact with skin and eyes. Ensure adequate ventilation. Wear suitable protective clothing.

6.2 ENVIRONMENTAL PRECAUTIONS

Environmental Precautions: Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters or rinsate.

6.3 METHODS AND MATERIALS FOR CONTAINMENT AND CLEAN-UP

Methods for Clean-Up: Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. After removal flush contaminated area thoroughly with water.
Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to Remove residual contamination.
Never return spills to original containers for re-use.

7. HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING:

Advice on Safe Handling: Avoid inhalation of mists, vapors / spray and contact with eyes, skin and clothing. Do not breathe mists or vapor. Wear personal protective equipment. Do not use in areas without adequate ventilation. Avoid prolonged exposure. Wash thoroughly after handling. Do not empty into drains. Handle and open container with care. Use care in handling/storage. Wash before eating, drinking and/or smoking.

7.2 CONDITIONS FOR SAFE STORAGE:

Requirements for Storage Areas and Containers: Store above 10 °F (-12.2 °C) to keep product from crystallizing. Crystals will settle to the bottom of the container. If allowed to crystallize, place in a warm room at 68 °F (20 °C) for several days to redissolve and roll or shake container or recirculate in mini-bulk or bulk containers to mix well before using. Do not contaminate water, foodstuffs, feed or seed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 CONTROL PARAMETERS:

OCCUPATIONAL EXPOSURE LIMITS

U.S. Workplace Exposure Level (ACGIH) TLVs

Components	Type	Value
No data available.		

U.S. Workplace Exposure Level (OSHA) PELs

Components	Type	Value
No data available.		

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Specimen
No listings		

8.2 EXPOSURE CONTROLS:

Engineering Measures

Provide adequate general and local exhaust ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of vapors and spray mists. Provide eyewash station and safety shower.

Individual Protection Measures:

Eye / Face Protection: Goggles or shielded safety glasses are recommended.

Skin Protection: Coveralls worn over long-sleeved shirt and long pants. Chemical-resistant gloves. Chemical-resistant footwear plus socks.

Respiratory Protection: In case of inadequate ventilation or risk of inhalation of mists or vapors, use suitable respiratory equipment such as MSHA/NIOSH TC-21C or NIOSH approved respirator with N, R, P or HE filter. Wear respiratory protection during operations where spraying or misting occurs. If respirators are used, a program should be in place to assure compliance with 29 CFR 1910.134, the OSHA Respiratory Protection standard. Wear air supplied respiratory protection if exposure concentrations are unknown.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 APPEARANCE: Clear liquid
ODOR: Amine.
ODOR THRESHOLD: No data available.
COLOR: Amber.
pH: 4.3 (1% solution)
MELTING POINT / FREEZING POINT: No data available
BOILING POINT: No data available
FLASH POINT: Does not flash.
FLAMMABILILITY (solid, gas): No data available.
UPPER / LOWER FLAMMABILITY OR EXPLOSIVE LIMITS: No data available.
VAPOR PRESSURE: 25 mmHg @ 24°C
SOLUBILITY: Emulsifies
PARTITION CO-EFFICIENT, n-OCTANOL / WATER: <3.2 @ 25°C (Glyphosate).
AUTO-IGNITION TEMPERATURE: No data available.
DECOMPOSITION TEMPERATURE: No data available
VISCOSITY: (kinematic): 22.42 cST @ 24°C
SPECIFIC GRAVITY (Water = 1): 1.173 g/ml
DENSITY: 9.79 lbs./gal / 1.17 kg/L

Note: These physical data are typical values based on material tested but may vary from sample to sample.
Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.

10. STABILITY AND REACTIVITY

10.1 REACTIVITY
Stable

10.2 CHEMICAL STABILITY
Stable under normal temperature conditions

10.3 POSSIBILITY OF HAZARDOUS REACTIONS
No data available. Will not polymerize.

10.4 CONDITIONS TO AVOID
Use of galvanized or unlined steel.

10.5 INCOMPATIBILE MATERIALS
This product and its spray solutions will react with galvanized or unlined steel to produce hydrogen gas that may form a highly combustible gas mixture, which could flash or explode if ignited. Acids and bases.

10.6 HAZARDOUS DECOMPOSITION PRODUCTS
Will emit toxic fumes as it burns.

11 TOXICOLOGICAL INFORMATION

11.3 LIKELY ROUTES OF EXPOSURE
Skin contact. Ingestion.
LC_{50} (rat): >2.03 mg/L (4 HR)
LD_{50} Oral (rat): > 2,000 mg/kg
LD_{50} Dermal (rat): > 5,000 mg/kg
Acute Toxicity Estimates: No data available
Skin Irritation (rabbit): Harmful if absorbed.
Eye Irritation (rabbit): Mild eye irritation
Specific Target Organ Toxicity: Single exposure: No data available.
Aspiration: No data available
Skin Sensitization (guinea pig): Not a sensitizer
Carcinogenicity: No data available
Germ Cell Mutagenicity: No data available
Interactive Effects: None known

12 ECOLOGICAL INFORMATION

12.3 ECOTOXICITY

The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Ecotoxicological Data

	Species	Test Results
Glyphosate acid	Rainbow trout	5.4 mg/L – 96-hour LC_{50}
	Bluegill	7.3 mg/L – 96-hour LC_{50}
	Bee	>100µ/bee – Contact LD_{50}

Drift or runoff may adversely affect non-target plants.
Do not apply directly to water.
Do not contaminate water when disposing of equipment wash water.
Do not apply when weather conditions favor drift from target area.

12.2 PERSISTENCE AND DEGRADABILITY

Biodegradability: No data available

12.3 BIOACCUMULATIVE POTENTIAL

Bioaccumulation: No data available.

12.4 MOBILITY IN SOIL

No data available.

12.5 OTHER ADVERSE EFFECTS

Assessment: No data available.

13 DISPOSAL CONSIDERATIONS

13.1 WASTE TREATMENT METHODS

Wastes resulting from the use of this product that cannot be used of chemically reprocessed should be disposed of at an approved waste disposal facility. Triple rinse (or equivalent), adding rinse water to spray tank. Offer container for recycling or dispose of in a sanitary landfill or by other procedures approved by appropriate authorities. Recycling decontaminated containers is the best option of container disposal. The Agricultural Container Recycling Council (ACRC) operates the national recycling program. To contact your state and local ACRC recycler visit the ACRC web page at http://www.acrecycle.org/. See product label for additional Disposal information. Do not contaminate water, food or feed by storage or disposal.

14 TRANSPORT INFORMATION

14.3 LAND TRANSPORT

DOT Shipping Description: NOT REGULATED BY USDOT
U.S. Surface Freight Classification: COMPOUND, TREE OR WEED KILLING, NOI (NMFC 50320, SUB 2: CLASS 60)

15 REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS

NFPA & HMIS Hazard Ratings:

NFPA			HMIS	
1	Health	0 Least	1	Health
0	Flammability	1 Slight	0	Flammability
0	Instability	2 Moderate	0	Reactivity
		3 High	B	PPE
		4 Severe		

SARA Hazard Notification/Reporting
SARA Title III Hazard Category:

Immediate	Y	Fire	N	Sudden Release of Pressure	N
Delayed	N	Reactive	N		

Reportable Quantity (RQ) under U.S. CERCLA: Not listed.
SARA, Title III, Section 313: Not listed.
RCRA Waste Code: Not listed.
CA Proposition 65: Not applicable

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

CAUTION
Harmful if absorbed through skin.
Harmful if swallowed.
Avoid contact with eyes, skin, or clothing.

16 OTHER INFORMATION

SDS STATUS: Format revised.

PREPARED BY: Registrations and Regulatory Affairs **REVIEWED BY:** Environmental Health and Safety

®Makaze Yield Pro is a registered trademark of Loveland Products, Inc.

®Roundup Ready is a registered trademark of Monsanto Technology, LLC

EPA REG. NO.: 34704-1033

Disclaimer and Limitation of Liability: This data sheet was developed from information on the constituent materials identified herein and does not relate to the use of such materials in combination with any other material or process. No warranty is expressed or implied with respect to the completeness or ongoing accuracy of the information contained in this data sheet, and LOVELAND PRODUCTS, INC. disclaims all liability for reliance on such information. This data sheet is not a guarantee of safety. Users are responsible for ensuring that they have all current information necessary to safely use the product described by this data sheet for their specific purpose.

Safety Data Sheet

Issue Date: 24-Feb-2011 **Revision Date:** 09-Oct-2015 **Version** 2

1. IDENTIFICATION

Product Identifier

Product Name **Incognito 4.5F**

Other means of identification

SDS # ADAMA-028A

Registration Number(s) EPA Reg. No. 66222-134

UN/ID No UN3082

Recommended use of the chemical and restrictions on use

Recommended Use EPA registered pesticide.

Details of the supplier of the safety data sheet

Manufacturer Address

Makhteshim Agan of North America, Inc. (d/b/a ADAMA)
3120 Highwoods Blvd., Suite 100
Raleigh, NC 27604
1-919-256-9300

Emergency Telephone Number

Emergency Telephone (24 hr) For fire, spill and/or leak contact INFOTRAC:
1-800-535-5053 (North America) 1-352-323-3500 (International)
For medical emergencies and health/safety inquiries, contact PROSAR:
1-877-250-9291

2. HAZARDS IDENTIFICATION

This chemical is a product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-EPA registered chemicals. Please see Section 15 for additional EPA information. The product contains no substances which, at their given concentration, are considered to be hazardous to health.

Appearance Off-white, opaque viscous liquid **Physical State** Liquid **Odor** No odor

Classification

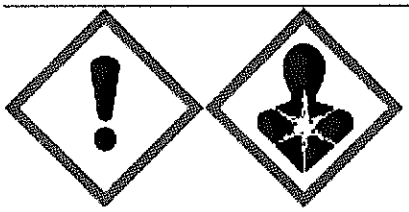
Acute toxicity - Inhalation (Dusts/Mists)	Category 4
Acute toxicity – Oral	Category 4
Germ cell mutagenicity	Category 2

Signal Word

Warning

Hazard Statements

Harmful if inhaled
Harmful if swallowed
Suspected of causing genetic defects



Precautionary Statements - Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Avoid breathing dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product

Precautionary Statements - Response
If exposed or concerned: Get medical advice/attention
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
IF SWALLOWED: Call a poison center/ doctor if you feel unwell
Rinse mouth

Precautionary Statements - Storage
Store locked up

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Other Hazards
Very toxic to aquatic life with long lasting effects

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No	Weight-%
Thiophanate-methyl	23564-05-8	45.27-48-07

If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. FIRST-AID MEASURES

First Aid Measures

General Advice IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician. When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.

Eye Contact IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Skin Contact IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Wash skin with soap and water. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse.

Inhalation Remove victim to fresh air and keep at rest in a position comfortable for breathing. Give oxygen if breathing is difficult. If breathing has stopped, call 911, give artificial respiration. Call a physician if you feel unwell.

Ingestion Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Do not induce vomiting without medical advice. Immediately call a poison center or doctor/physician.

Most important symptoms and effects

Symptoms May cause an allergic skin reaction. Harmful if inhaled.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Dry chemical. Carbon dioxide (CO2). Foam. Water spray (fog). Sand/earth.

Unsuitable Extinguishing Media Not determined.

Specific Hazards Arising from the Chemical
Product is not flammable.

Hazardous Combustion Products None known.

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Evacuate area of unprotected personnel. Remain upwind of fire to avoid hazardous vapors and decomposition products. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Wear protective clothing as described in Section 8 of this safety data sheet. Isolate hazard area. Keep unnecessary and unprotected personnel from entering.

Environmental Precautions Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. See Section 13: DISPOSAL CONSIDERATIONS.

Methods and material for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for Clean-Up Cover liquid spill with sand, earth or other non-combustible absorbent material. Sweep up and shovel into suitable containers for disposal. Dispose of in accordance with federal, state and local regulations.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling Handle in accordance with good industrial hygiene and safety practice. Use personal protective equipment as required. Wash face, hands, and any exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product. Avoid contact with skin, eyes or clothing. Use only outdoors or in a well-ventilated area. Do not breathe dust/fume/gas/mist/vapors/spray. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Contaminated work clothing should not be allowed out of the workplace.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep container tightly closed and store in a cool, dry and well-ventilated place. Do not contaminate water, food, or feed by storage or disposal. Keep/store only in original container. Protect container from physical damage. Store at ambient conditions. Store locked up.

Packaging Materials Do not reuse container.

Incompatible Materials None known based on information supplied.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies

Appropriate engineering controls

Engineering Controls Please refer to the product label. Use only with adequate ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures, such as personal protective equipment

Eye/Face Protection Wear safety glasses with side shields (or goggles).

Skin and Body Protection Wear appropriate clothing to prevent repeated or prolonged skin contact. Wear long-sleeved shirt, long pants, and shoes plus socks. Use chemical resistant gloves, such as P.V.C., butyl-rubber, nitrile-rubber, or neoprene.

Respiratory Protection NIOSH-approved respirator or mask in the absence of adequate ventilation.

General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practice. Wash face, hands and any exposed skin thoroughly after handling. Take off all contaminated clothing and wash it before reuse. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning and maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Liquid		
Appearance	Off-white, opaque viscous liquid	**Odor**	No odor
Color	Off-white/opaque	**Odor Threshold**	Not determined

Property	Values	Remarks • Method
pH	5.0-6.0	
Melting Point/Freezing Point	Not applicable	
Boiling Point/Boiling Range	~ 100 °C / ~212 °F	
Flash Point	Not applicable	
Evaporation Rate	Not determined	
Flammability (Solid, Gas)	Liquid-not applicable	
Upper Flammability Limits	Not available	
Lower Flammability Limit	Not available	
Vapor Pressure	Not determined	
Vapor Density	Not determined	
Specific Gravity	1.1652	(1=Water)
Water Solubility	Dispersible	
Solubility in other solvents	Not determined	
Partition Coefficient	Not determined	
Auto-ignition Temperature	Not available	
Decomposition Temperature	Not determined	
Kinematic Viscosity	Not determined	
Dynamic Viscosity	Not determined	
Explosive Properties	Not determined	
Oxidizing Properties	Not determined	
Bulk Density	1.62 g/ml (9.69 lb/gal)	

10. STABILITY AND REACTIVITY

Reactivity
Not reactive under normal conditions.

Chemical Stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous Polymerization Hazardous polymerization does not occur.

Conditions to Avoid
Keep out of reach of children. Contamination.

Incompatible Materials
None known based on information supplied.

Hazardous Decomposition Products
None known.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Eye Contact Avoid contact with eyes.

Skin Contact Avoid contact with skin.

Inhalation Harmful if inhaled.

Ingestion Harmful if swallowed.

Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Thiophanate-methyl 23564-05-8	= 6640 mg/kg (Rat)	> 10 g/kg (Rat) > 10 g/kg Rabbit)	= 1700 mg/m^3 (Rat) 4 h

Information on physical, chemical and toxicological effects

Symptoms Please see section 4 of this SDS for symptoms.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Germ cell mutagenicity Suspected of causing genetic defects.

Carcinogenicity This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.

Product Information (Numerical measures of toxicity)
Acute Oral LD50 (Rat): 1,752 mg/kg
Acute Dermal LD50 (Rabbit): >2,000 mg/kg
Acute Inhalation LC50 (Rat): >2.02 mg/L (4-hr)
Eye Irritation: Minimally irritating.
Dermal Irritation: Non-irritating.
Dermal Sensitization: Not a skin sensitizer

12. ECOLOGICAL INFORMATION

Ecotoxicity
Very toxic to aquatic life with long lasting effects. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when disposing of equipment wash water.

Component Information

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Thiophanate-methyl 23564-05-8		7.8: 48 h Oncorhynchus mykiss mg/L LC50		

Persistence/Degradability
Not determined.

Bioaccumulation
Not determined.

Mobility
Not determined

Other Adverse Effects
Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes

END USERS MUST DISPOSE OF ANY UNUSED PRODUCT AS PER THE LABEL RECOMMENDATIONS.
Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide spray mixture, or rinsate is a violation of federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.
Under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste.

Contaminated Packaging

Disposal should be in accordance with applicable regional, national and local laws and regulations.

US EPA Waste Number

Chemical Name	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
Thiophanate-methyl 23564-05-8	U409			U409

14. TRANSPORT INFORMATION

DOT

Package size less than 2.3 gallons : Not regulated

Package larger than 2.3 Gallons:

UN/ID No UN3082
Proper Shipping Name Environmentally hazardous substance, liquid, n.o.s. (Thiophanate-methyl) RQ, Marine pollutant.
Hazard Class 9
Packing Group III
Reportable Quantity (RQ) RQ = 10 lb

IATA

Not regulated

IMDG

Basic Description

UN 3082, Environmentally hazardous Substance N.O.S., liquid, 9, PG III, Marine Pollutant
This material may meet the definition of a marine pollutant

15. REGULATORY INFORMATION

International Inventories

TSCA All ingredients are listed or exempt from listing on Chemical Substance Inventory

Legend:
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

US Federal Regulations

CERCLA

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Thiophanate-methyl 23564-05-8	10 lb		RQ 10 lb final RQ RQ 4.54 kg final RQ

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

SARA 313

Chemical Name	CAS No	Weight-%	SARA 313 - Threshold Values %
Thiophanate-methyl - 23564-05-8	23564-05-8	45.27-48-07	1.0

US State Regulations

California Proposition 65
This product contains the following Proposition 65 chemicals.

Chemical Name	California Proposition 65
Thiophanate-methyl - 23564-05-8	Female Reproductive Male Reproductive

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Thiophanate-methyl 23564-05-8	X		

EPA Pesticide Registration Number EPA Reg. No. 66222-134

EPA Statement
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

EPA Pesticide Label
Signal Word: Caution

Difference between SDS and EPA pesticide label

	EPA	OSHA
Signal Word	Caution	Warning
Acute toxicity - Oral	Harmful if swallowed	Harmful if swallowed
Acute toxicity - Dermal	Harmful if absorbed through the skin	N/A
Acute toxicity - Inhalation	Harmful if inhaled	Harmful if inhaled
Germ cell mutagenicity	N/A	Suspected of causing genetic defects

16. OTHER INFORMATION

NFPA	**Health Hazards**	**Flammability**	**Instability**	**Special Hazards**
	1	0	0	None
HMIS	**Health Hazards**	**Flammability**	**Physical Hazards**	**Personal Protection**
	1	0	0	See section 8

Issue Date: 24-Feb-2011
Revision Date: 09-Oct-2015
Revision Note: Updated format from 30-Jun-2014

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

TOMBSTONE HELIOS 4X1GA	GA	LOVELAND PRODUCTS INC	CYFLUTHRIN	144		X	
PROPI-STAR EC 4X1GA	GA	ALBAUGH INC	PROPICONAZOLE	288		X	
GRANITE SC 4X4X1QT	QT	DOW AGROSCIENCES	PENOXSULAM	480			
BOND MAX 4X1GA	GA	LOVELAND PRODUCTS INC	ALCOHOL ETHOXYLATE	288			
LANNATE SP 6X2LB	LB	E I DUPONT DE NEMOURS & CO	METHOMYL	580	X		
TANOS 4X7.5LB	LB	DUPONT	FAMOXADONE	240	X		
SEVIN XLR PLUS 2X2.5GA	GA	TESSENDERLO KERLEY INC	CARBARYL	1,800	X		
ROUNDUP POWERMAX 275GA RPK	GA	MONSANTO	GLYPHOSATE	5,000			
FUJIMITE SC 2X2.5GA	GA	NICHINO AMERICA INC	FENPYROXIMATE	900			
HI-WETT SUPER SPREADER 4X1GA	GA	LOVELAND PRODUCTS INC	ORGANOSILICONE	20			
ALTREVIN FIRE ANT BAIT 15LB	LB	BASF CORPORATION	METAFLUMIZONE	5,000			
BASIC COPPER 53 50LB	LB	ALBAUGH INC	BASIC COPPER SULFATE	12,000			
REGIMENT CA 5X4X2OZ	OZ	VALENT USA CORPORATION	BISPYRIBAC SODIUM	2,000			
REMEDY ULTRA 4X1GA	GA	DOW AGROSCIENCES	TRICLOPYR	180			
TRIFLURALIN 10G 50LB	LB	LOVELAND PRODUCTS INC	TRIFLURALIN	12,000	X		
FORFEIT 280 2X2.5GA	GA	LOVELAND PRODUCTS INC	GLUFOSINATE-AMMONIUM	3,600			
FORFEIT 280 BULK	GA	LOVELAND PRODUCTS INC	GLUFOSINATE-AMMONIUM	5,000			X
SANDEA 24X10OZ	OZ	GOWAN USA	HALOSULFURON-METHYL	2,000			
INTREPID EDGE 4X1GA	GA	DOW AGROSCIENCES	METHOXYFENOZIDE	1,440			
SILENCER 4X1GA	GA	ADAMA	LAMBDA-CYHALOTHRIN	144	X	X	
STYLET OIL 2X2.5GA	GA	JMS FLOWER FARMS INC	WHITE MINERAL OIL	3,600			
AZA-DIRECT 2X2.5GA	GA	GOWAN USA	AZADIRACHTIN	180			
KOCIDE 3000 4X10LB	LB	DUPONT	COPPER HYDROXIDE	10,000	X		
LONDAX 8X20OZ	OZ	RICE CO	BENSULFURON-METHYL	7,000			
FITNESS FUNGICIDE 4X1GA	GA	LOVELAND PRODUCTS INC	PROPICONAZOLE	182		X	
MANZATE PRO-STICK 30LB	LB	UNITED PHOSPHORUS, INC	MANCOZEB	12,000	X		
ACTIVATOR 90 4X1GA	GA	LOVELAND PRODUCTS INC	PRIMARY ALIPHATIC OXYAL	288			
OXIDATE 2.0 2.5GA	GA	BIOSAFE SYSTEMS LLC	HYDROGEN PEROXIDE	180	X	X	
PRINCEP 4L 2X2.5GA	GA	SYNGENTA	SIMAZINE	540			
PRISTINE 4X7.5LB	LB	BASF CORPORATION	PYRACLOSTROBIN	4,000			
TRIFLURALIN HF 2X2.5GA	GA	LOVELAND PRODUCTS INC	TRIFLURALIN	1,800	X		
SATORI 2X2.5GA	GA	LOVELAND PRODUCTS INC	AZOXYSTROBIN	1,800			
BADGE X2 4X10LB	LB	ISAGRO USA INC	COPPER OXYCHLORIDE	5,000			
THIOLUX 30LB	LB	LOVELAND PRODUCTS INC	SULFUR	18,000			
BUTYRAC 200 2X2.5GA	GA	ALBAUGH INC	2,4-DB	180			
SUCCESS 1GA	GA	DOW AGROSCIENCES	SPINOSAD	144			
SURROUND WP 25LB	LB	TESSENDERLO KERLEY INC	KAOLIN CLAY	60,000			
ENVIDOR CA 2X2.5GA	GA	BAYER CROPSCIENCE INC	SPIRODICLOFEN	360			
NU-COP 50DF 20LB	LB	ALBAUGH INC	COPPER HYDROXIDE	34,000	X		
WRANGLER 4X1GA	GA	LOVELAND PRODUCTS INC	IMIDACLOPRID	288	X		
SIL-MATRIX 2X2.5GA	GA	PQ CORPORATION	POTASSIUM SILICATE	180			
IPRODIONE 4L AG 2X2.5GA	GA	ARYSTA LIFESCIENCE NA CORP	IPRODIONE	1,800			
TILT 2X1GA	GA	SYNGENTA	PROPICONAZOLE	280		X	
GOAL 2XL 30GA	GA	DOW AGROSCIENCES	OXYFLUORFEN	3,000	X		
INITIATE 720 2X2.5GA	GA	LOVELAND PRODUCTS INC	CHLOROTHALONIL	3,600	X		
FOSPHITE 2X2.5GA	GA	JH BIOTECH, INC.	DIPOTASSIUM PHOSPHITE	900			
MICRO FLOW 300 30GA	GA	MERAS ENGINEERING, INC	SODIUM CHLORITE	900			
MANZATE MAX 2X2.5GA	GA	UNITED PHOSPHORUS, INC	MANCOZEB	1,800	X		
BRANDT INSECT BAIT 2X2.5GA	GA	BRANDT CONSOLIDATED INC	CORN STEEP LIQUOR	360	X		
REGALIA 2X2.5GA	GA	MARRONE BIO INNOVATIONS INC	REYNOUTRIA SACHALINENS	900			
LAMCAP 4X1GA	GA	SYNGENTA	LAMBDA-CYHALOTHRIN	288			
INDAR 2F 4X1GA	GA	DOW AGROSCIENCES	FENBUCONAZOLE	288			
MCP AMINE 4 2X2.5GA	GA	LOVELAND PRODUCTS INC	MCPA	360			
ASSAIL 70WP 4X28OZ	OZ	UNITED PHOSPHORUS, INC	ACETAMIPRID	12,000			
QUINTEC 10X30OZ	OZ	DOW AGROSCIENCES	QUINOXYFEN	12,000			
ONAGER 6X96OZ	OZ	GOWAN USA	HEXYTHIAZOX	30,000	X		
AMINE 4 2,4-D 2X2.5GA	GA	LOVELAND PRODUCTS INC	2,4-D	900			
REQUIEM EC 2X2.5GA	GA	BAYER CROPSCIENCE LP	CHENOPODIUM AMBROSIOID	360		X	
ASANA XL 2X2.5GA	GA	E I DUPONT DE NEMOURS & CO	ESFENVALERATE	288		X	
KOCIDE 3000 4X10LB	LB	CERTIS USA LLC	COPPER HYDROXIDE	12,000	X		
NEALTA 4X137OZ	OZ	BASF CORPORATION	CYFLUMETOFEN	2,000			
PROWL H2O 2X2.5GA	GA	BASF CORPORATION	PENDIMETHALIN	3,000			
PROWL H2O BULK	GA	BASF CORPORATION	PENDIMETHALIN	5,000			X
MERIVON 4X55OZ	OZ	BASF CORPORATION	FLUXAPYROXAD	12,000	X		
APOLLO SC 3X4X1QT	QT	ADAMA	CLOFENTEZINE	120			
ACTIVATOR 90 2X2.5GA	GA	LOVELAND PRODUCTS INC	PRIMARY ALIPHATIC OXYAL	1,800			
TEB 45DF 24X2LB	LB	WILLOWOOD USA, LLC	TEBUCONAZOLE	4,682	X		
SUPPRESS EC 2X2.5GA	GA	WESTBRIDGE AGRICULTURAL PRODUCTS		143			
SONALAN HFP 2X2.5GA	GA	DOW AGROSCIENCES	ETHALFLURALIN	900	X	X	
MSO CONCENTRATE W/LECITEC 2X2.5GA	GA	LOVELAND PRODUCTS INC	METHYLATED SEED OIL	360			
RELY 280 2X2.5GA	GA	BAYER CROPSCIENCE LP	GLUFOSINATE-AMMONIUM	180			
VIGILANT 4SC 2X2.5GA	GA	CHEMTURA CORPORATION	BIFENAZATE	180	X		
MEDAL EC 2X2.5GA	GA	SYNGENTA	S-METOLACHLOR	900			
DUAL MAGNUM BULK	GA	SYNGENTA	S-METOLACHLOR	5,000			X
COPPER SULFATE CRYSTALS FINE 25 50LB	LB	CHEM ONE LTD	COPPER SULFATE PENTAHY	12,000	X		
VIGILANT 4SC 2X2.5GA	GA	CHEMTURA CORPORATION	BIFENAZATE	180	X		

MATERIAL SAFETY DATA SHEET

TOMBSTONE™ HELIOS®

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

FORMULATED FOR:

LOVELAND PRODUCTS, INC.
P.O. Box 1286 • Greeley, CO 80632-1286

24-Hour Emergency Phone: 1-800-424-9300
Medical Emergencies: 1-866-944-8565
U.S. Coast Guard National Response Center: 1-800-424-8802

PRODUCT NAME: TOMBSTONE™ HELIOS®
CHEMICAL NAME: Cyfluthrin; Cyano (4-fluoro-3-phenoxyphenyl) methyl-3-(2,2-dichloroethenyl)-2,2-dimethyl-cyclopropanecarboxylate
CHEMICAL FAMILY: Pyrethroid Insecticide
EPA REG. NO.: 34704-978
MSDS Number: 000978-12-LPI **MSDS Revisions:** Sections 1, 3, 13, 14, 15 **Date of Issue:** 11/30/12 **Supersedes:** 02/27/07

2. HAZARDS IDENTIFICATION SUMMARY

KEEP OUT OF REACH OF CHILDREN – WARNING - AVISO – Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted endetalle.(If you do not understand the label, find someone to explain it to you in detail.) Warning. Causes substantial but temporary eye injury. Do not get in eyes or on skin or clothing. Wear protective eyewear (goggles or face shield). Harmful if swallowed or inhaled. Avoid breathing vapor or spray mist. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum or using tobacco. Remove contaminated clothing and wash before reuse. Prolonged or frequently repeated skin contact may cause allergic skin reactions in some individuals.

This product is dark amber liquid with a turpentine odor. Primary routes of entry are eye contact and skin contact.
This product is hazardous under the criteria of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

3. COMPOSITION, INFORMATION ON INGREDIENTS

Chemical Ingredients:	Percentage by Weight:	CAS No.	TLV (Units)
Cyfluthrin	25.00	68359-37-5	Not Established
Inert Ingredients, including	75.00		
Naphthalene		91-20-3	52 mg/m^3

4. FIRST AID MEASURES

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

If swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: **1-866-944-8565.** Have the product label or container with you when calling a poison control center or doctor, or going for treatment.

NOTE TO PHYSICIAN: This product is a Pyrethroid insecticide containing the active ingredient Cyfluthrin. No specific antidote is available. Treat symptomatically. Published data indicate that Vitamin E acetate can prevent and/or mitigate symptoms of paresthesia caused by synthetic pyrethroids. Contains petroleum distillates. Vomiting may cause aspiration pneumonia.

5. FIRE FIGHTING MEASURES

FLASH POINT (°F/Test Method): 152.8°F (67.1°C) / CC
FLAMMABLE LIMITS (LFL & UFL): Not established
EXTINGUISHING MEDIA: Foam or dry chemical.
HAZARDOUS COMBUSTION PRODUCTS: Not determined.
SPECIAL FIRE FIGHTING PROCEDURES: Keep out of smoke. Wear protective clothing and self-contained breathing apparatus. Cool exposed containers with water spray. Fight fire from upwind.
UNUSUAL FIRE AND EXPLOSION HAZARDS: Combustible. Can release vapors which can form explosive mixtures at temperatures at or above the flashpoint. Heavy vapors can flow along surfaces to distant ignition sources and flash back.

6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

Small spill or leak: Avoid bodily contact. Keep unauthorized people away. Avoid breathing vapors and skin contact. Confine spill by diking with suitable absorbent material. Pick up absorbed spill and place in a suitable container for proper disposal in accordance with all Federal, State and Local regulations.

Large spill or leak: Follow basic procedure as outlined in small spill or leak steps above. To clean and neutralize spill area, tools and equipment, wash with a solution of detergent and bleach or detergent and lye in water solution. Follow this by washing with a strong soap and water solution. Absorb any excess liquid and add to the drums of waste collected. Repeat if necessary. Dispose in accordance with Federal, State and Local regulations.

CAUTION: Do not allow any spill clean up materials to enter waterways.

7. HANDLING AND STORAGE

HANDLING: Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. See section 8 for additional information on personal protection. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing

STORAGE: Store in a cool, dry place and away from open flame and extreme heat. Store in such a manner as to prevent cross contamination with other pesticides, fertilizers, food and feed. Store in original container and out of the reach of children, preferably in a locked storage area. Do not contaminate water, food, or feed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets with requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40CFR 170.240 (d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

RESPIRATORY PROTECTION: When needed wear a NIOSH approved organic vapor respirator with particulate pre-filter.

EYE PROTECTION: Splash-proof goggles, face shield, or safety glasses.

SKIN PROTECTION: Wear chemical-resistant gloves, shoes plus socks, and apron while mixing undiluted product.

	OSHA PEL 8 hr TWA	ACGIH TLV-TWA
Naphthalene	50 mg/m^3	52 mg/m^3

Personal Protective Equipment (PPE): Applicators and other handlers must wear: long-sleeved shirt and long pants, chemical-resistant gloves, such as barrier laminate and Viton®, shoes plus socks, and protective eyewear. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with the product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning and maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR: Dark amber liquid with turpentine odor
SPECIFIC GRAVITY (Water= 1): 0.998 g/ml
VAPOR PRESSURE (mmHg): Not established
PERCENT VOLATILE (by volume): Not established
BULK DENSITY: 8.33 lbs/gal.
BOILING POINT: Not established
EVAPORATION RATE: Not established
SOLUBILITY: Emulsifies
pH: 4.8 (1% emulsion)

Note: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.

10. STABILITY AND REACTIVITY

STABILITY: Stable
CONDITIONS TO AVOID: Excessive heat and open flame, and fire.
INCOMPATIBILITY: Alkaline media. Reacts with methanol. Incompatible with most disinfectants.
HAZARDOUS DECOMPOSITION PRODUCTS: Not determined.
HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION

Acute Oral LD_{50} (female rat): 1030 mg/kg
Eye Irritation (rabbit): Severely irritating
Inhalation LC_{50} (male rat): 0.54 – 2.04 mg/L (4 HR)
Acute Dermal LD_{50} (rabbit) : > 2000 mg/kg
Skin Irritation (rabbit): Moderately irritating.
Skin Sensitization (guinea pig): Sensitizer.
Carcinogenic Potential: No components listed in ACGIH, OSHA, NTP, or IARC as a carcinogen.

12. ECOLOGICAL INFORMATION

This product is extremely toxic to fish and aquatic invertebrates. **For terrestrial uses:** Do not apply directly to water or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not apply when weather conditions favor drift from treated areas. Drift and runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when disposing of equipment wash waters. This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops when bees are visiting the treatment area.

13. DISPOSAL CONSIDERATIONS

PESTICIDE DISPOSAL: Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

CONTAINER HANDLING: Non-refillable container. Do not reuse this container to hold materials other than pesticides or dilute pesticides (rinsate). After emptying and cleaning, it may be allowable to temporarily hold rinsate or other pesticide-related materials in the container. Contact your state regulatory agency to determine allowable practices in your state. Once cleaned, some agricultural plastic pesticide containers can be taken to a container collection site or picked up for recycling. To find the nearest site, contact your chemical dealer or manufacturer, or contact The Agricultural Container Recycling Council (ACRC) at www.acrecycle.org. If not recycled, then puncture and dispose of in a sanitary landfill, or incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke. Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **For packages up to 5 gallons:** Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. **Pressure rinse as follows:** Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip. **For packages greater than 5 gallons or 50 lbs: Triple rinse as follows:** Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. **Pressure rinse as follows:** Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip. **For square bottom caged totes greater than 55 gals.): Triple rinse or pressure rinse as follows:** Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Fill the container about ¼ full with water, rinsing down all sides inside the container thoroughly. Recirculate water with the pump for 2 minutes. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. **For refillable containers:** Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

14. TRANSPORT INFORMATION

DOT Shipping Description: 119 GALLONS OR LESS: NOT REGULATED BY DOT
DOT Shipping Description: GREATER THAN 119 GALLONS: RQ NA1993, COMBUSTIBLE LIQUID N.O.S. (NAPHTHALENE), III ERG GUIDE 128
U.S. Surface Freight Classification: INSECTICIDES OR FUNGICIDES, INSECT OR ANIMAL REPELLENTS, NOI, OTHER THAN POISON (NMFC 102120; CLASS: 60)
Consult appropriate ICAO/IATA and IMDG regulations for shipment requirements in the Air and Maritime shipping modes.

15. REGULATORY INFORMATION

NFPA & HMIS Hazard Ratings:

NFPA			HMIS	
2 Health	0 Least		2 Health	
2 Flammability	1 Slight		2 Flammability	
1 Instability	2 Moderate		1 Reactivity	
	3 High		G PPE	
	4 Severe			

SARA Hazard Notification/Reporting
SARA Title III Hazard Category:

Immediate	Y	Fire	Y	Sudden Release of Pressure	N
Delayed	Y	Reactive	N		

Reportable Quantity (RQ) under U.S. CERCLA: Naphthalene (CAS: 91-20-3) (6.8% in product) 100 lbs.)
SARA, Title III, Section 313: Cyfluthrin (CAS: 68359-37-5) 25%; Naphthalene (CAS: 91-20-3) 6.8%
RCRA Waste Code: Not listed
CA Proposition 65: WARNING: This product contains chemicals known to the State of California to cause cancer or birth defects or other reproductive harm.

WARNING — This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals.

16. OTHER INFORMATION

MSDS STATUS: Sections 1, 3, 13, 14, 15 revised
PREPARED BY: Registrations and Regulatory Affairs

REVIEWED BY: Environmental Health and Safety

™Tombstone is a trademark and ®Helios is a registered trademark of Loveland Products Inc.

®Viton is a registered trademark of DUPONT PERFORMANCE ELASTOMERS L.L.C.

This product is a Restricted Use Pesticide (Toxicity to Fish and Aquatic Organisms)

Disclaimer and Limitation of Liability: This data sheet was developed from information on the constituent materials identified herein and does not relate to the use of such materials in combination with any other material or process. No warranty is expressed or implied with respect to the completeness or ongoing accuracy of the information contained in this data sheet, and LOVELAND PRODUCTS, INC. disclaims all liability for reliance on such information. This data sheet is not a guarantee of safety. Users are responsible for ensuring that they have all current information necessary to safely use the product described by this data sheet for their specific purpose.

SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

COMPANY ADDRESS:
ALBAUGH, LLC
Ankeny, IA 50021

EMERGENCY TELEPHONE NUMBERS:
(800) 424-9300 (CHEMTREC, transportation and spills)

PRODUCT NAME : **PROPI-STAR EC**
CHEMICAL NAME : Propiconazole
PRODUCT USE : Fungicide
PRODUCT CODE : EPA Reg. No 42750-211

SECTION 2 - HAZARDS IDENTIFICATION SUMMARY

(As defined by OSHA Hazard Communication Standard, 29 CFR 1910.1200)

Transparent dark yellow liquid

HEALTH HAZARDS: WARNING. Causes substantial but temporary eye injury. Harmful if swallowed. Possible skin sensitizer.

PHYSICAL HAZARDS: Combustible liquid. May release toxic fumes if burned.

ENVIRONMENTAL HAZARDS: Toxic to aquatic life.

SECTION 3 - COMPOSITION, INFORMATION OF INGREDIENTS

COMPONENT	PERCENTAGE	CAS NUMBER
Propiconazole	41.8	60207-90-1
Aromatic solvent (contains)*	45.0 – 55.0	64742-94-5
*Naphthlalene	2 – 5	91-20-3
Surfactants (proprietary)	4.0 – 12.0	n/a

SECTION 4 - FIRST AID MEASURES

First Aid responders should use protective equipment in Section 8 if there is a potential for exposure to product.

IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
IF SWALLOWED: Immediately call a poison control center or doctor. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give any liquid to the person. Do not give anything by mouth to an unconscious person.
IF INHALED: Move person to fresh air, if person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

NOTE TO PHYSICIAN: Contains petroleum distillate - vomiting may cause aspiration pneumonia.

Have a product container or label with you when calling a poison control center or doctor, or going for treatment.

SECTION 5 - FIRE FIGHTING MEASURES

National Fire Protection Rating (NFPA)

HEALTH	2
FLAMMABILITY	2
REACTIVITY	0
4=Severe 3=Serious 2=Moderate 1=Slight 0=Minimal	

FLASHPOINT: 69.3°C (157 F)

EXTINGUISHING MEDIA: Use foam, dry chemical, carbon dioxide, or water spray when fighting fires involving this material.

FIRE AND EXPLOSION HAZARD: Can burn in fire, releasing irritating and toxic gases due to thermal decomposition or combustion.

FIRE FIGHTING INSTRUCTIONS: Evacuate area and fight fire upwind from a safe distance to avoid hazardous vapors and decomposition products. Fire exposed containers can build up pressure and should be kept cool with water spray if possible. Dike and collect water used to fight fire to prevent environmental damage due to run off.

FIRE FIGHTING EQUIPMENT: Self-contained breathing apparatus with full facepiece.

Minimize use of water to prevent environmental contamination. Contact your State Pesticide or Environmental Control Agency, or nearest EPA Regional Office for guidance on disposal.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILLS OR LEAKS: Clean up spills immediately, observing precautions in Section 8 of this document. Isolate hazard area. Keep unnecessary and unprotected personnel from entering.

SMALL SPILL: Absorb small spills on sand, vermiculite or other inert absorbent. Place contaminated material in appropriate container for disposal.

LARGE SPILL: Dike large spills using absorbent or impervious material such as clay or sand. Recover and contain as much free liquid as possible for reuse. Allow absorbed material to solidify, and scrape up for disposal. After removal, clean contaminated area thoroughly with water. Pick up wash liquid with additional absorbent and place in a disposable container.

Minimize use of water to prevent environmental contamination

SECTION 7 - HANDLING AND STORAGE

KEEP OUT OF REACH OF CHILDREN!

Wear proper safety equipment specified in Section 8 when mixing, loading or otherwise handling concentrate.

HANDLING: Use only in a well-ventilated area.

STORAGE: Store in original container with lid tightly closed. Keep away from food, feed and drinking water. Store in a well ventilated dry place away from heat and other sources of ignition.

SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS (8 hour TWA, ppm):

COMPONENT	OSHA PEL	ACIGH TLV
Propiconazole	Not listed	Not listed
Naphthalene	10	10

ENGINEERING CONTROLS: Proper ventilation is required when handling or using this product to keep exposure to airborne contaminants below the exposure limit. Local mechanical exhaust ventilation may be required. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

PERSONAL PROTECTIVE EQUIPMENT:
EYE PROTECTION - Safety glasses or goggles.
CLOTHING - Long-sleeved shirt and long pants, Shoes plus socks.
GLOVES – Chemical-resistant gloves, such as barrier laminate, or viton.

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

USER SAFETY RECOMMENDATIONS: Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash outside of gloves before removing. As soon as possible wash thoroughly and change into clean clothing.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Transparent dark yellow liquid
Odor:	Estery odor
pH:	4.85 – 5.85
Melting Point:	Not applicable
Boiling Point:	No data
Flash Point:	69.3°C
Evaporation Rate:	No data
Flammability:	No data
Flammability Limits:	No data
Vapor Pressure:	5.6 x 10-2 mPa (25°C) (Propiconazole)
Vapor Density:	Not applicable
Density:	1.02 – 1.06 g/ml (8.51 – 8.85 lb/gl)*
Solubility:	Emulsifies
Partition Coefficient:	3.72 (pH 6.6, 25°C) (Propiconazole)
Auto-Ignition Temperature:	No data
Decomposition Temperature:	No data
Viscosity:	10.77 cSt (20°C); 5.44 cSt (40°C)

*Listed density is an approximate value and does not necessarily represent that of a specific batch.

SECTION 10 - STABILITY AND REACTIVITY

PRODUCT REACTIVITY: None known

CHEMICAL STABILITY: Stable, however may decompose if heated.

HAZARDOUS REACTION/POLYMERIZATION: Product will not undergo polymerization.

CONDITIONS TO AVOID: Avoid temperatures above (125°F, 48°C)

INCOMPATIBLE MATERIALS: Acidic and oxidizing materials

HAZARDOUS DECOMPOSITION PRODUCTS: Hydrogen chloride, Oxides of nitrogen

SECTION 11 - TOXICOLOGICAL INFORMATION

Acute toxicity values based on similar but not identical formulation.

ACUTE TOXICITY:

Oral LD_{50} (rat)	> 1,000 mg/Kg
Dermal LD_{50} (rat)	> 2,000 mg/Kg
Inhalation LC_{50} (rat)	> 2.02 mg/L
Eye Irritation (rabbit)	Moderate irritant
Skin Irritation (rabbit)	Moderate irritant
Sensitization (guinea pig)	Potential sensitizer

CARCINOGEN STATUS:

OSHA	- Not listed
NTP	- Not listed
IARC	- Not listed

TERATOGENICITY: Effects only noted at maternally toxic doses.

MUTAGENICITY: Weight of evidence indicates that propiconazole is non-mutagenic

SECTION 12 - ECOLOGICAL INFORMATION

ENVIRONMENTAL SUMMARY: This pesticide is toxic to fish. For terrestrial uses, do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment wash water.

FATE: Propiconazole is moderately persistent with a soil half-life of 30-365 days depending on soil type and weather conditions. Propiconazole binds to soil and is immobile in most soil types.

FISH TOXICITY: (technical)

96 hour LC_{50}, Rainbow trout –	0.8 ppm
96 hour LC_{50}, Bluegill –	1.3 ppm

AVIAN TOXICITY: (technical)

Dietary LC_{50}, Bobwhite quail –	> 5,000 ppm
Dietary LD_{50}, Mallard duck -	> 5,000 ppm

BEE TOXICITY: (technical) > 25 ug/bee

SECTION 13 - DISPOSAL CONSIDERATIONS

Do not contaminate water, food or feed by storage or disposal.

WASTE: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER: Non-refillable container: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

Triple Rinsing Instructions: To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsates into application equipment or rinsates collection system. Repeat this rinsing procedure two more times.

Refer to the product label for additional and complete Container Handling instructions

SECTION 14 - TRANSPORT INFORMATION

SHIPPING DESCRIPTION:
(Ground transport)

Containers ≤ 119 gallons -	Not regulated
Containers > 119 gallons -	NA1993, Combustible liquid, N.O.S. (contains petroleum distillate), PG III
DOT HAZARD CLASS:	Combustible liquid
IDENTIFICATION NUMBER:	NA1993
DOT PACKING GROUP:	PG III

SECTION 15 - REGULATORY INFORMATION

CERCLA REPORTABLE QUANTITY:	226 gallons product (100 lbs naphthalene)
SARA TITLE III STATUS:	
311/312 Hazard Categories –	Immediate, Delayed
313 Toxic Chemicals –	Propiconazole
CALIFORNIA PROP 65:	Naphthalene is listed.
TSCA:	This product is exempted from TSCA because it is solely for FIFRA regulated use.

SECTION 16 - OTHER INFORMATION

HMIS HAZARD RATINGS	HEALTH	2
	FLAMMABILITY	2
	PHYSICAL HAZARD	0
	4=Severe 3=Serious 2=Moderate 1=Slight 0=Minimal	

DISCLAIMER: The information presented herein is based on available data from reliable sources and is correct to the best of Albaugh's knowledge. Albaugh makes no warranty, express or implied, regarding the accuracy of the data or the results obtained from the use of this product. Nothing herein may be construed as recommending any practice or any product in violation of any law or regulations. The user is solely responsible for determining the suitability of any material or product for a specific purpose and for adopting any appropriate safety precautions.

This Safety Data Sheet (SDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA APPROVED PRODUCT LABELING (attached to and accompanying the product container). This SDS provides important health, safety, and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course. Use, storage and disposal of pesticide products are regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling, and all necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling.

It is a violation of federal law to use a pesticide product in any manner not prescribed on the EPA-approved label.

REVISED DATE: October, 2014

REFERENCE: Revised for GHS compliance

DuPont™ Lannate® SP Insecticide

Version 2.1

Revision Date 02/19/2016 Ref. 130000000505

This SDS adheres to the standards and regulatory requirements of the United States and may not meet the regulatory requirements in other countries.

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	DuPont™ Lannate® SP Insecticide
Tradename/Synonym	:	B10029800 DPX-X1179 90SP Yugo Lannate SP Methomyl 90SP Lannate 90WD 90WD METHOMYL (S-methyl N-[(methylcarbamoyl)oxy]thioacetimidate)
Product Use	:	Insecticide
Restrictions on use	:	Do not use product for anything outside of the above specified uses.
Manufacturer/Supplier	:	DuPont 974 Centre Road Wilmington, DE 19805, USA
Product Information	:	1-800-441-7515 (outside the U.S. 1-302-774-1000)
Medical Emergency	:	1-800-441-3637 (outside the U.S. 1-302-774-1139)
Transport Emergency	:	CHEMTREC: +1-800-424-9300 (outside the U.S. +1-703-527-3887)

SECTION 2. HAZARDS IDENTIFICATION

Product hazard category

Acute toxicity (Oral)	Category 2
Acute toxicity (Inhalation)	Category 2

Label content

Pictogram :

Signal word : Danger

Hazardous warnings : Fatal if swallowed or if inhaled

Hazardous prevention measures : Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Wear respiratory protection.
IF SWALLOWED: Immediately call a POISON CENTER/doctor.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
Immediately call a POISON CENTER/doctor.
Rinse mouth.
Store in a well-ventilated place. Keep container tightly closed.
Store locked up.
Dispose of contents/ container to an approved waste disposal plant.

Other hazards

Information presented in Section 2 conforms to the requirements of the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard of 2012. See Section 15 for applicable information conforming to the requirements of the Federal Insecticide Fungicide and Rodenticide Act (FIFRA), as required by the US Environmental Protection Agency (EPA), or by state Regulatory Agencies.

The following percentage of the mixture consists of ingredient(s) with unknown acute toxicity: 1.144 %

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Concentration
Methomyl	16752-77-5	90 %
Other Ingredients		10 %

SECTION 4. FIRST AID MEASURES

General advice : ATROPINE IS AN ANTIDOTE - SEEK MEDICAL ATTENTION AT ONCE IN ALL CASES OF SUSPECTED POISONINGS. Have the product container or label with you when calling a poison control center or doctor, or going for treatment.
For medical emergencies involving this product, call toll free 1-800-441-3637.
See Label for Additional Precautions and Directions for Use.
Information presented in Section 4 conforms to the requirements of the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard of 2012. See Section 15 for applicable information conforming to the requirements of the Federal Insecticide Fungicide and Rodenticide Act (FIFRA), as required by the US Environmental Protection Agency (EPA), or by state Regulatory Agencies.

Inhalation : Move to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a poison control center or doctor for treatment advice.

Skin contact : Take off all contaminated clothing immediately. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Eye contact : Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

Ingestion	:	Call a physician or poison control centre immediately. If swallowed, drink 1 or 2 glasses of water and try once or twice to induce vomiting by touching the back of throat with finger. Induce vomiting if person is conscious. Never give anything by mouth to an unconscious person.
Most important symptoms/effects, acute and delayed	:	Poisoning produces effects associated with anticholinesterase activity which may include: Weakness Blurred vision Headache Nausea Abdominal pain discomfort in the chest constriction of pupils Sweating slow pulse muscle twitching
Protection of first-aiders	:	No applicable data available.
Notes to physician	:	This product is an acetyl cholinesterase inhibiting carbamate insecticide. Morphine therapy is contra-indicated. Probable mucosal damage may contraindicate the use of gastric lavage. Morphine, 2-PAM and oxime therapy are contra-indicated. Administer atropine sulphate as an antidote until complete atropinisation (1.2-2.0 mg i.v. every 10-30 minutes). However, for exposure to methomyl in combination with organophosphorous insecticides, 2-PAM (1-2 g slow i.v.) may be used as required to supplement the atropine sulfate treatment as described above. Artificial respiration and/or oxygen may be necessary. Allow no further exposure to any cholinesterase inhibitor until full recovery is assured.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Water spray, Foam, Dry chemical, Carbon dioxide (CO2)
Unsuitable extinguishing media	:	High volume water jet, (contamination risk)
Specific hazards	:	Fire or intense heat may cause violent rupture of packages. Dust may form explosive mixture in air.
Special protective equipment for firefighters	:	In the event of fire, wear self-contained breathing apparatus. Wear full protective equipment.
Further information	:	If area is heavily exposed to fire and if conditions permit, let fire burn itself out since water may increase the area contaminated. Cool containers/tanks with water spray.

SECTION 6. ACCIDENTAL RELEASE MEASURES

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Safeguards (Personnel)	:	Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus. Use personal protective equipment.
Environmental precautions	:	Prevent material from entering sewers, waterways, or low areas.
Spill Cleanup	:	Sweep up and shovel into suitable containers for disposal. Soak up with sawdust, sand, oil dry or other absorbent material. If product enters crevices and can not be removed , treat with a sodium hydroxide solution and allow to stand 4 hours. Note: Sodium hydroxide is caustic and causes burns. Do not get in eyes, skin or clothing.
Accidental Release Measures	:	Never return spills in original containers for re-use. Dispose of in accordance with local regulations.

SECTION 7. HANDLING AND STORAGE

Handling (Personnel)	:	Do not breathe dust or spray mist. Do not get in eyes, on skin, or on clothing. Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove personal protective equipment immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing. Remove clothing/PPE immediately if material gets inside. Wash thoroughly and put on clean clothing.
Handling (Physical Aspects)	:	Keep away from heat and sources of ignition. Use only in well-ventilated areas.
Dust explosion class	:	No applicable data available.
Storage	:	Do not contaminate water, other pesticides, fertilizer, food or feed in storage. Handle this package carefully to prevent breakage of inner bag when stored at low temperatures. Allow to warm above 10°C (50°F) for normal handling. Store in original container. Keep container tightly closed in a dry and well-ventilated place. Not for use or storage in or around the home. Keep out of the reach of children.

Storage period	:	No applicable data available.
Storage temperature	:	No applicable data available.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls	:	Information presented in Section 8 conforms to the requirements of the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard of 2012. See Section 15 for applicable information conforming to the requirements of the Federal Insecticide Fungicide and Rodenticide Act (FIFRA), as required by the US Environmental Protection Agency (EPA), or by state Regulatory Agencies. Use only with adequate ventilation.
Personal protective equipment		
Respiratory protection	:	For exposures in enclosed areas: A respirator with an organic vapor-removing cartridge with a prefilter approved for pesticides (NIOSH approval number prefix TC-23C), or a canister approved for pesticides (NIOSH approval number prefix TC-14G), or a NIOSH approved respirator with an organic vapor (OV) cartridge or canister with any R, P, or HE prefilter. For exposures outdoors: A NIOSH approved dust/mist filtering respirator with any R, P, or HE filter or with approval number prefix TC-21C.
Skin and body protection	:	Applicators and other handlers exposed to the diluted material must wear: Long sleeved shirt and long pants Chemical-resistant gloves Shoes plus socks Protective eyewear Mixers, loaders, applicators and other handlers who may be exposed to the concentrate must wear: Long sleeved shirt and long pants Chemical-resistant gloves Chemical resistant footwear plus socks Protective eyewear Chemical resistant apron PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is: Coveralls Chemical-resistant gloves, Category A (such as butyl rubber, natural rubber, neoprene rubber, or nitrile rubber), all greater than or equal to 14 mils Shoes plus socks Protective eyewear

Protective measures : Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

Exposure Guidelines
Exposure Limit Values

Methomyl				
TLV	(ACGIH)	0.2 mg/m3	TWA	Inhalable fraction and vapor.

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance
- Physical state : solid
- Form : solid, powder
- Color : white, or, blue

Odor : slight, sulphurous

Odor threshold : No applicable data available.

pH : No applicable data available.

Melting point/range : No applicable data available.

Boiling point/boiling range : No applicable data available.

Flash point : Not applicable

Evaporation rate : No applicable data available.

Flammability (solid, gas) : No applicable data available.

Upper explosion limit : No applicable data available.

Lower explosion limit	:	0.096 g/l
Vapour Pressure	:	No applicable data available.
Vapour density	:	No applicable data available.
Specific gravity (Relative density)	:	1.2946 at 25 °C (77 °F)
Water solubility	:	58 g/l at 25 °C (77 °F)
Solubility(ies)	:	No applicable data available.
Partition coefficient: n-octanol/water	:	No applicable data available.
Auto-ignition temperature	:	No applicable data available.
Decomposition temperature	:	No applicable data available.
Viscosity, kinematic	:	No applicable data available.
Viscosity, dynamic	:	No applicable data available.

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	No applicable data available.
Chemical stability	:	Stable at normal temperatures and storage conditions.
Possibility of hazardous reactions	:	No applicable data available.
Conditions to avoid	:	No applicable data available.
Incompatible materials	:	Incompatible products Strong bases
Hazardous decomposition products	:	Hazardous thermal decomposition products:: Sulphur oxides, Methyl isocyanate, Hydrogen cyanide (hydrocyanic acid)

SECTION 11. TOXICOLOGICAL INFORMATION

DuPont™ Lannate® SP Insecticide

Oral LD50	:	23 mg/kg , Rat

Skin irritation	:	No skin irritation, Rabbit
Eye irritation	:	slight irritation, Rabbit
Sensitisation	:	Animal test did not cause sensitization by skin contact., Guinea pig
Further information	:	May be lethal if absorbed through eyes: a rabbit died via ocular exposure. This exposure was within the equivalent range that produced mortalities via oral administration.
Further information	:	Information presented in this Section conforms to the requirements of the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard of 2012. See Section 15 for applicable information conforming to the requirements of the Federal Insecticide Fungicide and Rodenticide Act (FIFRA), as required by the US Environmental Protection Agency (EPA), or by state Regulatory Agencies.

Methomyl

Inhalation 4 h LC50	:	0.258 mg/l , Rat
Dermal LD50	:	> 2,000 mg/kg , Rabbit
Carcinogenicity	:	Did not show carcinogenic effects in animal experiments. Not classifiable as a human carcinogen.
Mutagenicity	:	Tests on bacterial or mammalian cell cultures did not show mutagenic effects. Animal testing did not show any mutagenic effects.
Reproductive toxicity	:	Animal testing showed no reproductive toxicity. No toxicity to reproduction
Teratogenicity	:	Animal testing showed no developmental toxicity.

Carcinogenicity

The carcinogenicity classifications for this product and/or its ingredients have been determined according to HazCom 2012, Appendix A.6. The classifications may differ from those listed in the National Toxicology Program (NTP) Report on Carcinogens (latest edition) or those found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest edition).

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, or OSHA, as a carcinogen.

SECTION 12. ECOLOGICAL INFORMATION

Aquatic Toxicity

DuPont™ Lannate® SP Insecticide

96 h LC50	:	Lepomis macrochirus (Bluegill sunfish) 0.63 mg/l
72 h ErC50	:	Pseudokirchneriella subcapitata (microalgae) > 100 mg/l
48 h EC50	:	Daphnia (water flea) 0.017 mg/l
Additional ecological information	:	Environmental Hazards: Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Run-off from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when cleaning equipment or disposing of equipment washwaters or rinsate. Do not apply this product if bees are visiting the treatment area. See product label for additional application instructions relating to environmental precautions. No data is available on the product itself.

SECTION 13. DISPOSAL CONSIDERATIONS

Waste disposal methods - Product	:	Do not contaminate water, food or feed by disposal. Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.
Waste disposal methods - Container	:	Container Refilling and Disposal: Refer to the product label for instructions. If the container is to be refilled, do not rinse with any material or introduce any pesticide other than this product. DO NO REUSE THE CONTAINER FOR ANY OTHER PURPOSE. Do not transport if this container is damaged or leaking. In the event of a major spill, fire or other emergency, call 1-800-441-3637 day or night.

Contaminated packaging : No applicable data available.

SECTION 14. TRANSPORT INFORMATION

DOT	UN number	: 2757
	Proper shipping name	: Carbamate pesticides, solid, toxic (Methomyl)
	Class	: 6.1
	Packing group	: II
	Labelling No.	: 6.1
	Reportable Quantity	: 100 lbs Methomyl
IATA_C	UN number	: 2757
	Proper shipping name	: Carbamate pesticide, solid, toxic (Methomyl)
	Class	: 6.1
	Packing group	: II
	Labelling No.	: 6.1
IMDG	UN number	: 2757
	Proper shipping name	: CARBAMATE PESTICIDE, SOLID, TOXIC (Methomyl)
	Class	: 6.1
	Packing group	: II
	Labelling No.	: 6.1
	Marine pollutant	: yes (Methomyl)

SECTION 15. REGULATORY INFORMATION

Other regulations : This Safety Data Sheet is for a pesticide product registered by the US Environmental Protection Agency (USEPA) and various state regulatory agencies, and is therefore also subject to certain requirements under US and state pesticide laws, including the Federal Insecticide Fungicide and Rodenticide Act (FIFRA). These requirements differ from the classification criteria and hazard information required by OSHA for safety data sheets, and for workplace labels of non-pesticide chemicals. The following is information determined by USEPA, and various states.

DANGER! POISON!

Fatal if swallowed. May be fatal if inhaled or absorbed through eyes. Do not

get in eyes, on skin, or on clothing. Do not breathe dust. Do not breathe vapours or spray mist. Wear protective eyewear and respirator. Harmful if absorbed through skin. Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. This product is toxic to fish. This product is toxic to: Aquatic invertebrates Mammals

SARA 313 Regulated Chemical(s)	:	This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.
PA Right to Know Regulated Chemical(s)	:	Substances on the Pennsylvania Hazardous Substances List present at a concentration of 1% or more (0.01% for Special Hazardous Substances): Silicon dioxide, amorphous, Methomyl
NJ Right to Know Regulated Chemical(s)	:	Substances on the New Jersey Workplace Hazardous Substance List present at a concentration of 1% or more (0.1% for substances identified as carcinogens, mutagens or teratogens): Methomyl, Silicon dioxide, amorphous
Title III hazard classification	:	Acute Health Hazard: Yes Chronic Health Hazard: No Fire: No Reactivity/Physical hazard: No Pressure: No
CERCLA Reportable Quantity	:	110 lbs Based on the percentage composition of this chemical in the product.: Methomyl
SARA Reportable Quantity	:	110 lbs Based on the percentage composition of this chemical in the product.: Methomyl
EPA Reg. No.	:	352-342 In the United States this product is regulated by the US Environmental Protection Agency (EPA) under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Read and follow all label directions. This product is excluded from listing requirements under EPA/TSCA.

SECTION 16. OTHER INFORMATION

		NFPA
Health	:	2
Flammability	:	1
Reactivity/Physical hazard	:	1

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Revision Date : 02/19/2016

Contact person : DuPont Crop Protection, Wilmington, DE, 19805, Phone: 1-888-638-7668

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Significant change from previous version is denoted with a double bar.

DuPont™ Tanos® Fungicide

Version 2.0

Revision Date 06/18/2015 Ref. 130000000560

This SDS adheres to the standards and regulatory requirements of the United States and may not meet the regulatory requirements in other countries.

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	DuPont™ Tanos® Fungicide
Tradename/Synonym	:	B10480592 DPX-KP481 50DF DPX-KP481 WG Tanos 50DF Tanos 50WG
Product Use	:	Fungicide
Restrictions on use	:	Do not use product for anything outside of the above specified uses
Manufacturer/Supplier	:	DuPont 4417 Lancaster Pike Wilmington, DE 19805, USA
Product Information	:	1-800-441-7515 (outside the U.S. 1-302-774-1000)
Medical Emergency	:	1-800-441-3637 (outside the U.S. 1-302-774-1139)
Transport Emergency	:	CHEMTREC: +1-800-424-9300 (outside the U.S. +1-703-527-3887)

SECTION 2. HAZARDS IDENTIFICATION

Product hazard category

Acute toxicity (Oral)	Category 4
Skin sensitisation	Category 1
Specific target organ toxicity - repeated exposure	Category 2

Label content

Pictogram :

Signal word : Warning

Hazardous warnings : Harmful if swallowed.
May cause an allergic skin reaction.
May cause damage to organs through prolonged or repeated exposure. (Eyes, thymus)

Hazardous prevention measures : Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves.
IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell.
IF ON SKIN: Wash with plenty of soap and water.
Get medical advice/ attention if you feel unwell.
Rinse mouth.
If skin irritation or rash occurs: Get medical advice/ attention.
Wash contaminated clothing before reuse.
Dispose of contents/ container to an approved waste disposal plant.

Other hazards

No applicable data available.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Concentration
Famoxadone	131807-57-3	25 %
Cymoxanil	57966-95-7	25 %
Sodium dioctyl sulfosuccinate	577-11-7	1 - 5 %
Alkyl Glycol Polymer		1 - 5 %
Modified Lingin Sulfonate Salt		20 - 25 %
Other Ingredients		15 - 28 %

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

SECTION 4. FIRST AID MEASURES

General advice : Have the product container or label with you when calling a poison control center or doctor, or going for treatment.
For medical emergencies involving this product, call toll free 1-800-441-3637.
See Label for Additional Precautions and Directions for Use.

Inhalation : Move to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a poison control center or doctor for treatment advice.

Skin contact : Take off all contaminated clothing immediately. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Eye contact	: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
Ingestion	: Call a poison control center or doctor for treatment advice. Have person sip a glass of water if able to swallow. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Do not give anything by mouth to an unconscious person.
Most important symptoms/effects, acute and delayed	: No applicable data available.
Protection of first-aiders	: No applicable data available.
Notes to physician	: No applicable data available.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	: Water spray, Foam, Dry chemical, Carbon dioxide (CO2)
Unsuitable extinguishing media	: High volume water jet, (contamination risk)
Specific hazards	: No applicable data available.
Special protective equipment for firefighters	: Wear full protective clothing and self-contained breathing apparatus.
Further information	: (on small fires) If area is heavily exposed to fire and if conditions permit, let fire burn itself out since water may increase the area contaminated. Cool containers/tanks with water spray.

SECTION 6. ACCIDENTAL RELEASE MEASURES

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Safeguards (Personnel)	: Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus. Use personal protective equipment.
Environmental precautions	: Prevent material from entering sewers, waterways, or low areas.

Spill Cleanup	:	Sweep up and shovel into suitable containers for disposal.
Accidental Release Measures	:	Never return spills in original containers for re-use. Dispose of in accordance with local regulations.

SECTION 7. HANDLING AND STORAGE

Handling (Personnel)	:	Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove personal protective equipment immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing. Remove clothing/PPE immediately if material gets inside. Wash thoroughly and put on clean clothing.
Handling (Physical Aspects)	:	Keep away from heat and sources of ignition.
Dust explosion class	:	No applicable data available.
Storage	:	Store in original container. Do not contaminate water, other pesticides, fertilizer, food or feed in storage. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep out of the reach of children.
Storage period	:	No applicable data available.
Storage temperature	:	No applicable data available.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls	:	Use only with adequate ventilation. When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.
Personal protective equipment		
Hand protection	:	Material: Chemical-resistant gloves
Skin and body protection	:	Applicators and other handlers must wear: Long sleeved shirt and long pants Chemical-resistant gloves, Category A (such as butyl rubber, natural rubber,

neoprene rubber, or nitrile rubber), all greater than or equal to 14 mils
Shoes plus socks
PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:
Coveralls
Chemical-resistant gloves, Category A (such as butyl rubber, natural rubber, neoprene rubber, or nitrile rubber), all greater than or equal to 14 mils
Shoes plus socks

Protective measures : Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

Exposure Guidelines
Exposure Limit Values

Famoxadone

AEL *	(DUPONT)	2 mg/m3	8 hr. TWA
AEL *	(DUPONT)	1 mg/m3	12 hr. TWA

Cymoxanil

AEL *	(DUPONT)	2 mg/m3	15 minute TWA

Sodium dioctyl sulfosuccinate
No applicable data available.

Alkyl Glycol Polymer
No applicable data available.

Modified Lingin Sulfonate Salt
No applicable data available.

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance		
Physical state	:	solid
Form	:	solid
Color	:	brown
Odor	:	sweet
Odor threshold	:	No applicable data available.
pH	:	ca. 6 at 10 g/l 20 °C (68 °F)
Melting point/range	:	No applicable data available.
Boiling point/boiling range	:	No applicable data available.
Flash point	:	Not applicable
Evaporation rate	:	No applicable data available.
Flammability (solid, gas)	:	No applicable data available.
Upper explosion limit	:	No applicable data available.
Lower explosion limit	:	No applicable data available.
Vapour Pressure	:	No applicable data available.
Vapour density	:	No applicable data available.
Specific gravity (Relative density)	:	No applicable data available.
Bulk density	:	600 kg/m3
Water solubility	:	dispersible
Solubility(ies)	:	No applicable data available.
Partition coefficient: n-octanol/water	:	No applicable data available.

Auto-ignition temperature	:	No applicable data available.
Decomposition temperature	:	No applicable data available.
Viscosity, kinematic	:	No applicable data available.
Viscosity, dynamic	:	No applicable data available.

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	No applicable data available.
Chemical stability	:	Stable at normal temperatures and storage conditions.
Possibility of hazardous reactions	:	Polymerization will not occur.
Conditions to avoid	:	None reasonably foreseeable.
Incompatible materials	:	No applicable data available.
Hazardous decomposition products	:	Carbon oxides, Nitrogen oxides (NOx)

SECTION 11. TOXICOLOGICAL INFORMATION

DuPont™ Tanos® Fungicide

Inhalation 4 h LC50	:	> 5.1 mg/l , Rat
Dermal LD50	:	> 5,000 mg/kg , Rat
Oral LD50	:	1,732 mg/kg , male, Rat
Oral LD50	:	566 mg/kg , female, Rat
Skin irritation	:	No skin irritation, Rabbit Minimal effects that do not meet the threshold for classification.
Eye irritation	:	No eye irritation, Rabbit Minimal effects that do not meet the threshold for classification.
Sensitisation	:	May cause sensitisation by skin contact., Guinea pig

Famoxadone

Repeated dose toxicity	:	

The following effects occurred at levels of exposure that significantly exceed those expected under labeled usage conditions.

Oral - feed
Dog
-
Target Organs: Eyes
eye effects

Oral - feed
Rat
-
Reduced body weight gain, Organ weight changes, Increased liver enzyme levels in serum, Liver effects, Red blood cell destruction causing abnormal decrease in number of red blood cells (anaemia)

Dermal
Rat
-
Increased liver weight, Increased liver enzyme levels in serum

Carcinogenicity : Did not show carcinogenic effects in animal experiments.
Not classifiable as a human carcinogen.

Mutagenicity : Animal testing did not show any mutagenic effects.
Test on bacterial cultures did not show mutagenic effects.
Tests on mammalian cell cultures showed mutagenic effects.

Reproductive toxicity : No toxicity to reproduction
Animal testing showed effects on reproduction at levels equal to or above those causing parental toxicity.

Teratogenicity : Animal testing showed no developmental toxicity.

Cymoxanil

Repeated dose toxicity :

The following effects occurred at levels of exposure that significantly exceed those expected under labeled usage conditions.

Oral
multiple species
-
Target Organs: Blood, thymus
altered blood chemistry, No effect to neurotoxicity.

Oral - feed
Dog
- 90 d
Target Organs: thymus
Thymus effects

Carcinogenicity : Not classifiable as a human carcinogen.
Did not show carcinogenic effects in animal experiments.

Mutagenicity : Animal testing did not show any mutagenic effects.
Evidence suggests this substance does not cause genetic damage in cultured bacterial cells.
Tests on mammalian cell cultures showed mutagenic effects.

Reproductive toxicity : No toxicity to reproduction

Teratogenicity : Animal testing showed effects on embryo-fetal development at levels equal to or above those causing maternal toxicity.

Sodium dioctyl sulfosuccinate

Repeated dose toxicity : Oral
Rat
- 90 d
No toxicologically significant effects were found.

Reproductive toxicity : No toxicity to reproduction
Animal testing showed no reproductive toxicity.

Teratogenicity : Animal testing showed effects on embryo-fetal development at levels equal to or above those causing maternal toxicity.

Alkyl Glycol Polymer

Repeated dose toxicity : Ingestion
Dog
- 6 Months
NOAEL: > 100 mg/kg
No toxicologically significant effects were found.

Carcinogenicity : Not classifiable as a human carcinogen.
Animal testing did not show any carcinogenic effects.
Information given is based on data obtained from similar substances.

Reproductive toxicity : No toxicity to reproduction

Animal testing showed no reproductive toxicity.
No effects on or via lactation
Information given is based on data obtained from similar substances.

Teratogenicity : Animal testing showed no developmental toxicity.
Information given is based on data obtained from similar substances.

Carcinogenicity

The carcinogenicity classifications for this product and/or its ingredients have been determined according to HazCom 2012, Appendix A.6. The classifications may differ from those listed in the National Toxicology Program (NTP) Report on Carcinogens (latest edition) or those found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest edition).

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, or OSHA, as a carcinogen.

SECTION 12. ECOLOGICAL INFORMATION

Aquatic Toxicity

DuPont™ Tanos® Fungicide

96 h LC50 : Oncorhynchus mykiss (rainbow trout) 0.0287 mg/l

Famoxadone

72 h EbC50 : Pseudokirchneriella subcapitata (green algae) 0.023 mg/l

72 h ErC50 : Pseudokirchneriella subcapitata (green algae) 0.048 mg/l

48 h EC50 : Daphnia magna (Water flea) 0.012 mg/l

48 h EC50 : Daphnia magna (Water flea) 0.0118 mg/l

90 d : NOEC Oncorhynchus mykiss (rainbow trout) 0.0014 mg/l

21 d : NOEC Daphnia magna (Water flea) 0.0037 mg/l

Cymoxanil

72 h ErC50 : Pseudokirchneriella subcapitata (green algae) 2.39 mg/l

48 h EC50 : Daphnia magna (Water flea) 27 mg/l

21 d : NOEC Oncorhynchus mykiss (rainbow trout) 0.22 mg/l

21 d	:	NOEC Daphnia magna (Water flea) 0.067 mg/l
Sodium dioctyl sulfosuccinate		
48 h EC50	:	Daphnia magna (Water flea) 36 mg/l
Alkyl Glycol Polymer		
72 h EC50	:	Algae > 100 mg/l Information given is based on data obtained from similar substances.
48 h EC50	:	Daphnia (water flea) > 100 mg/l Information given is based on data obtained from similar substances.
Environmental Fate		
Sodium dioctyl sulfosuccinate		
Bioaccumulation	:	Bioaccumulation is unlikely.
Modified Lingin Sulfonate Salt		
Bioaccumulation	:	Bioaccumulation is unlikely.
Additional ecological information	:	Environmental Hazards: Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas. See product label for additional application instructions relating to environmental precautions.

SECTION 13. DISPOSAL CONSIDERATIONS

Waste disposal methods - Product	:	Do not contaminate water, food or feed by disposal. Wastes resulting from the use of this product must be disposed of on site or at an approved waste disposal facility.
Waste disposal methods - Container	:	Container Refilling and Disposal: Refer to the product label for instructions. Do not transport if this container is damaged or leaking. In the event of a major spill, fire or other emergency, call 1-800-441-3637 day or night.

Contaminated packaging : No applicable data available.

SECTION 14. TRANSPORT INFORMATION

IATA_C	UN number	: 3077
	Proper shipping name	: Environmentally hazardous substance, solid, n.o.s. (Famoxadone, Cymoxanil)
	Class	: 9
	Packing group	: III
	Labelling No.	: 9MI
IMDG	UN number	: 3077
	Proper shipping name	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
	Class	: 9
	Packing group	: III
	Labelling No.	: 9
	Marine pollutant	: yes (Famoxadone, Cymoxanil)

Not regulated by DOT/49 CFR unless shipped in bulk package or by water.
Marine Pollutants assigned UN number 3077 and 3082 in single or combination packaging containing a net quantity per single or inner packaging of 5 L or less for liquids or having a net mass per single or inner packaging of 5 KG or less for solids may be transported as non-dangerous goods as provided in section 2.10.2.7 of IMDG code, IATA special provision A197, and ADR/RID special provision 375.

SECTION 15. REGULATORY INFORMATION

Other regulations : This Safety Data Sheet is for a pesticide product registered by the US Environmental Protection Agency (USEPA) and is therefore also subject to certain labeling requirements under US pesticide law (FIFRA). These requirements differ from the classification criteria and hazard information required by OSHA for safety data sheets, and for workplace labels of non-pesticide chemicals. The following is the mandatory hazard information required by USEPA on the pesticide label:

CAUTION!

Harmful if swallowed. Causes moderate eye irritation. Harmful if absorbed through skin. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Avoid contact with skin, eyes and clothing. Wash thoroughly with soap and water after handling. Harmful if inhaled. Avoid breathing dust. Avoid breathing vapours or mist. Remove and wash contaminated clothing before re-use.

This product is toxic to fish. This product is toxic to: Aquatic invertebrates

SARA 313 Regulated Chemical(s)	:	This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.
PA Right to Know Regulated Chemical(s)	:	Substances on the Pennsylvania Hazardous Substances List present at a concentration of 1% or more (0.01% for Special Hazardous Substances): Fumaric acid
Title III hazard classification	:	Acute Health Hazard: Yes Chronic Health Hazard: No Fire: No Reactivity/Physical hazard: No Pressure: No
EPA Reg. No.	:	352-604 In the United States this product is regulated by the US Environmental Protection Agency (EPA) under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Read and follow all label directions. This product is excluded from listing requirements under EPA/TSCA.

SECTION 16. OTHER INFORMATION

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Revision Date : 06/18/2015

Contact person : DuPont Crop Protection, Wilmington, DE, 19898, Phone: 1-888-638-7668

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the

date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Significant change from previous version is denoted with a double bar.

Safety Data Sheet

1 IDENTIFICATION

Product Name:	Sevin® XLR PLUS
EPA Reg. No.:	61842-37
Chemical Family:	Carbamate
Manufacturer/Supplier:	Tessenderlo Kerley Inc. 2255 N. 44th Street, Suite 300 Phoenix, Arizona 85008-3279 Information:(602) 889-8300
For 24-Hour Emergency Assistance (Spill, Leak, Fire, or Exposure), Call CHEMTREC®:	(800) 424-9300 (CHEMTREC) (866) 374-1975 (Tessenderlo Kerley)

2 HAZARD(S) IDENTIFICATION

Classification of the substance or mixture

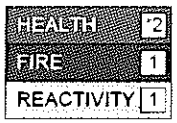
Pictogram	Hazard Statements	Precautionary Statements
	Suspected of causing cancer. May damage fertility or the unborn child.	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. If exposed or concerned: Get medical advice. Store locked up. Dispose of contents/container in accordance with local and State regulations.
	Harmful if swallowed.	Wash thoroughly after handling. Do not eat, drink or smoke when using this product. IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
	Very toxic to aquatic life.	Avoid release to the environment. Collect spillage.

Signal word: Warning
Hazard-determining components of labeling:
carbaryl (ISO)

NFPA Hazard Ratings

Health = 2
Fire = 1
Reactivity = 1

HMIS Ratings



Health = *2
Fire = 1
Reactivity = 1

3 COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Characterization: **Mixture**
Description: Mixture of the substance(s) listed below with nonhazardous additions.

	Component	CAS No.	% by Weight
Active Ingredient:	Carbaryl (1-naphthyl methyl carbamate	63-25-2	44.1
	Propylene glycol (1,2-Propanediol)	57-55-6	5

4 FIRST AID MEASURES

Description of first aid measures
General information:
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. For medical emergencies involving this product, call toll free 1-866-374-1975. See Label for Additional Precautions and Directions for Use.

IF SWALLOWED: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.
IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
IF INHALED: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.
IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
NOTE TO PHYSICIAN: Carbaryl contains an N-methyl carbamate that inhibits cholinesterase. Drugs like 2-Pam (pyridine-2-aldoxime methiodide) are not recommended. To aid in the confirmation of diagnosis, urine samples should be obtained within 24 hours of exposure and immediately frozen. Analysis will be arranged by Tessenderlo Kerley, Inc. Consultation on therapy can be obtained at all hours by calling the appropriate emergency number 1-866-374-1975 (U.S.A.)

5 FIRE FIGHTING MEASURES

Extinguishing media
Suitable extinguishing agents:
CO_2, extinguishing powder or water spray. Fight larger fires with water spray.
Special hazards arising from the substance or mixture
Keep containers/storage vessels in fire area cooled with water spray
In case of fire, the following can be released:
Nitrogen oxides (NOx)
Carbon dioxide
Advice for firefighters
Protective equipment:
Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face piece operated in positive pressure mode.

6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Not required.
Uncontrolled release should be responded to by trained personnel using pre-planned procedures. Evacuate area. Evacuate personnel to a safe area.
Keep people at a distance and stay upwind.

Environmental precautions:
Inform respective authorities in case of seepage into water course or sewage system.
Dilute with plenty of water.
Do not allow to enter sewers/ surface or ground water.
Methods and material for containment and cleaning up:
Absorb with liquid-binding material (i.e. sand, diatomite, acid binders, universal binders, sawdust).
Dispose contaminated material as waste according to section 13.
Ensure adequate ventilation.

7 HANDLING and STORAGE

Precautions for safe handling
Ensure good ventilation/exhaustion at the workplace.
Avoid prolonged or repeated exposure.
Personnel must refer to the Product Label and Directions For Use attached to the product for agricultural use requirements in accordance with the EPA Worker Protection Standard.

Information about protection against explosions and fires:
Keep protective respiratory device available.

Conditions for safe storage, including any incompatibilities
Store unused SEVIN® brand XLR Carbaryl Insecticide in original container only, in cool, dry area out of reach of children and animals. Do not store in areas where temperatures frequently exceed 100° F. If container is damaged, before cleaning up, put on Personal Protective Equipment.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
Components with occupational exposure limits:

	CAS No.	ACGIH TWA/STEL	NIOSH REL	OSHA PEL/TWA
Carbaryl	63-25-2	5 mg/m^3	5 mg/m^3	5 mg/m^3
Ethanol	64-17-5	1,000 ppm	1,000 ppm	1,000 ppm

Additional information:
Personnel who handle this product in its end-use application should use this product only in accordance with its pesticide labeling and with the "Worker Protection Standard", 40 CFR 170.

Exposure controls
Personal protective equipment:
General protective and hygienic measures:
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Store protective clothing separately.
Breathing equipment:
A NIOSH-approved dust/mist filtering respirator with NIOSH/MSHA approval number prefix TC-21C or a NIOSH-approved respirator with any N, R, P or HE filter.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION *(continued)*

Protection of hands:

Protective gloves
The glove material has to be impermeable and resistant to the product.

Material of gloves
Butyl rubber, BR
Natural rubber, NR
Nitrile rubber, NBR
Neoprene gloves

Penetration time of glove material
The exact break-through time has to be determined and observed by the manufacturer of the protective gloves.

Eye protection:
Tightly sealed goggles
Face protection

Body protection:
Wear long-sleeved shirt and long pants, waterproof shoes and socks. Wash contaminated clothing before reuse.

9 PHYSICAL and CHEMICAL PROPERTIES

Appearance	White to beige liquid suspension
Odor	Weak phenolic
pH @ 20°C (68°F)	4.0 – 5.0
Melting/Freezing Point	-4°C (25°F)
Boiling Point	Not determined
Flash Point	> 100 °C (> 212 °F)
Evaporation Rate	Not determined
Upper/Lower Flammability or Explosive Limits	Not determined
Vapor Pressure @ 20 °C (68 °F)	Not determined
Vapor Density @ 20 °C (68 °F)	Not determined
Relative Density	Not determined
Bulk Density	1.09 g/cm³ (9.1 lbs/gal)
Solubility (in Water)	Miscible
Partition Coefficient: n-octanol/water	Not determined
Auto-ignition temperature	Product is not self-igniting
Decomposition temperature	175 – 190°C (347 – 374°F) (exothermic decomposition)
Viscosity	500 – 700 mPa.s at 25°C

10 STABILITY and REACTIVITY

Reactivity	N/A
Chemical stability	This is a stable material under normal temperature and storage conditions.
Possibility of hazardous reactions	Will not occur
Conditions to avoid	Heat, flame and ignition sources.
Incompatible materials	Strong acids; bases
Hazardous decomposition products	Carbon oxides, Nitrogen oxides, Methyl iso-cyanate (trace: no adverse effects expected)

11 TOXICOLOGICAL INFORMATION

Acute toxicity:

LD/LC_{50} values relevant for classification:

Oral	Rat LD_{50}	699 mg/kg
Dermal	Rabbit LD_{50}:	>4,000
Inhalation	Rat LC_{50}:	3.84 mg/l (4 hr exposure)

Primary irritant effect:

on the skin

Mild irritant effect

on the eye

Mild irritant effect

Reproductive and Developmental Toxicity Carbaryl was not a reproductive toxicant in a 2-generation study in rats. Carbaryl was not a primary developmental toxicant in rats and rabbits. Developmental effects were observed in both species but were considered secondary to maternal toxicity

Neurotoxicity Carbaryl caused transient neurobehavioral effects (e.g., tremors) related to cholinergic toxicity without correlating neuropathological changes in acute and sub chronic neurotoxicity studies in rats. Carbaryl did not cause developmental neurotoxic effects in offspring in a 1-generation study in rats.

Mutagenicity Carbaryl poses only a slight mutagenic risk based on the overall weight of evidence in a battery of in-vitro and vivo tests.

Additional toxicological information:

Reversible cholinesterase inhibition occurred in chronic toxicity studies in rats and dogs. The principle organs affected in rats from long term exposure to high doses of Carbaryl include the urinary bladder, thyroid, kidneys and liver. Carbaryl has been shown to cause tumor in lab animals in lifetime feeding studies

Carcinogenic categories

IARC (International Agency for Research on Cancer)	Carbaryl; overall evaluation: 3
NTP (National Toxicology Program)	None of the ingredients is listed.
OSHA-Ca (Occupational Safety & Health Administration)	None of the ingredients is listed.

12 ECOLOGICAL INFORMATION

AQUATIC TOXICITY

96 hour LC_{50}	Rainbow trout:	3.3 mg/l
48 hour EC_{50}	Daphnia magna:	0.0164 mg/l

This information is based on the active ingredient:

AVIAN TOXICOLOGY

Acute Oral LC_{50}	Bobwhite quail	>5,000 mg/kg
Oral LC_{50}	Mallard duck	>5,000

Additional ecological information:

Water hazard class 3 (Self-assessment): extremely hazardous for water
Do not allow product to reach ground water, water course or sewage system, even in small quantities.
Dangerous to drinking water if even extremely small quantities leak into the ground.
Poisonous for fish and plankton in water bodies.
Very toxic for aquatic organisms
Highly toxic to bees. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.

13 DISPOSAL CONSIDERATIONS

PESTICIDE DISPOSAL: Wastes resulting from the use of this product must be disposed of on site or at an approved waste disposal facility.
CONTAINER DISPOSAL: Non-refillable container. Do not reuse or refill this container. Triple rinse or pressure rinse container (or equivalent) promptly after emptying.

Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

Pressure rinse as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

Offer for recycling, if available. If not recycled, then puncture and dispose of in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

14 TRANSPORT INFORMATION

UN Number:	
DOT, ADR, IMDG, IATA	UN3082
UN Proper shipping name:	
DOT	Environmentally hazardous substances, liquid, n.o.s.
ADR	UN3082 Environmentally hazardous substances, liquid, n.o.s.
IMDG	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., MARINE POLLUTANT
IATA	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Transport hazard class(es)/Label(s):	
DOT, ADR, IMDG, IATA	9 Miscellaneous dangerous substances and articles
Packing group:	
DOT, ADR, IMDG, IATA	III
Environmental hazards:	
Marine pollutant:	Yes
Special marking (ADR):	Symbol (fish and tree)
Special marking (IATA):	Symbol (fish and tree)
EMS Number:	F-A,S-F
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:	Not applicable
Transport/Additional information:	In accordance with 49 CFR 171.4(c), non-bulk packagings (*max capacity of 119 gal (450 L) or less for liquids or 882 lbs (400 kg) or less for solids)* transported by motor vehicle, rail car or aircraft are excepted from all Marine Pollutants regulations in 49 CFR and therefore treated as non-hazardous material. All bulk shipments or any shipment transported partially or entirely by vessel are treated as regulated Marine Pollutants and are shipped according to the requirements listed above.

15 REGULATORY INFORMATION

FIFRA: Yes **Product Name:** Sevin Brand XLR Plus **EPA Reg. No.** 61842-37

It is a violation of Federal law to use this product in any manner inconsistent with its labeling. This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

CAUTION
Harmful if swallowed, absorbed through the skin, or inhaled.
Avoid breathing spray mist.
Avoid contact with skin, eyes, or clothing.

Safety, health and environmental regulations/legislation specific for the substance or mixture
Section 355 (extremely hazardous substances): None of the ingredients is listed.
Section 313 (Toxic Release Reporting-Form R):

Chemical name	CAS No.	Concentration
Carbaryl	63-25-2	44.1%

TSCA (Toxic Substances Control Act): Exempt from TSCA
Proposition 65
This product contains a chemical known to the state of California to cause developmental toxicity or cancer.

CERCLA/SUPERFUND:
RQ (Reportable Quantity) Carbaryl (100 lbs)

RCRA Classification
Under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste.

16 OTHER INFORMATION

Issue Date: May 8, 2015

REVISIONS: SDS was reformatted in compliance with HCS 29 CFR 1910.1200 Rev. 2012 and GHS Rev 05, and ANSI Z400.1.

The information and recommendations contained herein are provided in good faith and are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information herein.

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FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

FORMULATED FOR:

Loveland Products, Inc.
P.O. Box 1286 • Greeley, CO 80632-1286

24-Hour Emergency Phone: 1-800-424-9300
Medical Emergencies: 1-800-301-7976
U.S. Coast Guard National Response Center: 1-800-424-8802

PRODUCT NAME: TRIFLURALIN 10G
CHEMICAL NAME: Trifluralin: α, α, α-trifluoro-2,6-dinitro-*N*,*N*-dipropyl-p-toluidine
CHEMICAL FAMILY: Trifluorodinitrotoluidine Herbicide
EPA REG. NO.: 34704-790
MSDS Number: 000790-04b-LPI **MSDS Revisions:** See section 16 **Date Of Issue:** 07/12/04 **Supersedes:** 05/24/04

2. HAZARDS IDENTIFICATION SUMMARY

KEEP OUT OF REACH OF CHILDREN - CAUTION – Causes eye irritation. Harmful if swallowed, inhaled or absorbed through the skin. Avoid breathing dust and contact with skin, eyes or clothing. This product may cause skin sensitization in some individuals.

This product is a yellow to orange granule with a mild aromatic odor.

3. COMPOSITION, INFORMATION ON INGREDIENTS

Chemical Ingredients:	Percentage by Weight:	CAS No.	TLV (Units)
Trifluralin	10.00	1582-09-8	none established
Inert Ingredients, including:	90.00		
Clay		8031-18-3	
(contains Crystalline Silica)		14808-60-7	0.05 mg/m^3

This product is hazardous according to the OSHA Hazard Communication Standard (29 CFR 1910.1200)

4. FIRST AID MEASURES

If in eyes: Flush eyes with plenty of water. Call a physician if irritation persists.
If swallowed: Call a physician or Poison Control Center. Drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger. If person is unconscious, do not give anything by mouth and do not induce vomiting.
If inhaled: Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention.
If on skin: Wash with plenty of soap and water. Get medical attention.
FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: 1-800-301-7976.

5. FIRE FIGHTING MEASURES

FLASH POINT (°F/Test Method): Does not flash
FLAMMABLE LIMITS (LFL & UFL): Not established
EXTINGUISHING MEDIA: Use medium appropriate to surrounding fire. Dry chemical, carbon dioxide, foam, water spray or fog.
HAZARDOUS COMBUSTION PRODUCTS: Oxides of nitrogen and carbon other unknown hazardous materials may be formed in a fire situation.
SPECIAL FIRE FIGHTING PROCEDURES: Wear self-contained breathing apparatus and full protective gear.
UNUSUAL FIRE AND EXPLOSION HAZARDS: If water is used to fight fire, contain runoff, using dikes to prevent contamination of water supplies. Do not allow water runoff to enter nearby streams, ponds or lakes.

6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:
In case of leak or spill, scoop or sweep up material and place in a container for possible land application according to label use or for proper disposal. Wash the spill area with water containing a strong detergent. Check local, state and federal regulations for proper disposal.
CAUTION: Keep spills and cleaning runoff from flowing onto adjacent land, or into municipal sewers and open bodies of water.

7. HANDLING AND STORAGE

HANDLING: Wash hands after handling, and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.
STORAGE: Store in original container only. In case of spill, contain material and dispose as waste. Do not contaminate water, food or feed by storage or disposal.

Personal Protective Equipment: Applicators and other handlers must wear: long sleeved shirt and long pants, chemical resistant gloves such as barrier laminate, butyl rubber ≥ 14 mils, nitrile rubber ≥ 14 mils, or Viton® ≥ 14 mils, and shoes plus socks. Follow manufacturer's instructions for cleaning and maintaining PPE. If no instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: When handlers used closed systems, enclosed cabs, or aircraft in a manner that meets with the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d) (4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

RESPIRATORY PROTECTION: Not normally required, if dusts or vapors exceed acceptable levels, wear a NIOSH approved pesticide respirator with cartridges for pesticide vapors.

EYE PROTECTION: Chemical goggles or shielded safety glasses.

SKIN PROTECTION: Wear protective clothing: long-sleeved shirts and pants, shoes plus socks. Wear rubber or chemical-resistant gloves.

	OSHA PEL 8 hr TWA	ACGIH TLV-TWA
Crystalline Silica	30 mg/m^3 / % SiO_2 + 2	0.05 mg/m^3

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR: Yellow to orange granule with mild aromatic odor.

SPECIFIC GRAVITY (Water = 1): 0.769 g/ml

BULK DENSITY: 48.0 lbs/ft^3

SOLUBILITY: Insoluble

pH: 7.7 (50/50 Aqueous)

VAPOR PRESSURE: Not established

BOILING POINT: Not established

PERCENT VOLATILE (by volume): Not established

EVAPORATION RATE: Not established

Note: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.

10. STABILITY AND REACTIVITY

STABILITY: Stable

CONDITIONS TO AVOID: Excessive heat and cold.

INCOMPATIBILITY: Strong oxidizers and acids.

HAZARDOUS DECOMPOSITION PRODUCTS: Oxides of nitrogen and carbon other unknown hazardous materials may be formed in a fire situation.

HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION

Acute Oral LD_{50} (rat): >5050 mg/kg

Acute Dermal LD_{50} (rabbit): >2020 mg/kg

Eye Irritation (rabbit): Causes moderate eye injury

Skin Irritation (rabbit): Causes slight irritation

Inhalation LC_{50} (rat): >2.38 mg/L (4 HR).

Skin Sensitization (guinea pig): Not a sensitizer

Carcinogenic Potential: Crystalline silica is classified as carcinogenic to humans by IARC; a potential occupational carcinogen by NIOSH; a suspected human carcinogen by ACGIH; and known to be a human carcinogen by NTP.

12. ECOLOGICAL INFORMATION

This pesticide is extremely toxic to freshwater marine and estuarine fish and aquatic invertebrates including shrimp and oyster. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not apply in a manner that will directly expose canals, lakes, streams, ponds, marshes or estuaries to aerial drift. Do not contaminate water when disposing of equipment wash waters.

13. DISPOSAL CONSIDERATIONS

Do not reuse product containers. Completely empty bag by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into application equipment. Then dispose of bags in a sanitary landfill or by incineration, in accordance with applicable regulations, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke. Do not contaminate water, food or feed by storage or disposal.

14. TRANSPORT INFORMATION

DOT Shipping Description: Less than 100 pounds: NOT REGULATED

DOT Shipping Description: 100 pounds and greater: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., 9, UN3077, III (TRIFLURALIN) ERG GUIDE 171

U.S. Surface Freight Classification: COMPOUND, TREE OR WEED KILLING, NOI (NMFC 50320, SUB 2: CLASS 60)

Consult appropriate ICAO/IATA and IMDG regulations for shipment requirements in the Air and Maritime shipping modes.

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

FORMULATED FOR:

LOVELAND PRODUCTS, INC.
P.O. Box 1286 • Greeley, CO 80632-1286

24-Hour Emergency Phone: 1-800-424-9300
Medical Emergencies: 1-866-944-8565
U.S. Coast Guard National Response Center: 1-800-424-8802

PRODUCT NAME: FORFEIT® 280 HERBICIDE
CHEMICAL NAME: Glufosinate-ammonium: 2-amino-4-(hydroxymethylphosphinyl)butanoic acid monoammonium salt
CHEMICAL FAMILY: GROUP 10 HERBICIDE
EPA REG. NO.: 34704-1080
SDS Number: 001080-14b-LPI **SDS Revisions:** Sections 1, 15 **Date of Issue:** 10/06/14 **Supersedes:** 01/24/13

2. HAZARDS IDENTIFICATION SUMMARY

KEEP OUT OF REACH OF CHILDREN – WARNING - AVISO – Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle (If you do not understand the label, find someone to explain it to you in detail.) May be fatal if absorbed through skin. Causes substantial but temporary eye injury. Harmful if swallowed. Do not get in eyes, on skin, or on clothing. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

This product is red liquid with no apparent odor.

3. COMPOSITION, INFORMATION ON INGREDIENTS

Chemical Ingredients:	Percentage by Weight:	CAS No.	TLV (Units)
Glufosinate-ammonium	24.50	77182-82-2	not listed
Other Ingredients, including	75.50		
Sodium alkyl ether sulfate		68585-34-2	not listed
1-Methoxy-2-propanol		107-98-2	369 mg/m^3
Dipropylene glycol		25265-71-8	not listed
Alkyl polysaccharide		68515-73-1	not listed

4. FIRST AID MEASURES

If in eyes: Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

If on skin or clothing: Take off contaminated clothing. Rinse skin with plenty of water for 15 to 20 minutes. Call a poison control center or doctor for treatment advice.

If swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

NOTE TO PHYSICIAN: If this product is ingested, endotracheal intubation and gastric lavage should be performed as soon as possible, followed by charcoal and sodium sulfate administration.

FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: 1-866-944-8565. Have the product label or container with you when calling a poison control center or doctor, or going for treatment.

5. FIRE FIGHTING MEASURES

FLASH POINT (°F/Test Method): 200.1°F / 93.4°C (TCC)
FLAMMABLE LIMITS (LFL & UFL): LFL: not data; UFL: no data
EXTINGUISHING MEDIA: Carbon dioxide (CO_2), dry powder, foam, or water spray.
HAZARDOUS COMBUSTION PRODUCTS: May include but are not limited to: Oxides of carbon, sulfur oxides.
SPECIAL FIRE FIGHTING PROCEDURES: Wear self-contained breathing apparatus with full protective clothing. Fight fire from upwind and keep all non-essential personnel out of area.
UNUSUAL FIRE AND EXPLOSION HAZARDS: Do not use high volume water stream as this may spread fire. If water is used to fight fire and cool the containers, contain run-off by diking to prevent contamination of water supplies.

6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

Keep unauthorized people away. Isolate spill area. Avoid contact with spilled product. For small spills, absorb with an absorbent material such as sand, vermiculite or other absorbent material. Place contaminated material in appropriate containers for proper disposal. For large spills: dike large spills using absorbent or impervious material such as clay or sand. Recover and contain as much free liquid as possible for reuse. Allow absorbed material to solidify, and scrape up for disposal. After removal, scrub the area with detergent and water and flush contaminated area thoroughly with water. Do not allow spilled material to contact vegetation. Use personal protective equipment.

CAUTION: Keep spills and cleaning runoff out of municipal sewers and open bodies of water.

7. HANDLING AND STORAGE

HANDLING: Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

STORAGE: Do not use or store near heat or open flame. Keep container tightly closed and dry in a cool, well-ventilated area. Storage temperature should not exceed 125°F / 51.7°C. If storage temperature for bulk product is below 32°F / 0°C, it should not be pumped until its temperature exceeds 32°F / 0°C. Protect against direct sunlight. Do not contaminate water, food, or feed by storage or disposal.

Personal Protective Equipment (PPE): Applicators and other handlers must wear: coveralls worn over short sleeved shirt and short pants, chemical-resistant gloves made of any waterproof material such as barrier laminate, butyl rubber ≥ 14 mils, nitrile rubber ≥ 14 mils, neoprene rubber ≥ 14 mils, polyvinyl chloride (PVC) ≥ 14 mils, or Viton® ≥ 14 mils; chemical-resistant footwear plus socks, protective eyewear (goggles, face shield or safety glasses; and chemical-resistant apron when cleaning equipment, mixing, or loading. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning and maintaining PPE. If no instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.
Mixers/loaders supporting aerial applications must wear a dust/mist filtering respirator (MSHS/NIOSH approval number prefix (TC-21C), or NIOSH approved respirator with any N, R, P or HE filter.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d) (4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

RESPIRATORY PROTECTION: Not normally required; if vapors or mists become excessive, wear a NIOSH approved pesticide respirator with cartridges for pesticide vapors.

EYE PROTECTION: Chemical goggles, face shield or safety glasses.

SKIN PROTECTION: Wear protective clothing: coveralls worn over short-sleeved shirts and short pants, shoes with socks. Wear chemical-resistant gloves.

	OSHA PEL 8 hr TWA	ACGIH TLV-TWA
1-Methoxy-2-propanol	not listed	369 mg/m^3

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR: Red liquid with no apparent odor
SPECIFIC GRAVITY (Water = 1): 1.15 g/ml
VAPOR PRESSURE: Not established
PERCENT VOLATILE (by volume): Not established
BULK DENSITY: 9.59 lbs/gal.
BOILING POINT: Not established
EVAPORATION RATE: Not established
SOLUBILITY: Emulsifies
pH: 6.6 – 7.4

Note: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.

10. STABILITY AND REACTIVITY

STABILITY: Stable

CONDITIONS TO AVOID: Elevated temperatures can cause product decomposition.

INCOMPATIBILITY: Avoid contact with mild steel.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, hydrogen chloride, oxides of nitrogen may form in a fire situation.

HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION

Acute Oral LD_{50} (female rat): > 300 mg/kg - < 2,000 mg/kg.
Acute Dermal LD_{50} (male rat): 1,400 mg/kg. **LD_{50} (female rat):** 800 mg/kg
Eye Irritation (rabbit): Severe irritant.
Skin Irritation (rabbit): Slight irritant.
Inhalation LC_{50} (rat): > 2.1 mg/L (4 hrs.)
Skin Sensitization (guinea pig): Sensitizer.
Carcinogenic Potential: Glufosinate-ammonium was not carcinogenic in lifetime feeding studies in rats and mice.
Chronic Toxicity: Glufosinate-ammonium caused kidney effects and/or mortality at high dose levels in chronic toxicity studies in rats, mice and dogs.

12. ECOLOGICAL INFORMATION

Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water by cleaning of equipment or when disposing of equipment wash waters. This pesticide is toxic to vascular plants and should be used in strict accordance with drift and run-off precautions on the product's label. Do not allow to get into surface water, drains and ground water. Drift or runoff from treated areas may adversely affect non-target plants. Do not apply when weather conditions favor runoff or drift.

13. DISPOSAL CONSIDERATIONS

PESTICIDE DISPOSAL: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.
CONTAINER DISPOSAL: Nonrefillable container. Do not reuse this container to hold materials other than pesticides or dilute pesticides (rinsate). After emptying and cleaning, it may be allowable to temporarily hold rinsate or other pesticide-related materials in the container. Contact your state regulatory agency to determine allowable practices in your state. Once cleaned, some agricultural plastic pesticide containers can be taken to a container collection site or picked up for recycling. To find the nearest site, contact your chemical dealer or manufacturer, or contact The Agricultural Container Recycling Council (ACRC) at www.acrecycle.org. Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **For packages up to 5 gallons: Triple rinse as follows:** Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. **Pressure rinse as follows:** Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip. **For packages greater than 5 gallons and less than 56 gallons: Triple rinse as follows:** Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. **Pressure rinse as follows:** Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip. **For packages greater than 56 gallons:** To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. **For refillable containers:** Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. Pesticide wastes are toxic. Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. Improper disposal of excess pesticide, spray mix, or rinsate is a violation of Federal law. Do not contaminate water, food, or feed by storage or disposal.

14. TRANSPORT INFORMATION

DOT Shipping Description: NON-BULK: NOT REGULATED
U.S. Surface Freight Classification: COMPOUND, TREE OR WEED KILLING, NOI (NMFC 50320, SUB 2: CLASS: 60)

Consult appropriate ICAO/IATA and IMDG regulations for shipment requirements in the Air and Maritime shipping modes.

15. REGULATORY INFORMATION

NFPA & HMIS Hazard Ratings:

NFPA			HMIS	
2	Health	0 Least	2	Health
1	Flammability	1 Slight	1	Flammability
1	Instability	2 Moderate	1	Reactivity
		3 High	H	PPE
		4 Severe		

SARA Hazard Notification/Reporting
SARA Title III Hazard Category:

Immediate	Y	Fire	N	Sudden Release of Pressure	N
Delayed	Y	Reactive	N		

Reportable Quantity (RQ) under U.S. CERCLA: Not listed
SARA, Title III, Section 313: Not listed
RCRA Waste Code: Not listed.
CA Proposition 65: Not listed

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

WARNING
May be fatal if absorbed through skin.
Causes substantial but temporary eye injury.
Harmful if swallowed.

16. OTHER INFORMATION

SDS STATUS: Sections 1 and 15 revised

PREPARED BY: Registrations and Regulatory Affairs

REVIEWED BY: Environmental Health and Safety

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Disclaimer and Limitation of Liability: This data sheet was developed from information on the constituent materials identified herein and does not relate to the use of such materials in combination with any other material or process. No warranty is expressed or implied with respect to the completeness or ongoing accuracy of the information contained in this data sheet, and LOVELAND PRODUCTS, INC. disclaims all liability for reliance on such information. This data sheet is not a guarantee of safety. Users are responsible for ensuring that they have all current information necessary to safely use the product described by this data sheet for their specific purpose.

Safety Data Sheet

Issue Date: 08-Jul-2013 **Revision Date:** 16-Oct-2015 **Version** 2

1. IDENTIFICATION

Product Identifier

Product Name **Silencer**

Other means of identification

SDS # MANA-008

Registration Number(s) EPA Reg. No. 66222-104

UN/ID No UN3352

Recommended use of the chemical and restrictions on use

Recommended Use EPA registered pesticide.

Details of the supplier of the safety data sheet

Manufacturer Address

Makhteshim Agan of North America, Inc.
3120 Highwoods Blvd., Suite 100
Raleigh, NC 27604
1-919-256-9300

Emergency Telephone Number

Emergency Telephone (24 hr) For fire, spill and/or leak contact INFOTRAC:
1-800-535-5053 (North America) 1-352-323-3500 (International)
For medical emergencies and health/safety inquiries, contact PROSAR:
1-877-250-9291

2. HAZARDS IDENTIFICATION

This chemical is a product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-EPA registered chemicals. Please see Section 15 for additional EPA information.

Appearance Lightly yellow Transparent liquid **Physical State** Liquid **Odor** Characteristic aromatic Solvent

Classification

Acute toxicity - Oral	Category 3
Acute toxicity - Inhalation (Dusts/Mists)	Category 4
Carcinogenicity	Category 1B
Aspiration toxicity	Category 1
Skin Sensitization	Category 1
Flammable Liquids	Category 4

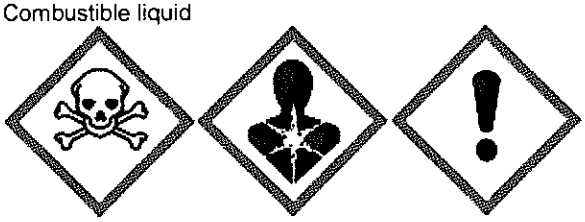
Hazards Not Otherwise Classified (HNOC)

May be harmful in contact with skin

Signal Word

Danger

Hazard Statements
Toxic if swallowed
Harmful if inhaled
May cause cancer
May be fatal if swallowed and enters airways
May cause an allergic skin reaction
Combustible liquid



Precautionary Statements - Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Contaminated clothing must not be allowed out of the workplace
Do not eat, drink or smoke when using this product
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wear respiratory protection
Keep away from heat/sparks/open flames/hot surfaces. — No smoking
Keep cool

Precautionary Statements - Response
If exposed or concerned: Get medical advice/attention
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Immediately call a poison center or doctor/physician
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
Do not induce vomiting
Rinse mouth
IF ON SKIN: Wash with plenty of water
If irritation or rash occurs: Get medical advice/attention
Wash contaminated clothing before reuse
IN CASE OF FIRE: Use CO2, dry chemical, or foam for extinction

Precautionary Statements - Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Other Hazards
Very toxic to aquatic life with long lasting effects

Unknown Acute Toxicity
8.5% of the mixture consists of ingredient(s) of unknown toxicity

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No	Weight-%
Cyhalothrin, lambda-	91465-08-6	12.7
Solvent #1	Proprietary	78.4
Solvent #2	Proprietary	7.84

If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. FIRST-AID MEASURES

First Aid Measures

General Advice When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a poison control center or doctor for treatment advice.

Skin Contact IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. Get medical attention if necessary.

Inhalation If inhaled remove to fresh air. Give oxygen if breathing is difficult. If breathing has stopped, call 911, give artificial respiration. Immediately call a physician.

Ingestion Immediately call a poison center or doctor/physician. Never give anything by mouth to an unconscious person. Obtain medical attention. Do not induce vomiting unless directed by medical personnel.

Most important symptoms and effects

Symptoms May cause nose and throat irritation, with possible central nervous system effects. In high concentrations, vapors and aerosol mists have a narcotic effect and may cause headache, fatigue, dizziness and nausea. May cause gastrointestinal irritation, nausea, diarrhea, and vomiting. Liquid ingestion may result in vomiting; aspiration of liquid into the lungs must be avoided as liquid contact with the lungs can result in chemical pneumonitis and pulmonary edema/hemorrhage. May cause mild skin and eye irritation.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Dry chemical. Foam. Carbon dioxide (CO2).

Unsuitable Extinguishing Media Not determined.

Specific Hazards Arising from the Chemical
Combustible liquid.

Hazardous Combustion Products Toxic gases may be formed by fire.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Evacuate area of unprotected personnel. Remain upwind of fire to avoid hazardous vapors and decomposition products. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Wear protective clothing as described in Section 8 of this safety data sheet. Isolate hazard area. Keep unnecessary and unprotected personnel from entering.

Environmental Precautions Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. See Section 13: DISPOSAL CONSIDERATIONS.

Methods and material for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for Clean-Up For small spills, absorb with sand, clay, or other inert absorbent. Place in appropriate containers for disposal. For large spills: recover free product. Dike for later disposal. Absorb with inert material, and then place in suitable container for chemical waste. Flush spill area with water, collect rinse water in containers for proper disposal.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Use personal protection recommended in Section 8. Do not breathe dust/fume/gas/mist/vapors/spray. Wash face, hands, and any exposed skin thoroughly after handling. Do not contaminate water, food or feed by storage, disposal or by cleaning equipment. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid breathing vapors or mists. Use only outdoors or in a well-ventilated area. Keep away from heat/sparks/open flames/hot surfaces. — No smoking. Do not eat, drink or smoke when using this product.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep container tightly closed and store in a cool, dry and well-ventilated place. Keep out of the reach of children. Store away from incompatible materials. Protect from excessive heat. Store locked up.

Incompatible Materials None known.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Solvent #2	STEL: 15 ppm TWA: 10 ppm S*	TWA: 10 ppm TWA: 50 mg/m^3 (vacated) TWA: 10 ppm (vacated) TWA: 50 mg/m^3 (vacated) STEL: 15 ppm (vacated) STEL: 75 mg/m^3	IDLH: 250 ppm TWA: 10 ppm TWA: 50 mg/m^3 STEL: 15 ppm STEL: 75 mg/m^3

Appropriate engineering controls

Engineering Controls	Please refer to the product label. Use only with adequate ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures, such as personal protective equipment

Eye/Face Protection	Use splash goggles or face shield when contact may occur.
Skin and Body Protection	Wear chemical-resistant gloves, footwear, and protective clothing appropriate for the risk of exposure. Viton or other impervious gloves are required. Long sleeve shirt, trousers, and safety shoes.
Respiratory Protection	Ensure adequate ventilation, especially in confined areas. Wear an appropriate NIOSH/MSHA approved respirator if ventilation is inadequate.
General Hygiene Considerations	Wash hands before eating, drinking, smoking and using the toilet. Remove contaminated clothing promptly and wash thoroughly before reused. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning and maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Liquid		
Appearance	Lightly yellow Transparent liquid	**Odor**	Characteristic aromatic Solvent
Color	Clear, light yellow	**Odor Threshold**	Not determined

Property	Values	Remarks • Method
pH	6.5-7.5	
Melting Point/Freezing Point	Not applicable	
Boiling Point/Boiling Range	Not determined	
Flash Point	62 °C / 144 °F	
Evaporation Rate	Not determined	
Flammability (Solid, Gas)	Liquid-not applicable	
Upper Flammability Limits	Not available	
Lower Flammability Limit	Not available	
Vapor Pressure	1.5 x 10 -9 mmHg @ 20°C (68°F)	(lambda-cyhalothrin technical)
Vapor Density	Not determined	
Specific Gravity	Not determined	
Water Solubility	0.004 mg/L	
Solubility in other solvents	Not determined	
Partition Coefficient	Not determined	
Auto-ignition Temperature	Not available	
Decomposition Temperature	Not determined	
Kinematic Viscosity	Not determined	
Dynamic Viscosity	Not determined	
Explosive Properties	Not determined	
Oxidizing Properties	Not determined	
Bulk Density	0.943 kg/L	

10. STABILITY AND REACTIVITY

Reactivity
Not reactive under normal conditions.

Chemical Stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous Polymerization Not known to occur.

Conditions to Avoid
Elevated temperatures.

Incompatible Materials
None known.

Hazardous Decomposition Products
May emit toxic fumes under fire conditions.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Eye Contact Avoid contact with eyes.

Skin Contact May be harmful in contact with skin.

Inhalation Fatal if inhaled.

Ingestion Harmful if swallowed.

Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Solvent #1	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 590 mg/m^3 (Rat) 4 h
Cyhalothrin, lambda- 91465-08-6	= 56 mg/kg (Rat)	= 632 mg/kg (Rat)	-
Solvent #2	= 490 mg/kg (Rat)	> 20 g/kg (Rabbit)	> 340 mg/m^3 (Rat) 1 h

Information on physical, chemical and toxicological effects

Symptoms Please see section 4 of this SDS for symptoms.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen. However, the product as a whole has not been tested.

Chemical Name	ACGIH	IARC	NTP	OSHA
Cyhalothrin, lambda- 91465-08-6		Group 2A		X
Solvent #2		Group 2B	Reasonably Anticipated	X

IARC (International Agency for Research on Cancer)
Group 2A - Probably Carcinogenic to Humans
Group 2B - Possibly Carcinogenic to Humans
NTP (National Toxicology Program)
Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen
OSHA (Occupational Safety and Health Administration of the US Department of Labor)
X - Present

Aspiration hazard May be fatal if swallowed and enters airways.

Skin Sensitization May cause an allergic skin reaction.

Product Information (Numerical measures of toxicity)
Acute Oral LD50 (Rat): 98.11 mg/kg
Acute Dermal LD50 (Rabbit): >2,000 mg/kg
Acute Inhalation LC50 (Rat): >1.83 mg/L (4-hr)
Eye Irritation: Mildly irritating.
Dermal Irritation: Slightly irritating.
Dermal Sensitization: Positive.

Unknown Acute Toxicity 8.5% of the mixture consists of ingredient(s) of unknown toxicity.

12. ECOLOGICAL INFORMATION

Ecotoxicity
Very toxic to aquatic life with long lasting effects. This pesticide is extremely toxic to fish and aquatic organisms and toxic to wildlife. Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not apply when weather conditions favor drift from treated areas. Drift and runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when disposing of equipment wash water
This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.

Component Information

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Solvent #1	2.5: 72 h Skeletonema costatum mg/L EC50	19: 96 h Pimephales promelas mg/L LC50 static 2.34: 96 h Oncorhynchus mykiss mg/L LC50 1740: 96 h Lepomis macrochirus mg/L LC50 static 45: 96 h Pimephales promelas mg/L LC50 flow-through 41: 96 h Pimephales promelas mg/L LC50		0.95: 48 h Daphnia magna mg/L EC50
Solvent #2		5.74 - 6.44: 96 h Pimephales promelas mg/L LC50 flow-through 1.6: 96 h Oncorhynchus mykiss mg/L LC50 flow-through 0.91 - 2.82: 96 h Oncorhynchus mykiss mg/L LC50 static 1.99: 96 h Pimephales promelas mg/L LC50 static 31.0265: 96 h Lepomis macrochirus mg/L LC50 static		2.16: 48 h Daphnia magna mg/L LC50 1.96: 48 h Daphnia magna mg/L EC50 Flow through 1.09 - 3.4: 48 h Daphnia magna mg/L EC50 Static

Persistence/Degradability
Not determined.

Bioaccumulation
Not determined.

Mobility

Chemical Name	Partition Coefficient
Solvent #1	6.1
Solvent #2	3.3

Other Adverse Effects
Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes END USERS MUST DISPOSE OF ANY UNUSED PRODUCT AS PER THE LABEL RECOMMENDATIONS. Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinse is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency or Hazardous Waste representative at the nearest EPA regional office. Never place any unused product down an indoor or outdoor drain. Do not contaminate water, food or feed by disposal.

Contaminated Packaging Disposal should be in accordance with applicable regional, national and local laws and regulations.

US EPA Waste Number

Chemical Name	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
Solvent #2	U165	Included in waste streams: F024, F025, F034, F039, K001, K035, K060, K087, K145		U165

Chemical Name	RCRA - Halogenated Organic Compounds	RCRA - P Series Wastes	RCRA - F Series Wastes	RCRA - K Series Wastes
Solvent #2			Toxic waste waste number F025 Waste description: Condensed light ends, spent filters and filter aids, and spent desiccant wastes from the production of certain chlorinated aliphatic hydrocarbons, by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution.	

California Hazardous Waste Status

Chemical Name	California Hazardous Waste Status
Cyhalothrin, lambda- 91465-08-6	Toxic
Solvent #2	Toxic

14. TRANSPORT INFORMATION

DOT

UN/ID No	UN3352
Proper Shipping Name	Pyrethroid pesticide, liquid, toxic (lambda-cyhalothrin)
Hazard Class	6.1
Packing Group	III
Marine Pollutant	Yes
NOTE:	Packages with inner packaging not over 5 liters (1.3 gallons) each may be reclassified as Limited Quantity

IATA

UN/ID No	UN3352
Proper Shipping Name	Pyrethroid pesticide, liquid, toxic (lambda-cyhalothrin)
Hazard Class	6.1
Packing Group	III
Marine Pollutant	Yes

IMDG

UN/ID No	UN3352
Proper Shipping Name	Pyrethroid pesticide, liquid, toxic (lambda-cyhalothrin)
Hazard Class	6.1
Packing Group	III
Marine Pollutant	Yes

15. REGULATORY INFORMATION

International Inventories

TSCA All ingredients are listed or exempt from listing on Chemical Substance Inventory

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

US Federal Regulations

CERCLA

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Solvent #2	100 lb 1 lb		RQ 100 lb final RQ RQ 45.4 kg final RQ RQ 1 lb final RQ RQ 0.454 kg final RQ

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

SARA 313

Chemical Name	CAS No	Weight-%	SARA 313 - Threshold Values %
Solvent #2	91-20-3	6-8	0.1

CWA (Clean Water Act)

Component	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Solvent #2	100 lb	X	X	X

US State Regulations

California Proposition 65
This product contains the following Proposition 65 chemicals.

Chemical Name	California Proposition 65
Solvent #2	Carcinogen

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Solvent #2	X	X	X

EPA Pesticide Registration Number 6222-104
EPA Statement
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

EPA Pesticide Label
Signal Word: Warning

May be fatal if swallowed. Causes substantial but temporary eye injury. Harmful if absorbed through skin or inhaled. Avoid breathing vapor or spray mist. Do not get in eyes, on skin, or on clothing. Wear appropriate protective clothing and eyewear as specified in the Personal Protective Equipment (PPE) section of this label. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Remove and wash contaminated clothing before reuse. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Skin exposure may also result in a sensation described as a tingling, itching, burning, or prickly feeling. Onset may occur immediately to 4 hours after exposure and may last 2-30 hours, without damage. Wash exposed areas once with soap and water. Relief from the skin sensation may be obtained by applying an oil-based cream.

Difference between SDS and EPA pesticide label

	EPA	OSHA
Signal Word	Warning	Danger
Acute toxicity - Oral	May be fatal if swallowed	Toxic if swallowed
Acute toxicity - Dermal	Harmful if absorbed through skin	May be harmful in contact with skin
Acute toxicity - Inhalation (Dusts/Mists)	Harmful if inhaled	Harmful if inhaled
Skin corrosion/irritation	Skin exposure may also result in a sensation described as a tingling, itching, burning, or prickly feeling	N/A
Serious eye damage/eye irritation	Causes substantial but temporary eye injury	N/A
Skin sensitization	Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals	May cause an allergic skin reaction
Carcinogenicity	N/A	May cause cancer
Aspiration Hazard	N/A	May be fatal if swallowed and enters airways

16. OTHER INFORMATION

NFPA	**Health Hazards**	**Flammability**	**Instability**	**Special Hazards**
	2	1	0	None
HMIS	**Health Hazards**	**Flammability**	**Physical Hazards**	**Personal Protection**
	2	1	0	See section 8

Issue Date: 08-Jul-2013
Revision Date: 16-Oct-2015
Revision Note: Updated format from 02-Jun-2014

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

Safety Data Sheet

Issue Date: 23-Jan-2012 **Revision Date:** 03-Sept-2015 **Version** 2

1. IDENTIFICATION

Product Identifier

Product Name **Silencer VXN**

Other means of identification

SDS # ADAMA-008A

Registration Number(s) EPA Reg. No. 66222-223

Recommended use of the chemical and restrictions on use

Recommended Use EPA registered pesticide.

Details of the supplier of the safety data sheet

Manufacturer Address

Makhteshim Agan of North America, Inc. (DBA: ADAMA)
3120 Highwoods Blvd., Suite 100
Raleigh, NC 27604
1-919-256-9300

Emergency Telephone Number

Emergency Telephone (24 hr) For fire, spill and/or leak contact INFOTRAC:
1-800-535-5053 (North America) 1-352-323-3500 (International)
For medical emergencies and health/safety inquiries, contact PROSAR:
1-877-250-9291

2. HAZARDS IDENTIFICATION

This chemical is a product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-EPA registered chemicals. Please see Section 15 for additional EPA information.

Appearance Light yellow liquid **Physical State** Liquid **Odor** Mild organic

Classification

Acute toxicity - Oral	Category 4
Acute toxicity - Inhalation (Dusts/Mists)	Category 2
Skin Sensitization	Category 1

Hazards Not Otherwise Classified (HNOC)

May be harmful in contact with skin
Causes mild skin irritation

Signal Word

Danger

Hazard Statements
Harmful if swallowed
Fatal if inhaled
May cause an allergic skin reaction

Precautionary Statements - Prevention
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wear respiratory protection
Contaminated clothing must not be allowed out of the workplace

Precautionary Statements - Response
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Immediately call a poison center or doctor/physician
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
Rinse mouth
IF ON SKIN: Wash with plenty of soap and water
If skin irritation or rash occurs: Get medical advice/attention
Wash contaminated clothing before reuse

Precautionary Statements - Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Other Hazards
Very toxic to aquatic life with long lasting effects

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No	Weight-%
Cyhalothrin, lambda-	91465-08-6	12.5-13.78
Proprietary Solvent	Proprietary	1.5-1.67

If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. FIRST-AID MEASURES

First Aid Measures

General Advice When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Seek immediate medical attention if adverse effect occurs.

Skin Contact Take off immediately all contaminated clothing. Drench affected area with water for at least 15 minutes. If skin irritation occurs: Get medical advice/ attention. Effects may be reduced by applying an oil-based cream.

Inhalation IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Give oxygen if breathing is difficult. If breathing has stopped, call 911, give artificial respiration. Seek immediate medical attention/advice.

Ingestion Immediately call a poison center or doctor/physician. DO NOT induce vomiting. If conscious, drink 8-10 oz. of water promptly. Never give anything by mouth to an unconscious person. Obtain medical attention. Do not induce vomiting unless directed by medical personnel.

Most important symptoms and effects

Symptoms Contact with skin can cause irritation, (minor itching, burning and/or redness), tingling. May cause an allergic skin reaction.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Foam. Dry chemical. Water spray (fog). Foam or dry chemical systems are preferred to prevent environmental damage from excessive water runoff.

Unsuitable Extinguishing Media Not determined.

Specific Hazards Arising from the Chemical
Product is not flammable.

Hazardous Combustion Products During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Evacuate area of unprotected personnel. Remain upwind of fire to avoid hazardous vapors and decomposition products. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Wear protective clothing as described in Section 8 of this safety data sheet. Isolate hazard area. Keep unnecessary and unprotected personnel from entering.

Environmental Precautions Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. See Section 13: DISPOSAL CONSIDERATIONS.

Methods and material for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so. Stop spill at source, dike area of spill to prevent spreading.

Methods for Clean-Up For small spills, absorb with sand, clay, or other inert absorbent. Place in appropriate containers for disposal. For large spills: recover free product. Dike for later disposal. Absorb with inert material, and then place in suitable container for chemical waste. Wash spill area with a strong detergent and water solution; rinse with water, but minimize water use during clean-up. Do not flush to sewer. Pick up and transfer to properly labeled containers.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Use personal protection recommended in Section 8. Avoid breathing dust/fume/gas/mist/vapors/spray. Do not contaminate water, food or feed by storage, disposal or by cleaning equipment. Keep containers closed when not in use. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use only outdoors or in a well-ventilated area. Wash face, hands and any exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep container tightly closed and store in a cool, dry and well-ventilated place. Keep out of the reach of children. Store away from incompatible materials. Keep/store only in original container. Store locked up. Store at ambient conditions. Protect from freezing.

Incompatible Materials None known.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies

Appropriate engineering controls

Engineering Controls Please refer to the product label. Use only with adequate ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures, such as personal protective equipment

Eye/Face Protection Use splash goggles or face shield when contact may occur.

Skin and Body Protection Wear chemical-resistant gloves, footwear, and protective clothing appropriate for the risk of exposure. Viton or other impervious gloves are required. Long sleeve shirt, trousers, and safety shoes.

Respiratory Protection Ensure adequate ventilation, especially in confined areas. Wear an appropriate NIOSH/MSHA approved respirator if ventilation is inadequate.

General Hygiene Considerations Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning and maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry. Wash at the end of each work shift and before eating, smoking or using the toilet. Promptly remove clothing that becomes contaminated. Discard contaminated leather articles. Launder or discard contaminated clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Liquid		
Appearance	Light yellow liquid	**Odor**	Mild organic
Color	Light yellow	**Odor Threshold**	Not determined

Property	Values	Remarks • Method
pH	4.8	(1% dispersion)
Melting Point/Freezing Point	Not determined	
Boiling Point/Boiling Range	Not determined	
Flash Point	> 110 °C / > 230 °F	
Evaporation Rate	Not determined	
Flammability (Solid, Gas)	Liquid-not applicable	
Upper Flammability Limits	Not applicable	
Lower Flammability Limit	Not applicable	
Vapor Pressure	Not determined	
Vapor Density	Not determined	
Specific Gravity	Not determined	
Water Solubility	Not determined	
Solubility in other solvents	Not determined	
Partition Coefficient	Not determined	
Auto-ignition Temperature	Not determined	
Decomposition Temperature	Not determined	
Kinematic Viscosity	Not determined	
Dynamic Viscosity	12.0 centipoise @ 23°C; 7.63 centipoise @ 39°C	
Explosive Properties	Not determined	
Oxidizing Properties	Not determined	
Bulk Density	0.94 g/ml	

10. STABILITY AND REACTIVITY

Reactivity
Not reactive under normal conditions.

Chemical Stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous Polymerization Not known to occur.

Conditions to Avoid
Contact with incompatible materials. Keep out of reach of children. Excessive heat and freezing temperature. Open flames. See Sec. 7 Handling & Storage.

Incompatible Materials
None known.

Hazardous Decomposition Products
Thermal decomposition can lead to release of irritating and toxic gases and vapors.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Eye Contact Avoid contact with eyes.

Skin Contact Causes mild skin irritation. May be harmful in contact with skin.

Inhalation Fatal if inhaled.

Ingestion Harmful if swallowed.

Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Cyhalothrin, lambda- 91465-08-6	= 56 mg/kg (Rat)	= 632 mg/kg (Rat)	-
Proprietary Solvent	1516 - 2774 mg/kg (Rat)	-	-

Information on physical, chemical and toxicological effects

Symptoms Please see section 4 of this SDS for symptoms.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Carcinogenicity Based on the information provided, this product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.

Skin Sensitization May cause an allergic skin reaction

Product Information (Numerical measures of toxicity)
Acute Oral LD50 (Rat): 1,530 mg/kg
Acute Dermal LD50 (Rabbit): >10,000 mg/kg
Acute Inhalation LC50 (Rat): >2.14 mg/L (4-hr)
Eye Irritation: Moderately irritating.
Dermal Irritation: Mildly irritating.
Dermal Sensitization: May cause an allergic skin reaction.

12. ECOLOGICAL INFORMATION

Ecotoxicity
The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. Do not apply this product directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas. Do not contaminate water when disposing of equipment wash waters or rinsate. This product may contaminate water through drift or spray in wind. This product has a potential for runoff for several days to weeks after application. Poorly draining soil with shallow water tables is more prone to produce runoff. A level, well maintained vegetative (grass) buffer strip between areas to which this product is applied and the surface water features such as ponds, streams, and springs will reduce the potential for contamination of water from rainfall runoff. Runoff of this product will be reduced by avoiding applications when rainfall is forecasted to occur within 48 hours. Sound erosion control practices will reduce this product's contribution to surface water contamination. This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.

Component Information

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Proprietary Solvent	11.5: 72 h Desmodesmus subspicatus mg/L EC50	32 - 37: 96 h Oncorhynchus mykiss mg/L LC50 static 7.5: 96 h Oncorhynchus mykiss mg/L LC50 27 - 29.5: 96 h Pimephales promelas mg/L LC50 flow-through 29.7: 96 h Pimephales promelas mg/L LC50 static 10.0 - 33.0: 96 h Lepomis macrochirus mg/L LC50 static		39: 48 h Daphnia magna mg/L EC50

Persistence/Degradability
Not determined.

Bioaccumulation
Not determined.

Mobility

Chemical Name	Partition Coefficient
Proprietary Solvent	3.1

Other Adverse Effects
Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes Do not contaminate water, food, or feed by storage or disposal. END USERS MUST DISPOSE OF ANY UNUSED PRODUCT AS PER THE LABEL RECOMMENDATIONS. PRODUCT DISPOSAL: Pesticide spray mixture or rinsate that cannot be used should be disposed of in a landfill approved for pesticides. Improper disposal of excess pesticide spray mixture or rinsate is a violation of Federal law. If these wastes cannot be disposed of by the use according to label instructions, contact your State Pesticide or Environmental Control Agency or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Contaminated Packaging Disposal should be in accordance with applicable regional, national and local laws and regulations.

California Hazardous Waste Status

Chemical Name	California Hazardous Waste Status
Cyhalothrin, lambda- 91465-08-6	Toxic

14. TRANSPORT INFORMATION

DOT Note: Packages with inner packaging not over 5 liters (1.3 gallons) each may be reclassified as Limited Quantity.

Inner packages greater than 5L/ 1.3 gal:

UN/ID No UN3352
Proper Shipping Name Pyrethroid pesticide, liquid, toxic
Hazard Class 6.1
Packing Group III
Marine Pollutant Yes, if inner package greater than 119 gals

IATA

UN/ID No	UN3352
Proper Shipping Name	Pyrethroid pesticide, liquid, toxic
Hazard Class	6.1
Packing Group	III
Marine Pollutant	Yes

IMDG

UN/ID No	UN3352
Proper Shipping Name	Pyrethroid pesticide, liquid, toxic
Hazard Class	6.1
Packing Group	III
Marine Pollutant	Yes

15. REGULATORY INFORMATION

International Inventories

TSCA	Listed

Legend:

TSCA *- United States Toxic Substances Control Act Section 8(b) Inventory*

DSL/NDSL *- Canadian Domestic Substances List/Non-Domestic Substances List*

EINECS/ELINCS *- European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances*

ENCS *- Japan Existing and New Chemical Substances*

IECSC *- China Inventory of Existing Chemical Substances*

KECL *- Korean Existing and Evaluated Chemical Substances*

PICCS *- Philippines Inventory of Chemicals and Chemical Substances*

US Federal Regulations

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

SARA 313

Not determined

US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Proprietary Solvent		X	X

EPA Pesticide Registration Number 66222-223

EPA Statement

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

EPA Pesticide Label
Signal Word: Caution

Harmful if swallowed or absorbed through the skin. Causes moderate eye irritation. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove and was contaminated clothing before reuse. Wear appropriate protective clothing.

Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Skin exposure may also result in a sensation described as tingling, itching, burning, or prickly feeling. Onset may occur immediately to 4 hours after exposure and may last 2-30 hours, without damage. Wash exposed areas once with soap and water. Relief from the skin sensation may be obtained by applying an oil based cream.

Difference between SDS and EPA pesticide label

	EPA	OSHA
Signal Word	Caution	Danger
Acute toxicity - Oral	Harmful if swallowed	Harmful if swallowed
Acute toxicity - Dermal	Harmful if absorbed through the skin	May be harmful in contact with skin
Acute toxicity - Inhalation (Dusts/Mists)	N/A	Fatal if inhaled
Skin corrosion/irritation	N/A	Causes mild skin irritation
Serious eye damage/eye irritation	Causes moderate eye irritation	N/A
Skin sensitization	Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals	May cause an allergic skin reaction

16. OTHER INFORMATION

NFPA	**Health Hazards**	**Flammability**	**Instability**	**Special Hazards**
	1	0	0	None
HMIS	**Health Hazards**	**Flammability**	**Physical Hazards**	**Personal Protection**
	1	0	0	See section 8

Issue Date: 23-Jan-2012
Revision Date: 03-Sept-2015
Revision Note: Updated format from 29-Apr-2014

Disclaimer
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End of Safety Data Sheet

Safety Data Sheet

DuPont™ Kocide® 3000 Fungicide/Bactericide

Version 2.0

Revision Date 05/28/2015 Ref. 130000024626

This SDS adheres to the standards and regulatory requirements of the United States and may not meet the regulatory requirements in other countries.

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	DuPont™ Kocide® 3000 Fungicide/Bactericide
Tradename/Synonym	:	B12015094 GX-569 30WG DPX-GFJ52 46.1WG Kocide Opti Kocide 46.1 DF
Product Grade/Type	:	(Cu 30%)
Product Use	:	Fungicide
Restrictions on use	:	Do not use product for anything outside of the above specified uses
Manufacturer/Supplier	:	DuPont 4417 Lancaster Pike Wilmington, DE 19805, USA
Product Information	:	1-800-441-7515 (outside the U.S. 1-302-774-1000)
Medical Emergency	:	1-800-441-3637 (outside the U.S. 1-302-774-1139)
Transport Emergency	:	CHEMTREC: +1-800-424-9300 (outside the U.S. +1-703-527-3887)

SECTION 2. HAZARDS IDENTIFICATION

Product hazard category

Acute toxicity (Oral)	Category 4
Acute toxicity (Inhalation)	Category 4
Serious eye damage/eye irritation	Category 2A

Label content

Pictogram :

Signal word : Warning

Hazardous warnings : Harmful if swallowed or if inhaled
Causes serious eye irritation.

Hazardous prevention measures : Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Wear eye protection/ face protection.
IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Call a POISON CENTER or doctor/ physician if you feel unwell.
Rinse mouth.
If eye irritation persists: Get medical advice/ attention.
Dispose of contents/ container to an approved waste disposal plant.

Other hazards

If you mill or grind this product you may change its toxicological properties.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Concentration
Copper Hydroxide	20427-59-2	46.1 %
Clay		1 - 5 %
2-Propenoic Acid, Homopolymer		5 - 10 %
Other Ingredients		38.9 - 47.9 %

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

SECTION 4. FIRST AID MEASURES

General advice : Have the product container or label with you when calling a poison control center or doctor, or going for treatment.
For medical emergencies involving this product, call toll free 1-800-441-3637.
See Label for Additional Precautions and Directions for Use.

Inhalation : Move to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a poison control center or doctor for treatment advice.

Skin contact : Take off all contaminated clothing immediately. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Eye contact	:	Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
Ingestion	:	Call a poison control center or doctor for treatment advice. Have person sip a glass of water if able to swallow. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person.
Most important symptoms/effects, acute and delayed	:	No applicable data available.
Protection of first-aiders	:	No applicable data available.
Notes to physician	:	Probable mucosal damage may contraindicate the use of gastric lavage.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Water spray, Dry chemical, Foam, Carbon dioxide (CO2)
Unsuitable extinguishing media	:	High volume water jet, (contamination risk)
Specific hazards	:	No applicable data available.
Special protective equipment for firefighters	:	Wear full protective equipment.
Further information	:	(on small fires) If area is heavily exposed to fire and if conditions permit, let fire burn itself out since water may increase the area contaminated. Cool containers/tanks with water spray. Runoff from fire control may be a pollution hazard. Control Runoff.

SECTION 6. ACCIDENTAL RELEASE MEASURES

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Safeguards (Personnel)	:	Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus. Use personal protective equipment.

Environmental precautions	:	Prevent material from entering sewers, waterways, or low areas.
Spill Cleanup	:	Shovel or sweep up. Avoid dust formation. Shovel into suitable container for disposal. Water Spill: If feasible, copper may be precipitated/-ultrafiltrated with caustics or other chemicals and resulting sludge disposed of in a chemical landfill.
Accidental Release Measures	:	Follow applicable Federal, State/Provincial and Local laws/regulations.

SECTION 7. HANDLING AND STORAGE

Handling (Personnel)	:	Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove clothing/PPE immediately if material gets inside. Wash thoroughly and put on clean clothing. Remove personal protective equipment immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.
Handling (Physical Aspects)	:	Keep away from heat and sources of ignition.
Dust explosion class	:	No applicable data available.
Storage	:	Do not contaminate water, other pesticides, fertilizer, food or feed in storage. Store in a cool, dry place. Keep out of the reach of children.
Storage period	:	No applicable data available.
Storage temperature	:	No applicable data available.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls	:	Ensure adequate ventilation.
Personal protective equipment		
Skin and body protection	:	Applicators and other handlers must wear: Long sleeved shirt and long pants Shoes plus socks Chemical resistant gloves made of any waterproof material Natural Rubber PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has

been treated, such as plants, soil, or water, is:
Coveralls
Chemical resistant gloves made of any waterproof material, such as polyvinyl chloride, nitrile rubber, or butyl rubber
Shoes plus socks

Protective measures : Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

Exposure Guidelines
Exposure Limit Values

Copper Hydroxide

TLV	(ACGIH)	0.2 mg/m3	TWA Fume. as Cu
TLV	(ACGIH)	1 mg/m3	TWA Dust and mist. as Cu
AEL *	(DUPONT)	1.5 mg/m3	8 & 12 hr. TWA

Clay
No applicable data available.

2-Propenoic Acid, Homopolymer
No applicable data available.

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance
Physical state : solid
Form : solid, granular
Color : blue

Odor : characteristic copper odor

Odor threshold	:	not determined
pH	:	7.5 - 9.5
Melting point/range	:	No applicable data available.
Boiling point/boiling range	:	No applicable data available.
Flash point	:	No applicable data available.
Evaporation rate	:	No applicable data available.
Flammability (solid, gas)	:	Does not sustain combustion.
Upper explosion limit	:	No applicable data available.
Lower explosion limit	:	No applicable data available.
Vapour Pressure	:	No applicable data available.
Vapour density	:	No applicable data available.
Specific gravity (Relative density)	:	No applicable data available.
Water solubility	:	dispersible
Solubility(ies)	:	No applicable data available.
Partition coefficient: n-octanol/water	:	No applicable data available.
Auto-ignition temperature	:	No applicable data available.
Decomposition temperature	:	No applicable data available.
Viscosity, kinematic	:	No applicable data available.
Viscosity, dynamic	:	No applicable data available.

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	No hazards to be specially mentioned.

Chemical stability	:	The product is chemically stable under recommended conditions of storage, use and temperature. Stable at normal temperatures and storage conditions.
Possibility of hazardous reactions	:	No applicable data available.
Conditions to avoid	:	No applicable data available.
Incompatible materials	:	None reasonably foreseeable.
Hazardous decomposition products	:	Hazardous thermal decomposition products:: Copper oxides

SECTION 11. TOXICOLOGICAL INFORMATION

DuPont™ Kocide® 3000 Fungicide/Bactericide

Inhalation 4 h LC50	:	> 2.08 mg/l , Rat
Dermal LD50	:	> 2,000 mg/kg , Rat
Oral LD50	:	1,847 mg/kg , Rat
Skin irritation	:	No skin irritation, Rabbit
Eye irritation	:	Irritating to eyes., Rabbit
Sensitisation	:	Animal test did not cause sensitization by skin contact., Guinea pig

Copper Hydroxide

Repeated dose toxicity :

No toxicological effects warranting significant target organ toxicity classification were seen below the recommended guidance values for classification., The following effects occurred at levels of exposure that significantly exceed those expected under labeled usage conditions.

Oral
Rat
-
Liver effects, Kidney effects, microcytic anemia

Information given is based on data obtained from similar substances.

Oral - feed

Rat
-
Spleen effects

Information given is based on data obtained from similar substances.

Carcinogenicity : Not classifiable as a human carcinogen.
Animal testing did not show any carcinogenic effects.
Information given is based on data obtained from similar substances.

Mutagenicity : Weight of evidence does not support classification as a germ cell mutagen.
Information given is based on data obtained from similar substances.

Reproductive toxicity : No toxicity to reproduction
Animal testing did not show any effects on fertility.
Information given is based on data obtained from similar substances.

Teratogenicity : The following effects occurred at levels of exposure that significantly exceed those expected under labeled usage conditions.
Animal testing showed effects on embryo-fetal development at levels equal to or above those causing maternal toxicity.

2-Propenoic Acid, Homopolymer

Repeated dose toxicity : Ingestion
Rat
- 28 d
NOAEL: 1,136 mg/kg
No toxicologically significant effects were found., Information given is based on data obtained from similar substances.

Mutagenicity : Animal testing did not show any mutagenic effects.
Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

Reproductive toxicity : No toxicity to reproduction
Animal testing showed no reproductive toxicity.

Teratogenicity : Animal testing showed no developmental toxicity.
Information given is based on data obtained from similar substances.

Carcinogenicity

The carcinogenicity classifications for this product and/or its ingredients have been determined according to HazCom 2012, Appendix A.6. The classifications may differ from those listed in the National Toxicology Program (NTP) Report on Carcinogens (latest edition) or those found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest edition).

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, or OSHA, as a carcinogen.

SECTION 12. ECOLOGICAL INFORMATION

Aquatic Toxicity

DuPont™ Kocide® 3000 Fungicide/Bactericide

96 h LC50	:	Oncorhynchus mykiss (rainbow trout) 0.24 mg/l
48 h EC50	:	Daphnia magna (Water flea) 0.118 mg/l

Copper Hydroxide

72 h ErC50	:	Pseudokirchneriella subcapitata (green algae) 0.00939 mg/l
90 d	:	NOEC 0.0017 mg/l
21 d	:	NOEC 0.03 mg/l

2-Propenoic Acid, Homopolymer

72 h EC50	:	Selenastrum capricornutum (green algae) 40 mg/l see user defined free text Information given is based on data obtained from similar substances.
96 h NOEC	:	Desmodesmus subspicatus (green algae) 32.8 mg/l OECD Test Guideline 201 Information given is based on data obtained from similar substances.
28 d	:	NOEC Danio rerio (zebra fish) > 450 mg/l OECD Test Guideline 204 Information given is based on data obtained from similar substances.
21 d	:	NOEC Daphnia magna (Water flea) 58 mg/l see user defined free text Information given is based on data obtained from similar substances.

Environmental Fate

2-Propenoic Acid, Homopolymer

Biodegradability	:	Not rapidly biodegradable Information given is based on data obtained from similar substances.
Bioaccumulation	:	Bioaccumulation is unlikely. Information given is based on data obtained from similar substances.
Additional ecological information	:	Environmental Hazards: For Terrestrial Uses: Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters or rinsate. Drift and runoff from treated areas may be hazardous to fish and aquatic organisms in adjacent aquatic sites. See product label for additional application instructions relating to environmental precautions.

SECTION 13. DISPOSAL CONSIDERATIONS

Waste disposal methods - Product	:	Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.
Waste disposal methods - Container	:	Refer to the product label for instructions. Do not transport if this container is damaged or leaking. In the event of a major spill, fire or other emergency, call 1-800-441-3637 day or night.
Contaminated packaging	:	No applicable data available.

SECTION 14. TRANSPORT INFORMATION

IATA_C	UN number	:	3077
	Proper shipping name	:	Environmentally hazardous substance, solid, n.o.s. (Copper hydroxide)
	Class	:	9
	Packing group	:	III
	Labelling No.	:	9MI

IMDG	UN number	: 3077
	Proper shipping name	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Copper hydroxide)
	Class	: 9
	Packing group	: III
	Labelling No.	: 9

Not regulated by DOT/49 CFR unless shipped in bulk package or by water.
Marine Pollutants assigned UN number 3077 and 3082 in single or combination packaging containing a net quantity per single or inner packaging of 5 L or less for liquids or having a net mass per single or inner packaging of 5 KG or less for solids may be transported as non-dangerous goods as provided in section 2.10.2.7 of IMDG code, IATA special provision A197, and ADR/RID special provision 375.

SECTION 15. REGULATORY INFORMATION

Other regulations	: Very toxic to aquatic organisms.
SARA 313 Regulated Chemical(s)	: Copper Hydroxide
PA Right to Know Regulated Chemical(s)	: Substances on the Pennsylvania Hazardous Substances List present at a concentration of 1% or more (0.01% for Special Hazardous Substances): Sodium sulphate
Title III hazard classification	: Acute Health Hazard: Yes Chronic Health Hazard: No Fire: No Reactivity/Physical hazard: No Pressure: No
EPA Reg. No.	: 352-662 In the United States this product is regulated by the US Environmental Protection Agency (EPA) under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Read and follow all label directions. This product is excluded from listing requirements under EPA/TSCA.
California Prop. 65	: WARNING! This product contains a chemical or chemicals known to the State of California to cause cancer.

WARNING! This product contains a chemical or chemicals known to the State of California to cause birth defects or other reproductive harm.

SECTION 16. OTHER INFORMATION

		NFPA
Health	:	2
Flammability	:	1
Reactivity/Physical hazard	:	0

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Revision Date : 05/28/2015

Contact person : DuPont Crop Protection, Wilmington, DE, 19898, Phone: 1-888-638-7668

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Significant change from previous version is denoted with a double bar.

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 PRODUCT IDENTIFIER:
TRADE NAME: **FITNESS® FUNGICIDE**
1.2 RECOMMENDED USE: GROUP 3 FUNGICIDE FOR CONTROL OF CERTAIN PLANT DISEASES
1.3 SUPPLIER DETAILS:
LOVELAND PRODUCTS, INC.
P.O. Box 1286 • Greeley, CO 80632-1286
1.4 24 Hour Emergency Phone: 1-800-424-9300 - **Medical Emergencies:** 1-866-944-8565 - **Product Information:** 1-888-574-2878 (LPI-CUST)
U.S. Coast Guard National Response Center: 1-800-424-8802

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to 29 CFR 1910.1200

Acute Toxicity – Oral	Category 4	H302
Eye Damage/Eye Irritation	Category 2A	H319

2.2 Label elements

Signal word: WARNING
Hazard Statement: H302 – Harmful if swallowed.
H319 – Causes serious irritation.

Precautionary Statement: (Prevention):
P264 – Wash hands and face thoroughly after handling.
P270 – Do not eat, drink or smoke when using this product.
P280 – Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary Statement: (Response):
P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P330 – Rinse mouth.
P305+P351+P338: IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.
P337+P311: If eye irritation persists: Get medical advice/attention.

Precautionary Statement: (Storage):
P402+P404 – Store in a dry place. Store in a closed copntainer.

Precautionary Statement: (Disposal):
P501 – Dispose of contents/container to an approved waste disposal plant.

2.3 Other hazards
None known

3. COMPOSITION, INFORMATION ON INGREDIENTS

3.1 Substances

3.2 Mixtures

Classification according to 29 CFR 1910.1200

Chemical Name:	CAS No.	Classification	Concentration [%]
Propiconazole	60207-90-1	Eye dam./irrit. 2A; H319	41.80
*Other ingredients, including		Oral tox. 4; H302	58.20
Naphthalene	91-20-3		4 – 4.5

*Ingredients not specifically listed are non-hazardous or are to be considered proprietary or confidential business information per 29 CFR 1910.1200(i).

4. FIRST AID MEASURES

4.1 Description of First Aid Measures

General Advice: Get medical attention if symptoms occur.

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

If swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

4.2 Most Important Symptoms and Effects, Acute and Delayed

Symptoms: Causes serious eye irritation. Harmful if swallowed.

4.3 Immediate Medical Attention and Special Treatment

Treatment: **NOTES TO PHYSICIAN:** Contains petroleum distillate. Vomiting may cause aspiration pneumonia. There is no specific antidote.
FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: 1-866-944-8565
Take container, label or product name with you when seeking medical attention.

5. FIRE FIGHTING MEASURES

5.1 EXTINGUISHING MEDIA:

Suitable Extinguishing Media: Use medium appropriate to surrounding fire. Dry chemical, carbon dioxide (CO_2), foam.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE:

Specific Hazards During Firefighting: Combustible liquid. Oxides of nitrogen, hydrogen chloride, hydrogen fluoride, and other unknown hazardous materials may be formed in a fire situation.

5.3 SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS

Special Protective Equipment for Firefighters: Self-contained breathing apparatus and full protective gear should be worn in fighting large fires involving chemicals. Use water spray to keep fire exposed containers cool. Keep people away. Isolate fire and deny unnecessary entry.

6. ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Personal Precautions: Avoid inhalation of vapors and spray mist and contact with skin and eyes. Ensure adequate ventilation. Wear suitable protective clothing. Remove all sources of ignition.

6.2 ENVIRONMENTAL PRECAUTIONS

Environmental Precautions: Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters or rinsate.

6.3 METHODS AND MATERIALS FOR CONTAINMENT AND CLEAN-UP

Methods for Clean-Up: Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. After removal flush contaminated area thoroughly with water.
Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to Remove residual contamination.
Never return spills to original containers for re-use.

7. HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING:

Advice on Safe Handling: Do not use, pour, spill or store near heat or open flame.
Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry. Discard clothing and other absorbent material that have been drenched or heavily contaminated with the product's concentrate. Do not reuse them. Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

7.2 CONDITIONS FOR SAFE STORAGE:

Requirements for Storage Areas and Containers: Store in original container in a secured dry storage area. Prevent cross-contamination with other pesticides and fertilizers. Do not contaminate water, food or feed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 CONTROL PARAMETERS:

OCCUPATIONAL EXPOSURE LIMITS

U.S. Workplace Exposure Level (ACGIH) TLVs

Components	Type	Value
Naphthalene	TWA	52 mg/m^3

U.S. Workplace Exposure Level (OSHA) PELs

Components	Type	Value
Naphthalene	TWA	50 mg/m^3

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Specimen
No listings		

8.2 EXPOSURE CONTROLS:

Engineering Measures

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets with requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d) (4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

Individual Protection Measures:

Eye / Face Protection: Goggles or shielded safety glasses are recommended.

Skin Protection: Long sleeved shirt and long pants, chemical-resistant gloves, such as barrier laminate or viton. Socks and chemical-resistant footwear.

Respiratory Protection: In case of inadequate ventilation or risk of inhalation of mists or vapors, use suitable respiratory equipment approved by MSHA/NIOSH. Wear respiratory protection during operations where spraying or misting occurs. If respirators are used, a program should be in place to assure compliance with 29 CFR 1910.134, the OSHA Respiratory Protection standard. Wear air supplied respiratory protection if exposure concentrations are unknown.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 APPEARANCE : Liquid
ODOR: Aromatic, solvent-like.
ODOR THRESHOLD: No data available.
COLOR: Clear yellow.
pH: 6 – 6.5 (1% solution)
MELTING POINT / FREEZING POINT: No data available
BOILING POINT: No data available
FLASH POINT: 148.1°F / 64.5°C (Setaflash).
FLAMMABILILITY (solid, gas): Combustible.
UPPER / LOWER FLAMMABILITY OR EXPLOSIVE LIMITS: No data available.
VAPOR PRESSURE: 4.2×10^7 @ 25°C (based on Propiconazole).
SOLUBILITY: Soluble.
PARTITION CO-EFFICIENT, n-OCTANOL / WATER: No data available.
AUTO-IGNITION TEMPERATURE: No data available.
DECOMPOSITION TEMPERATURE: No data available.
VISCOSITY: (kinematic): 9.95 cSt @ 20°C; 5.55 cSt @ 40°C
SPECIFIC GRAVITY (Water = 1): 1.039 g/ml
BULK DENSITY: 8.67 lbs./gal / 1.04 kg/L

Note: These physical data are typical values based on material tested but may vary from sample to sample.
Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.

10. STABILITY AND REACTIVITY

10.1 REACTIVITY
Stable
10.2 CHEMICAL STABILITY
Stable under normal temperature conditions
10.3 POSSIBILITY OF HAZARDOUS REACTIONS
No data available. Will not polymerize.
10.4 CONDITIONS TO AVOID
Flame, heat, ignition sources.
10.5 INCOMPATIBILE MATERIALS
Strong bases, acids, oxidizers.
10.6 HAZARDOUS DECOMPOSITION PRODUCTS
Oxides of nitrogen, hydrogen chloride, hydrogen fluoride, and other unknown hazardous materials may be formed in a fire situation.

11 TOXICOLOGICAL INFORMATION

11.3 LIKELY ROUTES OF EXPOSURE
Eyes, Ingestion.
LC_{50} (rat): >2.07 mg/L (4H)
LD_{50} Oral (female rat): 550 mg/kg.
LD_{50} Dermal (rat): > 5,050 mg/kg
Acute Toxicity Estimates: No data available.
Eye Irritation (rabbit): Moderate eye irritant.
Skin Irritation (rabbit): Slight imtant.
Inhalation: No data available.
Ingestion: Harmful if swallowed.
Specific Target Organ Toxicity: No data available.
Aspiration: May be fatal if swallowed and enters airways.
Skin Sensitization (guinea pig): Not a sensitizer
Carcinogenicity: For Naphthalene: NTP-R (Reasonably Anticipated To Be A Human Carcinogen); ACGIH-TLV-A4 (Not Classifiable as a Human Carcinogen); IARC-2B (Possibly carcinogenic to Humans).
Germ Cell Mutagenicity: No data available.
Interactive Effects: None known.

12 ECOLOGICAL INFORMATION

12.3 ECOTOXICITY

The pesticide is toxic to fish and shrimp.

Ecotoxicological Data

	Species	Test Results
Propiconazole	Rainbow trout	0.83 ppm – 96-hour LC_{50}
	Daphnia magna	3.2 ppm – 48-hour EC_{50}

Drift or runoff may adversely affect non-target plants.
Do not apply directly to water.
Do not contaminate water when disposing of equipment wash water.
Do not apply when weather conditions favor drift from target area.

12.2 PERSISTENCE AND DEGRADABILITY

Biodegradability: No data available.

12.3 BIOACCUMULATIVE POTENTIAL

Bioaccumulation: Low potential for accumulation.

12.4 MOBILITY IN SOIL

Low mobility.

12.5 OTHER ADVERSE EFFECTS

Assessment: No data available.

13 DISPOSAL CONSIDERATIONS

13.1 WASTE TREATMENT METHODS

Wastes may be disposed of on site or at an approved waste disposal facility. Triple rinse (or equivalent), adding rinse water to spray tank. Offer container for recycling or dispose of in a sanitary landfill or by other procedures approved by appropriate authorities. Recycling decontaminated containers is the best option of container disposal. The Agricultural Container Recycling Council (ACRC) operates the national recycling program. To contact your state and local ACRC recycler visit the ACRC web page at http://www.acrecycle.org/. Do not contaminate water, food or feed by storage or disposal.

14 TRANSPORT INFORMATION

14.3 LAND TRANSPORT

DOT Shipping Description: 119 GALLONS OR LESS: NOT REGULATED.
DOT Shipping Description: GREATER THAN 119 GALLONS: NA1993, COMBUSTIBLE LIQUID, N.O.S. (PETROLEUM DISTILLATES), III, ERG GUIDE 128
U.S. Surface Freight Classification: INSECTICIDES OR FUNGICIDES, INSECT OR ANIMAL REPELLENTS, NOI, OTHER THAN POISON (NMFC 102120; CLASS: 60)

15 REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS

NFPA & HMIS Hazard Ratings:

NFPA		HMIS
2 Health	0 Least	2 Health
2 Flammability	1 Slight	2 Flammability
0 Instability	2 Moderate	0 Reactivity
	3 High	B PPE
	4 Severe	

SARA Hazard Notification/Reporting
SARA Title III Hazard Category:

Immediate	Y	Fire	Y	Sudden Release of Pressure	N
Delayed	N	Reactive	N		

Reportable Quantity (RQ) under U.S. CERCLA: Naphthalene (CAS: 91-20-3) 100 lbs.
SARA, Title III, Section 313: Propiconazole (CAS: 60207-90-1); Naphthalene (CAS: 91-20-3)
RCRA Waste Code: U165 (Naphthalene)
CA Proposition 65: WARNING: This product contains chemicals known to the State of California to cause cancer or birth defects or other reproductive harm.

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

WARNING
Causes substantial but temporary eye injury.
Harmful if swallowed.
Do not get in eyes or on clothing.

16 OTHER INFORMATION

SDS STATUS: Format revised.

PREPARED BY: Registrations and Regulatory Affairs **REVIEWED BY:** Environmental Health and Safety

EPA REG. NO.: 34704-1031

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Safety Data Sheet

United Phosphorus, Inc.

Preparation Date 01-May-2015 **Revision date** 22-Mar-2016 **Revision Number:** 3

1. Identification of the Substance/Preparation and of the Company/Undertaking

Product identifier

Product Description: Manzate Pro-Stick T&O Fungicide

Other means of identification

Item#: 12-371F
UN-No UN3077
Synonyms Not Available
Registration number(s) 70506-234

Recommended use of the chemical and restrictions on use

Recommended use Fungicide.
Uses advised against Activties contrary to label recomendation

Details of the Supplier of the Safety Data Sheet

Supplier Address
United Phosphorus Inc.
630 Freedom Business Center
Suite 402
King of Prussia, PA 19406

Emergency telephone number

Company Phone Number 1-800-438-6071
Emergency telephone number Chemtrec: (800) 424-9300 (24hrs) or (703) 527-3887
Medical: Rocky Mountain Poison Control Center
(866) 673-6671 (24hrs)

2. Hazards Identification

Classification

OSHA Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute toxicity - Dermal	Category 4
Skin sensitization	Category 1
Reproductive Toxicity	Category 2

Label elements

EMERGENCY OVERVIEW

WARNING

hazard statements
Harmful in contact with skin
May cause an allergic skin reaction
Suspected of damaging fertility or the unborn child

appearance Yellow	**Physical state** solid	**Odor** Slight Rotten egg-like

Precautionary Statements - Prevention
Do not handle until all safety precautions have been read and understood
Do not handle until all safety precautions have been read and understood
Wear cold insulating gloves/face shield/eye protection
Do not get in eyes, on skin, or on clothing
Contaminated work clothing should not be allowed out of the workplace
Wear protective gloves

Precautionary Statements - Response
IF exposed or concerned: Get medical advice/attention
IF ON SKIN: Wash with plenty of soap and water
Call a POISON CENTER or doctor if you feel unwell
Wash contaminated clothing before reuse
If skin irritation or rash occurs: Get medical advice/attention

Precautionary Statements - Storage
Store locked up

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Hazards Not Otherwise Classified (HNOC)
OTHER INFORMATION
• Very toxic to aquatic life
• May be harmful in contact with skin

3. Composition/Information on Ingredients

Chemical name	CAS-No	Weight %	Trade secret
Sucrose	57-50-1	7.3	
Mancozeb	8018-01-7	75	
Ethylene thiourea	96-45-7	0-0.1	

If CAS number is "proprietary", the specific chemical identity and percentage of composition has been withheld as a trade secret.

4. First aid measures

FIRST AID MEASURES

Eye contact Hold eye open and rinse slowly and gently with water for 15 - 20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

Skin contact Wash off immediately with soap and plenty of water for at least 15 minutes. Call poison control center or doctor for treatment advice. Remove contaminated clothing and shoes.

Inhalation Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a physician or poison control center immediately.

Ingestion Never give anything by mouth to an unconscious person. Do not induce vomiting without medical advice. Call a physician or poison control center immediately.

Most Important Symptoms and Effects, Both Acute and Delayed

Most Important Symptoms and MAY CAUSE ALLERGIC SKIN REACTION.

Effects

Indication of Any Immediate Medical Attention and Special Treatment Needed

Notes to physician Treat symptomatically.

5. Fire-fighting measures

Suitable extinguishing media

Use:. Dry chemical. Carbon dioxide (CO2). Water spray. alcohol-resistant foam.

Unsuitable extinguishing media No information available.

Specific hazards arising from the chemical
No information available.

Hazardous combustion products Carbon disulfide, ethylene thiourea (ETU). Sulfur oxides. Oxides of nitrogen. Oxides of carbon.

Explosion data
Protective equipment and precautions for firefighters
Use personal protective equipment. As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal Precautions Avoid contact with the skin and the eyes. Wear protective gloves/clothing and eye/face protection. Wash thoroughly after handling.

Environmental Precautions

Environmental precautions Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinenet environmental permits.

Methods and material for containment and cleaning up

Methods for Clean-Up Sweep up and shovel into suitable containers for disposal.

7. Handling and Storage

Precautions for safe handling

Handling Avoid contact with skin and eyes. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Keep out of reach of children. Wear protective gloves/clothing and eye/face protection.

Conditions for safe storage, including any incompatibilities

Storage Keep containers tightly closed in a cool, well-ventilated place.

incompatible materials Strong oxidizing agents. Acids.

8. Exposure Controls/Personal Protection

Exposure guidelines

Chemical name	ACGIH TLV	OSHA PEL
Sucrose	TWA: 10 mg/m³	TWA: 15 mg/m³ total dust TWA: 5 mg/m³ respirable fraction

		(vacated) TWA: 15 mg/m³ total dust (vacated) TWA: 5 mg/m³ respirable fraction

Engineering controls Investigate engineering techniques to reduce exposures. Local mechanical exhaust ventilation is preferred. Consult ACGIH ventilation manual or NFPA Standard 91 for design of exhaust systems.

Personal protective equipment

Eye/Face Protection Use eye protection to avoid eye contact. Where there is potential for eye contact have eye flushing equipment available. Safety glasses with side-shields. If splashes are likely to occur, wear:. Goggles.

Skin protection Wear protective gloves/clothing. Long sleeved clothing. Socks and footwear.

Respiratory protection Where airborne exposure is likely, use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. Full facepiece equipment is recommended and, if used, replaces need for face shield and/or chemical goggles. If exposures cannot be kept at a minimum with engineering controls, consult respirator manufacturer to determine appropriate type equipment for given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where there may be a potential for significant exposure, use an approved full face positive-pressure, self-contained breathing apparatus. Respiratory protection programs must comply with 29 CFR 1910.134.

General hygiene considerations

Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing before re-use. Wear suitable gloves and eye/face protection. Wash hands before breaks and immediately after handling the product.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Physical state	solid		
appearance	Yellow	**Odor**	Slight Rotten egg-like
color	No information available		

Property	**VALUES**	**Remarks/ • Method**
pH	No information available	
Melting point/freezing point	No information available	
Boiling Point/Range	No information available	
Flash Point	No information available	
Evaporation Rate	No information available	
flammability (solid, gas)	No information available	
Flammability limit in air		
Upper Flammability Limit	No information available	
Lower Flammability Limit	No information available	
vapor pressure	No information available	
Vapor Density	No information available	
Specific gravity	No information available	
Water solubility	No information available	
Solubility in Other Solvents	No information available	
Partition coefficient: n-octanol/water	No information available	
Autoignition temperature	205 C / 401 F °C / 401 °F	
decomposition temperature	No information available	
Viscosity, kinematic	No information available	
Dynamic viscosity	No information available	
Explosive properties	No information available	
Oxidizing properties	No information available	

OTHER INFORMATION

Softening point	No information available
molecular weight	No information available
VOC Content	No information available
density	No information available

Bulk density 40-45 lb/cu ft

10. Stability and Reactivity

Reactivity
no data available

Chemical stability
Stable under normal conditions. Hazardous polymerisation does not occur.
Possibility of hazardous reactions
None under normal processing.
Conditions to avoid
To avoid thermal decomposition, do not overheat. Keep away from children.
incompatible materials
Strong oxidizing agents. Acids.
Hazardous decomposition products
Hydrogen sulfide. Ethylenethiourea. Carbon disulfide.

11. Toxicological Information

Information on Likely Routes of Exposure

Product information Manzate Pro Stick :
Oral LD50 (rat) = >5,000 mg/kg
Dermal LD50 (rabbit) = > 2,000 mg/kg
Inhalation LC50 (rat) 4 hr = >5.4 mg/L

Mild to moderate eye irritant. Mild to slight skin irritant. Sensitizer .

Inhalation May be harmful if inhaled.

Eye contact May cause irritation.

Skin contact Slightly irritating.

Ingestion MAY BE HARMFUL IF SWALLOWED.

Information on Toxicological Effects

Symptoms No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

sensitization No information available.
Mutagenic effects No information available.
Carcinogenicity The information below indicates whether any agency has listed any ingredient as a carcinogen.

Chemical name	ACGIH	IARC	NTP	OSHA
Ethylene thiourea 96-45-7	-	Group 3	Reasonably Anticipated	X

IARC: (International Agency for Research on Cancer)
A trace contaminant, Ethylene thiourea (ETU) a breakdown product of Maneb, has been catergorized as a probable human carcinogen by NTP.

Reproductive effects Not Available.
STOT - Single Exposure No information available.
STOT - repeated exposure No information available.
Chronic toxicity Avoid repeated exposure.
Target organ effects Respiratory System, EYES.
Aspiration hazard No information available.

Numerical Measures of Toxicity - Product information

LD50 Oral	> 5000 mg/kg (rat)
LD50 Dermal	> 2000 mg/kg (rat)
LC50 Inhalation:	LC50/inhalation/4h/rat = > 5.4 mg/l 0 ml/m³ (Vapor)

12. Ecological Information

Marine Pollutant.

ecotoxicity

Manzate:
96 hr LC50
Rainbow trout -= 0.73 mg/L
Fathead minnow = 0.57 mg/L
Bluegill sunfish = 0.84 mg/L
72 hr EC50
Freshwater algae = 0.43 mg/L

Persistence/Degradability
No information available.

Bioaccumulation/ Accumulation
No information available.

Other Adverse Effects
No information available

13. Disposal Considerations

Waste Treatment Methods

Waste Disposal Method Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide or rinsate is a violation of Federal law. If the wastes cannot be disposed of by use or according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Contaminated packaging Refer to product label.

Chemical name	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
Ethylene thiourea	U116	Included in waste streams: K123, K124, K125, K126		U116

14. Transport Information

DOT Not regulated when shipped domestically by highway in non-buk containers as per 49 CFR 171.4

UN-No	UN3077
Proper shipping name	Environmentally hazardous substances, solid, n.o.s Mancozeb
Hazard class	9
Packing group	PG III
Marine Pollutant	Marine Pollutant.

IATA

UN-No	UN3077

Proper shipping name	Environmentally hazardous substances, solid, n.o.s Mancozeb
Hazard class	9
Packing group	PG III
Description	Marine Pollutant

IMDG/IMO

UN-No	UN3077
Proper shipping name	Environmentally hazardous substances, solid, n.o.s (Mancozeb)
Hazard class	9
Packing group	PG III
Marine Pollutant	Marine Pollutant

15. Regulatory Information

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

signal word	CAUTION
Ventilation Control	PESTICIDE APPLICATORS & WORKERS THESE WORKERS MUST REFER TO PRODUCT LABELING AND DIRECTIONS FOR USE IN ACCORDANCE WITH EPA WORKER PROTECTION STANDARD 40 CFR PART 170.

Keep out of Reach of Children. Harmful if inhaled or absorbed through skin. Harmful if swallowed. May irritate eyes, nose, throat and skin.

International Inventories

USINV	Not determined
DSL/NDSL	Not determined
EINECS/ ELINCS	Does not comply
ENCS	Does not comply
China	Does not comply
KECL	Does not comply
PICCS	Does not comply
AICS	Does not comply
TSCA	Does not comply

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and and Title 40n of the Code of Federal Regulations, Part 372:

Chemical name	SARA 313 - Threshold Values
Ethylene thiourea - 96-45-7	0.1

SARA 311/312 Hazardous Categorization

Acute health hazard	yes
Chronic health hazard	yes
Fire hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	yes

Chemical name	RQ	CERCLA EHS RQs	RQ
Ethylene thiourea 96-45-7	10 lb		RQ 10 lb final RQ RQ 4.54 kg final RQ

CERCLA

Component	RQ
Ethylene thiourea 96-45-7 (0-0.1)	10 lb

SARA Product RQ 0

RCRA

Component	RCRA - D Series Wastes	RCRA - P Series Wastes	RCRA - U Series Wastes
Ethylene thiourea 96-45-7 (0-0.1)			U116

Pesticide Information

State Regulations

Component	CAS-No	CATEGORY	California Prop. 65	Non-additive, corrosive chemical type
Mancozeb 8018-01-7 (75)	8018-01-7	Carcinogen	Carcinogen	
Ethylene thiourea 96-45-7 (0-0.1)	96-45-7	Carcinogen	Carcinogen Developmental	

State Right-to-Know

Chemical name	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Sucrose	X		X		
Mancozeb				X	
Ethylene thiourea	X	X	X	X	

International regulations

U.S. EPA Label information

EPA Pesticide registration number 70506-234

16. Other Information

NFPA **HEALTH** 1 **flammability** 1 **Instability** 1 **Physical hazard** -

Preparation Date 01-May-2015
Revision date 22-Mar-2016
Revision Summary
Update section 14

Disclaimer

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End of MSDS

BioSafe Systems LLC

Safety Data Sheet
OxiDate® 2.0

Revision Date: 11/2014
Supersedes: 10/13

Section 1: Identification

Product Name: OxiDate 2.0 ®	**Product Type/Description:** Bactericide / Fungicide
Recommended Use/ Use Restrictions: Pesticide; It is a violation of federal law to use this product in a manner inconsistent with its labeling	**Other Means of Identification:** Peracetic Acid, Peroxyacetic Acid, PAA **EPA Registration Number:** 70299-12
Manufacturer: BioSafe Systems LLC 22 Meadow Street, East Hartford, CT 06108 **Telephone Number:** (888-273-3088)	**Emergency Number:** 800-424-9300 (CHEMTREC)

Section 2: Hazard Identification

GHS Classification (As Concentrate)
Oxidizing Liquid: Category 2
Organic Peroxide: Type F
Corrosive to Metals: Category 1
Acute Toxicity (oral, dermal and inhalation): Category 4
Skin Corrosion: Category 1
Serious Eye Damage: Category 1

Hazard Statements: (As Concentrate)
H272: May intensify fire; oxidizer
H242: Heating may cause fire
H290: May be corrosive to metals
H302: Harmful if swallowed
H332: Harmful if inhaled
H313: Causes severe skin burns and eye damage
H335: May cause respiratory irritation

Pictograms:

Signal Word: DANGER

Precautionary Statements:

General:
P101: If medical advice is needed, have product container or label at hand
P102: Keep out of reach of children
P103: Read label before use.

Prevention:
P210: Keep away from heat, sparks or open flames, no smoking
P220: Store away from combustible materials
P221: Take any precautions to avoid mixing with combustibles
P234: Keep only in original container
P260: Do not breathe fumes, mist or vapors
P262: Do not get in eyes, on skin or on clothing
P264: Wash thoroughly after handling
P270: Do not eat, drink, or smoke when using this product.
P280: Wear protective gloves, clothing, eye protection, face protection
P271: Use only outdoors or in a well-ventilated area

Response:
P301+P330+P331: If SWALLOWED: Rinse mouth. Do not induce vomiting.
P303+P361+P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue Rinsing.
P310: Immediately call a POISON CENTER/doctor.
P321: For specific treatments see FIRST AID section on SDS or label
P370+P378: In case of fire: Use water or other suitable extinguishing media
P390: Absorb spillage to prevent material damage

Storage:
P405: Store locked up
P410: Protect from sunlight
P411: Store at temperatures not exceeding 55°C (131°F)
P406: Store in corrosive resistant container, never use metal containers
P420: Store away from Incompatible materials

Disposal
P501 Dispose of contents/container in accordance with local/regional/national/international regulations

Other Information:
NFPA Rating: Health – 2; Flammability – 0; Reactivity – 3; Special – OXY
HMIS Rating: Heatlh – 2; Flammability – 0; Reactivity – 2; PPE: Required

Section 3: Composition/Information on Ingredients

Components:	CAS-No:	% Concentration by Weight:
Hydrogen Dioxide	7722-84-1	27.1%
Peroxyacetic Acid	79-21-0	2%
Acetic Acid	64-19-7	>5%

Section 4: First-aid Measures	
Eye Contact:	Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
Skin Contact:	Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
Ingestion	Call poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.
Inhalation:	Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call poison control center or doctor for treatment advice. Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1.800.222.1222 for emergency treatment information.
Note to Physician:	Probable mucosal damage may contraindicate the use of gastric lavage.

Section 5: Fire-fighting Measures	
Suitable Extinguishing Media:	Product is not flammable and can be quickly diluted with clean water. Oxidizing Agent may cause spontaneous ignition with oxidizing agents
Unsuitable Extinguishing Media:	None Known
Combustion Products:	Carbon Oxides
Unusual Fire and Explosion Hazards:	Product (concentrate) can decompose and will release oxygen thereby adding to the fire hazard.
Protective Equipment for Firefighters:	Use PPE equipment

Section 6: Accidental Release Measures	
Personal Precautions:	Ensure adequate ventilation. Remove all sources of ignition. Keep people away from and upwind of spill/leak. Avoid inhalation, ingestion and contact with skin and eyes
Emergency Procedures	Ensure clean-up is conducted by trained personnel. Personnel should wear protective equipment outlined in Sections 7 & 8. If facing concentrations above exposure limits personnel shall wear certified respirators
Environmental Precautions	Prevent spill from entering waterways
Methods and Material for Containment and Cleaning up	Cleanup: Rinse small amounts to drain when possible. Dike or dam large spills, pump to containers or soak in inert absorbent. Flush residue to sanitary sewer, rinse area thoroughly with clean water. Avoid materials that are incompatible with concentrate. Waste Disposal: Consult state and local authorities for restrictions on disposal of chemical wastes. Unused product (concentrate) is classified as a (D002) by RCRA criteria.

Section 7: Handling and Storage	
Handling:	Wear protective gloves/eye protection/face protection Do not eat, drink, or smoke when using this product. Wash thoroughly after handling Avoid breathing fumes/mist/vapors. Use only outdoors or in a well-ventilated area
Storage:	Keep away from heat. Keep only in original container. Protect from sunlight. Store at temperatures not exceeding 55°C (131°F). Never return product back to the original container. Store in cool, ventilated area. Never use metal containers or spigots. Use vented container
Incompatible Materials:	Store away from combustible materials. Keep concentrate away from reactive substances

Section 8: Exposure Controls/Personal Protection

Components with workplace control parameters

Component	ACGIH	NIOSH	OSHA
Acetic Acid	TWA 10 ppm	TWA: 25 mg/m³- 8 hours. TWA: 10 ppm- 8 hours.	TWA: 25 mg/m³- 8 hours. TWA: 10 ppm- 8 hours.
Hydrogen Peroxide	TWA 1 ppm	TWA: 1.4 mg/m³- 8 hours. TWA: 1 ppm- 8 hours.	TWA: 1.4 mg/m³- 8 hours. TWA: 1 ppm- 8 hours.

Engineering Controls		Effective exhaust ventilation system
Personal Protection Equipment	**Respiratory**	NIOSH approved full-face respirator for excessive conditions
	Eye/Face Protection	- chemical proof goggles/face shield for splash risk
	Hands	Hand gloves for handling concentrate = butyl rubber
	Skin/Body	coveralls when handling concentrate
	General Hygienic Practices	Do not eat, drink, or smoke when using this product. Wash thoroughly after handling Avoid breathing fumes/mist/vapors. Remove and wash contaminated clothing before reuse

Section 9: Physical and Chemical Properties		
Appearance: Clear, colorless liquid	**Odor:** Pungent	**pH:** 0.96
Melting Point: No data available	**Freezing Point:** -30°C (-22°F)	**Boiling Point:** Not applicable, product decomposes
Flash Point: No data available	**Flammability:** No data available	**Flammable Limits:** No data available
Vapor Pressure: No data available	**Specific Gravity:** 1.10	**Solubility(ies):** soluble
Partition Coefficient n- octanol/water: No data available	**Auto-ignition Temperature:** No data available	**Decomposition Temperature:** self-accelerating decomposition temperature > 55°C

Section 10: Stability and Reactivity	
Stability:	Stable under normal conditions, with slow oxygen release
Conditions to Avoid	Heat / Direct Sunlight
Incompatible materials	Acids / Bases / Reducing Agents Organic Materials /Metals / Salts of Metals
Hazardous Decomposition Products	N/A

Section 11: Toxicological Information		
Acute Toxicological Data:	**Oral:** LD50 rat 3,622 mg/kg. Test substance: 5.6% PAA, 26.9% H2O2, 7.6% HOAc solution	**Dermal:** LD50 rabbit, 1040 mg/kg. Test substance: 4.89% PAA, 19.72% H2O2, 10% HOAc solution
Inhalation: LD50 rat > 5.35 mg/L for four hour exposure. Test substance: 4.5% PAA, 27% H2O2,16.7% HOAc solution	**Primary Skin irritation:** rabbit, severe irritant. Test substance: 2% PAA solution	**Primary Eye irritation:** rabbit, severely irritating or corrosive. Test substance: 2% PAA solution
Likely Routes of Exposure: Inhalation, eye contact, skin contact		
Symptoms and effects:	**Acute Effects**	
Eye Contact	Causes serious eye damage	
Skin Contact	Causes severe skin burns	
Inhalation	May cause respiratory track irritation	
Ingestion	Harmful if swallowed	
Chronic exposure:	Dermal and inhalation – irritating effects	

Section 12: Ecological Information	
Ecotoxicity	Toxic to simple cell and aquatic organisms; Fish, Rainbow trout LC50, 48 hours > 40 mg/L Crustaceans, EC 50,48 hours 126.8 mg/l 1 mg/ L Bacteria, Pseudomonas aeruginosa, EC 100, 5 minutes, 5mg/L
Persistence and degradability	Weak persistence of degradation products
Bioaccumulation potential	No bioaccumulation
Mobility is Soil	Non-significant adsorption 5oil degradation = 99% in 20 minutes
Other adverse effects	N/A

Section 13: Disposal Considerations	
Waste From Residues and Unused Product	Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. Open dumping is prohibited. If wastes cannot be disposed of according to label directions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste Representative at the nearest EPA Regional Office for guidance.
Contaminated Container Disposal	Triple rinse (or equivalent). Then offer for recycling or dispose in a sanitary landfill, or incineration, if allowed by state and local authorities by burning. Stay out of smoke.

Section 14: Transport Information

	UN Number	UN Proper Shipping Name	Hazard Class (Subsidiary)	Label (Subsidiary)	Packing Group	Marine Pollutant
US DOT	3149	Hydrogen peroxide and peroxyacetic acid mixture, stabilized with acids and water and not more than 5% peroxyacetic acid.	5.1(8)	Oxidizer (Corrosive)	II	No
Canada (TDG)	3149	Hydrogen peroxide and peroxyacetic acid mixture, stabilized with acids and water and not more than 5% peroxyacetic acid.	5.1(8)	Oxidizer (Corrosive)	II	NO

Special Precautions: Shipping Container: UN Certified vented polyethylene

Section 15: Regulatory Information		
TSCA Inventory List: Yes	**US EPA CERCLA RQ:** Acetic Acid 5000 lbs	
SARA Title III Section Extremely Hazardous Substance: Peroxyacetic acid	**Section 304 EHS RQ:** Peroxyacetic Acid 500 lbs	**Section 302 TPQ:** Peroxyacetic Acid 500 lbs
SARA Title III Sec. 311/312: peroxyacetic acid	**Hazard category:** Acute Health Hazard Reactivity Hazard, Fire Hazard	
US. EPA EPCRA Section 313 listed: Peroxyetic acid	**Threshold quantity (processed or manufactured):** 10,000 lbs	**Threshold quantity (otherwise used):** 25,0000 lbs
Canadian WHIMIS Classification	C – Oxidizing E – Corrosive F – Dangerously Reactive	
California Prop 65	This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.	
EPA	This product is a registered Pesticide with the United States Environmental Protection Agency and is subject to EPA labeling requirements under the Federal Insecticide, Fungicide, and Rodenticide Act ("FIFRA"). These requirements may differ from the classification criteria and hazard information required for a safety data sheet under the Global Harmonized Systems (GHS), and for workplace labels of non-pesticide chemicals. It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Always refer to product label for further precautionary information and use directions.	

Section 16: Other Information

To the extent of our knowledge, the information herein is accurate as of the date of this document. However, neither BioSafe Systems nor any of it's affiliates make any warranty, expressed or implied, or accept any liability in connection with the information or its use. The information is for use by technically skilled persons at their own discretions and risk. This is not a license or a patent. The user alone must finally determine suitability of any information or material for any contemplated use, the manner or use and whether any patents are infringed.

BioSafe Systems

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Issuing Date: 12/14
Revision Number: r1

Loveland PRODUCTS

SAFETY DATA SHEET

TRIFLURALIN HF

SDS NUMBER: 000792-16-LPI **SDS REVISIONS: FORMAT** **DATE OF ISSUE: 09/08/16** **SUPERSEDES: 01/10/12**

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 PRODUCT IDENTIFIER:
TRADE NAME: **TRIFLURALIN HF**
1.2 RECOMMENDED USE: SELECTIVE HERBICIDE FOR PRE-EMERGENCE CONTROL OF LISTED WEEDS AND GRASSES
1.3 SUPPLIER DETAILS:
LOVELAND PRODUCTS, INC.
P.O. Box 1286 • Greeley, CO 80632-1286
1.4 24 Hour Emergency Phone: 1-800-424-9300 - **Medical Emergencies:** 1-866-944-8565 – **Product Information:** 1-888-574-2878 (LPI-CUST)
U.S. Coast Guard National Response Center: 1-800-424-8802

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to 29 CFR 1910.1200

Acute Toxicity – Oral	Category 4	H302
Sensitization – Skin	Category 1	H317
Eye Damage/Irritation	Category 2B	H320

2.2 Label elements

Signal word: WARNING

Hazard Statement:
H302 – Harmful if swallowed.
H317 – May cause an allergic skin reaction.
H320 – Causes eye irritation.

Precautionary Statement: (Prevention):
P264 – Wash face, hands and any exposed skin thoroughly after handling.
P270 – Do not eat, drink or smoke when using this product.
P272 – Contaminated work clothing must not be allowed out of the workplace.
P280 – Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary Statement: (Response):
P301+P312 – IF SWALLOWED: Call a poison center or doctor/physician if you feel unwell.
P302+P352 – IF ON SKIN: Wash with plenty of soap and water.
P333+P313 – If skin irritation or rash occurs: Get medical advice/attention.
P321 – Specific treatment (see FIRST AID and additional medical contact information on the product label).
P363 – Wash contaminated clothing before reuse.
P305+P351+P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313 – If eye irritation persists: Get medical advice/attention.

Precautionary Statement: (Storage): Not applicable or required.

Precautionary Statement: (Disposal) Not applicable or required.

2.3 Other hazards
None known.

3. COMPOSITION, INFORMATION ON INGREDIENTS

3.1 Substances

3.2 Mixtures

Classification according to 29 CFR 1910.1200

Chemical Name:	CAS No.	Concentration [%]
Trifluralin	1582-09-8	43.00
Other ingredients*	n/a	57.00
Solvent Naphtha (Petroleum), Heavy Aromatic, contains	64742-94-5	
Naphthalene)	91-20-3	

*Ingredients not specifically listed are non-hazardous or are to be considered proprietary or confidential business information per 29 CFR 1910.1200(i)

4. FIRST AID MEASURES

4.1 Description of First Aid Measures

General Advice: Get medical attention if symptoms occur.

If swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

If on skin or clothing: Take of contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

4.2 Most Important Symptoms and Effects, Acute and Delayed

Symptoms: Harmful if swallowed. Causes eye irritation. May cause an allergic skin reaction.

4.3 Immediate Medical Attention and Special Treatment

Treatment: Treat symptomatic and supportive.

FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: **1-866-944-8565**

Take container, label or product name with you when seeking medical attention.

5. FIRE FIGHTING MEASURES

5.1 EXTINGUISHING MEDIA:

Suitable Extinguishing Media: Use medium appropriate to surrounding fire. Foam, carbon dioxide (CO_2), dry chemical, foam or water spray or fog. Do not use water jet as this will spread the fire.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE:

Specific Hazards During Firefighting: During a fire, oxides of carbon and oxides of nitrogen can be released.

5.3 SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS

Special Protective Equipment for Firefighters: Self-contained breathing apparatus and full protective gear should be worn in fighting large fires involving chemicals. Use water spray to keep fire exposed containers cool. Keep people away. Isolate fire and deny unnecessary entry.

6. ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Personal Precautions: Wash hands after handling, and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing. See section 8 for PPE. Keep away from children.

6.2 ENVIRONMENTAL PRECAUTIONS

Environmental Precautions: This product is extremely toxic to freshwater marine, and estuarine fish and aquatic invertebrates including shrimp and oyster. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not apply in a manner in which will directly expose canals, lakes, streams, ponds, marshes or estuaries to aerial drift. Do not contaminate water when disposing of equipment wash waters.

6.3 METHODS AND MATERIALS FOR CONTAINMENT AND CLEAN-UP

Methods for Clean-Up: In case of leak or spill, contain by absorbing spilled liquid with clay or other absorbent material; scoop or sweep up material and place in a container for possible land application according to label use or for proper disposal. Wash the spill area with water containing a strong detergent. Check local, state and federal regulations for proper disposal.

7. HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING:

Advice on Safe Handling: Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

7.2 CONDITIONS FOR SAFE STORAGE:

Requirements for Storage Areas and Containers: Store in original containers only. In case of spill, contain material and dispose as waste. Do not contaminate water, food or feed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 CONTROL PARAMETERS:

OCCUPATIONAL EXPOSURE LIMITS

U.S. Workplace Exposure Level (ACGIH) TLVs

Components	Type	Value
Naphthalene	TWA	52 mg/m^3 (Skin)

U.S. Workplace Exposure Level (OSHA) PELs

Components	Type	Value
Naphthalene	TWA	50 mg/m^3

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Specimen
No listings		

8.2 EXPOSURE CONTROLS:

Engineering Measures

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d) (4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

Individual Protection Measures:

Eye / Face Protection: Goggles or shielded safety glasses are recommended.
Skin Protection: Long-sleeved shirt and long pants. Chemical-resistant gloves. Shoes plus socks.
Respiratory Protection: Not normally required. If respirators are used, a program should be in place to assure compliance with 29 CFR 1910.134, the OSHA Respiratory Protection standard.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 APPEARANCE : Liquid
ODOR: Mild aromatic.
ODOR THRESHOLD: No data available.
COLOR: Clear orange.
pH: 5.0 (50% solution)
MELTING POINT / FREEZING POINT: No data available.
BOILING POINT: 450 – 527 °F / 232 – 275°C (Solvent)
FLASH POINT: > 210 °F / > 98 °C (PMCC).
FLAMMABILITY (solid, gas): No data available.
UPPER / LOWER FLAMMABILITY OR EXPLOSIVE LIMITS: LFL: 1.8% | UFL: 11.8% (Based on the solvent).
VAPOR PRESSURE: < 1mm Hg @ 68 °F / 20 °C.
SOLUBILITY: Emulsifies.
PARTITION CO-EFFICIENT, n-OCTANOL / WATER: No data available.
AUTO-IGNITION TEMPERATURE: No data available.
DECOMPOSITION TEMPERATURE: No data available.
VISCOSITY: No data available.
SPECIFIC GRAVITY (Water = 1): 1.12 g/ml
DENSITY: 9.35 lbs/gal | 1.12 kg/l

Note: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.

10. STABILITY AND REACTIVITY

10.1 REACTIVITY
Stable
10.2 CHEMICAL STABILITY
Stable under normal temperature conditions
10.3 POSSIBILITY OF HAZARDOUS REACTIONS
No data available. Will not polymerize.
10.4 CONDITIONS TO AVOID
Keep away from heat, sparks and open flame. Avoid freezing.
10.5 INCOMPATIBILE MATERIALS
Strong oxidizers.
10.6 HAZARDOUS DECOMPOSITION PRODUCTS
Oxides of nitrogen, oxides of carbon, fluorinated hydrocarbons and hydrogen fluoride may be formed in a fire situation.

11 TOXICOLOGICAL INFORMATION

11.3 LIKELY ROUTES OF EXPOSURE
Ingestion. Eye Contact. Inhlalation. Dermal.
LC_{50} (rat): > 7.74 mg/L (4 HR).
LD_{50} Oral (rat): > 5,000 mg/kg
LD_{50} Dermal (rabbit): > 2,000 mg/kg
Acute Toxicity Estimates: No data available.
Skin Irritation (rabbit): May causes skin irritation.
Eye Irritation (rabbit): Causes eye irritation
Specific Target Organ Toxicity: No data available.
Aspiration: No data available.
Skin Sensitization (guinea pig): May cause an allergic skin reaction.
Carcinogenicity: Naphthalene has been determined to be a Possible Human Carcinogen (Group 2B) by IARC; Confirmed Animal Carcinogen with Unknown Relevance to Humans by ACGIH (A3); Reasonably Anticipated to Be a Human Carcinogen (NTP-R) by NTP; and Cannot Be Determined (EPA-CBD) by US EPA.
Germ Cell Mutagenicity: Not observed in studies.
Interactive Effects: None known

12 ECOLOGICAL INFORMATION

12.3 ECOTOXICITY
This pesticide is extremely toxic to freshwater marine and estuarine fish and aquatic invertebrates including shrimp and oyster. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not apply in a manner that will directly expose canals, lakes streams, ponds, marshes or estuaries to aerial drift. Do not contaminate water when disposing of equipment wash water. Do not apply when weather conditions favor drift from target area.

Ecotoxicological Data

	Species	Test Results
Trifluralin	Rainbow trout	0.41 ppm – 96 hour LC_{50}
	Bluegill	0.58 ppm – 96 hour LC_{50}
	Bee	> 100 µ/bee (contact)

Drift or runoff may adversely affect non-target plants.
Do not apply directly to water.
Do not contaminate water when disposing of equipment wash water.
Do not apply when weather conditions favor drift from target area.

12.2 PERSISTENCE AND DEGRADABILITY
Biodegradability: No data available.
12.3 BIOACCUMULATIVE POTENTIAL
Bioaccumulation: No data available.
12.4 MOBILITY IN SOIL
No data available.
12.5 OTHER ADVERSE EFFECTS
Assessment: No data available.

13 DISPOSAL CONSIDERATIONS

13.1 WASTE TREATMENT METHODS

PESTICIDE DISPOSAL: Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

CONTAINER DISPOSAL: Non-refillable container. Do not reuse this container to hold materials other than pesticides or dilute pesticides (rinsate). After emptying and cleaning, it may be allowable to temporarily hold rinsate or other pesticide-related materials in the container. Contact your state regulatory agency to determine allowable practices in your state. Once cleaned, some agricultural plastic pesticide containers can be taken to a container collection site or picked up for recycling. To find the nearest site, contact your chemical dealer or manufacturer, or contact The Agricultural Container Recycling Council (ACRC) at www.acrecycle.org. If not recycled, then puncture and dispose of in a sanitary landfill, or incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke. Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **For packages up to 5 gallons: Triple rinse as follows:** Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. **Pressure rinse as follows:** Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip. **For packages greater than 5 gallons or 50 lbs: Triple rinse as follows:** Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. **Pressure rinse as follows:** Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip. **For square bottom caged totes greater than 55 gals.: Triple rinse or pressure rinse as follows:** Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Fill the container about 1/4 full with water, rinsing down all sides inside the container thoroughly. Recirculate water with the pump for 2 minutes. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. **For refillable containers:** Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. Do not contaminate water, food or feed by storage or disposal.

14 TRANSPORT INFORMATION

14.3 LAND TRANSPORT

DOT Shipping Description: UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (TRIFLURALIN) 9, III ERG GUIDE 171
U.S. Surface Freight Classification: COMPOUND, TREE OR WEED KILLING, NOI (NMFC 50320, SUB 2: CLASS 60)

15 REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS

NFPA & HMIS Hazard Ratings:

NFPA			HMIS	
2	Health	0 Least	2	Health
1	Flammability	1 Slight	1	Flammability
0	Instability	2 Moderate	0	Reactivity
		3 High	I	PPE
		4 Severe		

SARA Hazard Notification/Reporting

SARA Title III Hazard Category:	Immediate	Y	Fire	N	Sudden Release of Pressure	N
	Delayed	Y	Reactive	N		

Reportable Quantity (RQ) under U.S. CERCLA: Trifluralin (CAS: 1582-09-8) 10 lbs.
SARA, Title III, Section 313: Trifluralin (CAS: 1582-09-8) 43.0% [TRI Threshold: 100 lbs.]; Naphthalene (CAS: 91-20-3) 7.0%
RCRA Waste Code: Not listed.
CA Proposition 65: WARNING: This product contains chemicals known to the State of California to cause cancer or birth defects or other reproductive harm.

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

CAUTION
Causes moderate eye injury.
Harmful if swallowed.
Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.
Avoid contact eyes, with skin, or clothing.

16 OTHER INFORMATION

SDS STATUS: Format revised.

PREPARED BY: Registrations and Regulatory Affairs

REVIEWED BY: Environmental Health and Safety

EPA REG. NO.: 34704-792

Disclaimer and Limitation of Liability: This data sheet was developed from information on the constituent materials identified herein and does not relate to the use of such materials in combination with any other material or process. No warranty is expressed or implied with respect to the completeness or ongoing accuracy of the information contained in this data sheet, and LOVELAND PRODUCTS, INC. disclaims all liability for reliance on such information. This data sheet is not a guarantee of safety. Users are responsible for ensuring that they have all current information necessary to safely use the product described by this data sheet for their specific purpose.

SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

COMPANY ADDRESS:
ALBAUGH, LLC
Ankeny, IA 50021

EMERGENCY TELEPHONE NUMBERS:
(800) 424-9300 (CHEMTREC, transportation and spills)

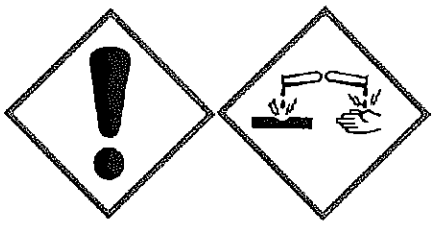
PRODUCT NAME : **NU-COP 50 DF**
CHEMICAL NAME : Copper (II) Hydroxide
PRODUCT USE : Fungicide
PRODUCT CODE : EPA Reg. No 45002-4

SECTION 2 - HAZARDS IDENTIFICATION SUMMARY

(As defined by OSHA Hazard Communication Standard, 29 CFR 1910.1200)

Teal green granular powder

HEALTH HAZARDS: **DANGER**. Corrosive. Causes irreversible eye damage if not treated promptly. Harmful if swallowed.



PHYSICAL HAZARDS:
Can decompose at high temperatures forming toxic gases.

ENVIRONMENTAL HAZARDS:
Toxic to fish and aquatic invertebrates.

SECTION 3 - COMPOSITION, INFORMATION OF INGREDIENTS

COMPONENT	PERCENTAGE	CAS NUMBER
Copper Hydroxide	76.77%	20427-59-2
Inert Ingredients	23.23%	n/a

SECTION 4 - FIRST AID MEASURES

First Aid responders should use protective equipment in Section 8 if there is a potential for exposure to product.

IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
IF SWALLOWED: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.
IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
IF INHALED: Move person to fresh air, if person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

NOTE TO PHYSICIAN: **Probable mucosal damage may contraindicate use of gastric lavage.**

Have a product container or label with you when calling a poison control center or doctor, or going for treatment.

SECTION 5 - FIRE FIGHTING MEASURES

National Fire Protection Rating (NFPA)

HEALTH	2
FLAMMABILITY	1
REACTIVITY	0
4=Severe 3=Serious 2=Moderate 1=Slight 0=Minimal	

FLASHPOINT: Will not flash

EXTINGUISHING MEDIA: Proper to primary cause of fire. Use foam, dry chemical, carbon dioxide, or water spray when fighting fires involving this material.

FIRE AND EXPLOSION HAZARD: Can burn in fire, releasing irritating and toxic gases due to thermal decomposition or combustion.

FIRE FIGHTING INSTRUCTIONS: Evacuate area and fight fire upwind from a safe distance to avoid hazardous vapors and decomposition products. Foam or dry chemical fire extinguishing system is preferred to prevent excessive water run off.

FIRE FIGHTING EQUIPMENT: If Copper Hydroxide is involved in a fire, avoid breathing smoke. Use a positive-pressure, self-contained breathing air supply. Avoid getting water from fire fighting into domestic or irrigation water supplies.

Minimize use of water to prevent environmental contamination

SECTION 6 - ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILLS OR LEAKS: Clean up spills immediately, observing precautions in Section 8 of this document. Isolate hazard area. Keep unnecessary and unprotected personnel from entering.

SMALL SPILL: Vacuum or sweep up material and place in a container for reuse or disposal.

LARGE SPILL: Avoid creating dust cloud. Vacuum or sweep up material and place in a container for reuse or disposal. Reduce airborne dust and prevent scattering by moistening with water. Pick up wash liquid with additional absorbent and place in a disposable container. After removal, flush contaminated area thoroughly with water.

This material should be prevented from contaminating soil or from entering sewage and drainage systems and bodies of water. Minimize use of water to prevent environmental contamination

SECTION 7 - HANDLING AND STORAGE

KEEP OUT OF REACH OF CHILDREN!

HANDLING: Use only in a well-ventilated area. Minimize dust generation and accumulation. Wear proper safety equipment specified in Section 8 when mixing, loading or otherwise handling concentrate.

STORAGE: Store in a cool, secure, dry area in original container. Do not contaminate water, food, or feed by storage or disposal.

SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS (8 hour TWA, mg/m^3):

COMPONENT	OSHA PEL	ACIGH TLV
Copper hydroxide (as Cu)	1.0	1.0

ENGINEERING CONTROLS: Proper ventilation is required when handling or using this product to avoid exposure to airborne contaminants above the exposure limit. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

PERSONAL PROTECTIVE EQUIPMENT: Mixers, loaders, applicators and other handlers must wear the following:
1. Long-sleeved shirt and long pants
2. Chemical resistant gloves made of any waterproof material
3. Shoes plus socks
4. Protective eyewear such as face shield or goggles

Some materials that are chemical-resistant to this product are barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, PVC and viton. If you want more options, follow the instructions for category A on an EPA chemical-resistance category selection chart.

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

USER SAFETY RECOMMENDATIONS: Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash outside of gloves before removing. As soon as possible wash thoroughly and change into clean clothing.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Teal green granular powder
Odor:	None
pH:	6.7 – 7.7
Melting Point:	No data
Boiling Point:	Not applicable
Flash Point:	Not applicable
Evaporation Rate:	Not applicable
Flammability:	Not flammable
Flammability Limits:	Not flammable
Vapor Pressure:	No data
Vapor Density:	No data
Density:	0.61 – 0.65 g/mL (5.09 – 5.42 lb/gal)
Solubility:	No data
Partition Coefficient:	No data
Auto-Ignition Temperature:	No data
Decomposition Temperature:	No data
Viscosity:	Not applicable

*Listed density is an approximate value and does not necessarily represent that of a specific batch.

SECTION 10 - STABILITY AND REACTIVITY

PRODUCT REACTIVITY: Copper is corrosive to aluminum, especially when in aqueous state and elevated temperatures.

CHEMICAL STABILITY: Stable, but may decompose if heated.

HAZARDOUS REACTION/POLYMERIZATION: Does not polymerize

CONDITIONS TO AVOID: Temperatures over 125 °F. Avoid exposure to high moisture conditions for prolonged periods.

INCOMPATIBLE MATERIALS: Ammonia or acid vapors. Strong acids.

HAZARDOUS DECOMPOSITION PRODUCTS:. Decomposes in high temperature to $CuO + H_2O$.

SECTION 11 - TOXICOLOGICAL INFORMATION

ACUTE TOXICITY:

Oral LD_{50} (rat)	1300 mg/kg
Dermal LD_{50} (rat)	2000 mg/kg
Inhalation LC_{50} (rat)	0.52 – 2.04 mg/L
Eye Irritation (rabbit)	Corrosive. Can cause irreversible damage if not treated promptly
Skin Irritation (rabbit)	Slightly irritating
Sensitization (guinea pig)	No data

CARCINOGEN STATUS:

OSHA	- Not listed
NTP	- Not listed
IARC	- Not listed

TERATOGENICITY: Not known to exhibit reproductive or teratogenic (birth defect) effects

MUTAGENICITY: No evidence of effects during in vivo or in vitro studies.

SECTION 12 - ECOLOGICAL INFORMATION

ENVIRONMENTAL SUMMARY: This pesticide is toxic to fish and aquatic invertebrates and may contaminate water through runoff. This product has a potential for runoff for several months or more after application. Poorly draining soils and soils with shallow water tables are more prone to produce runoff that contains this product. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas.
Do not contaminate water when disposing of equipment washwater or rinsate.

FATE: Copper hydroxide breaks down to metallic copper which is a chemical element and cannot be further degraded.

FISH TOXICITY: (technical)

96-hour LC_{50}, Rainbow trout –	10 mg/L
96-hour LC_{50}, Bluegill –	unknown

AVIAN TOXICITY: (technical)

8-day LC_{50}, Bobwhite quail –	> 5,000 mg/Kg
8-day LC_{50}, Mallard duck -	> 5,000 mg/Kg

BEE TOXICITY: (technical) - 68 ug ai/bee

SECTION 13 - DISPOSAL CONSIDERATIONS

Do not contaminate water, food or feed by storage or disposal.

WASTE DISPOSAL: Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

CONTAINER DISPOSAL: Nonrefillable container. Do not resuse or refill this container. Completely empty bag into application equipment. Offer for recycling, if available. Dispose of empty bag in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

SECTION 14 - TRANSPORT INFORMATION

SHIPPING DESCRIPTION:	Not regulated for ground transport
TRANSPORT HAZARD CLASS:	N/A
UN NUMBER:	N/A
DOT PACKING GROUP:	PG III

SECTION 15 - REGULATORY INFORMATION

CERCLA REPORTABLE QUANTITY:	5,000 lbs.
SARA TITLE III STATUS:	
311/312 Hazard Categories –	Acute Health
313 Toxic Chemicals –	Copper hydroxide
CALIFORNIA PROP 65:	Not listed
TSCA:	This product is exempted from TSCA because it is solely for FIFRA regulated use.

SECTION 16 - OTHER INFORMATION

HMIS HAZARD RATINGS	HEALTH	2
	FLAMMABILITY	1
	PHYSICAL HAZARD	0
	4=Severe 3=Serious 2=Moderate 1=Slight 0=Minimal	

DISCLAIMER: The information presented herein is based on available data from reliable sources and is correct to the best of Albaugh's knowledge. Albaugh makes no warranty, express or implied, regarding the accuracy of the data or the results obtained from the use of this product. Nothing herein may be construed as recommending any practice or any product in violation of any law or regulations. The user is solely responsible for determining the suitability of any material or product for a specific purpose and for adopting any appropriate safety precautions.

This Safety Data Sheet (SDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA APPROVED PRODUCT LABELING (attached to and accompanying the product container). This SDS provides important health, safety, and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course. Use, storage and disposal of pesticide products are regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling, and all necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling.

It is a violation of federal law to use a pesticide product in any manner not prescribed on the EPA-approved label.

REVISED DATE: August, 2016

REFERENCE: Updated ingredient percentage in Section 3 and Eye Irritation value in Section 11

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 PRODUCT IDENTIFIER:
TRADE NAME: **WRANGLER® INSECTICIDE**
1.2 RECOMMENDED USE: GROUP 4A INSECTICIDE
1.3 SUPPLIER DETAILS:
LOVELAND PRODUCTS, INC.
P.O. Box 1286 • Greeley, CO 80632-1286
1.4 24 Hour Emergency Phone: 1-800-424-9300 - **Medical Emergencies:** 1-866-944-8565 – **Product Information:** 1-888-574-2878 (LPI-CUST)
U.S. Coast Guard National Response Center: 1-800-424-8802

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to 29 CFR 1910.1200

Acute Toxicity - Oral	Category 4	H302
Acute Toxicity - Dermal	Category 4	H312
Acute Toxicity – Inhalation	Category 4	H332

2.2 Label elements

Signal word: WARNING

Hazard Statement:
H302 – Harmful if swallowed.
H312 – Harmful in contact with skin.
H332 – Harmful if inhaled.

Precautionary Statement: (Prevention):
P264 – Wash hands and face thoroughly after handling.
P270 – Do not eat, drink or smoke when using this product.
P280 – Wear protective gloves/protective clothing/eye protection/face protection.
P261 – Avoid breathing dust/fume/gas/mist/vapors/spray.
P271 – Use outdoors or in a well-ventilated area.

Precautionary Statement: (Response):
P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P330 – Rinse mouth.
P302+P352: IF ON SKIN: Wash with plenty of soap and water.
P312 – Call a POISON CENTER or doctor/physician if you feel unwell.
P321 – Specific treatment (see Note to Physician on the product label).
P362 – Take off contaminated clothing and wash it before reuse.
P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312 – Call a POISON CENTER or doctor/physician if you feel unwell.

Precautionary Statement: (Storage):
Not required or applicable.

Precautionary Statement: (Disposal):
P501 – Dispose of contents/container on site or at an approved waste disposal facility or in accordance with local, state, and federal requirements.

2.3 Other hazards
Risk to bees and other pollinators.

3. COMPOSITION, INFORMATION ON INGREDIENTS

3.1 Substances

3.2 Mixtures

Classification according to 29 CFR 1910.1200

Chemical Name:	CAS No.	Concentration [%]
Imidacloprid	138261-41-3, 105827-78-9	40.70
*Other ingredients	n/a	59.30

*Ingredients not specifically listed are non-hazardous or are to be considered proprietary or confidential business information per 29 CFR 1910.1200(i)

4. FIRST AID MEASURES

4.1 Description of First Aid Measures
General Advice: Get medical attention if symptoms occur.

If swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

If on skin or clothing: Take of contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

4.2 Most Important Symptoms and Effects, Acute and Delayed
Symptoms: Oral: Harmful if swallowed.
Dermal: Harmful in contact with skin.
Inhalation: Harmful if inhaled.

4.3 Immediate Medical Attention and Special Treatment

Treatment: Treat symptomatically. Symptoms may be delayed.
FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: 1-866-944-8565
Take container, label or product name with you when seeking medical attention.

NOTES TO PHYSICIAN: No specific antidote is available. Treat the patient symptomatically.

5. FIRE FIGHTING MEASURES

5.1 EXTINGUISHING MEDIA:

Suitable Extinguishing Media: Use medium appropriate to surrounding fire. Dry chemical, carbon dioxide (CO_2), dry chemical, alcohol foam, foam, water spray or fog.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE:

Specific Hazards During Firefighting: None known.

5.3 SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS

Special Protective Equipment for Firefighters: Self-contained breathing apparatus and full protective gear should be worn. Fight fire from upwind and keep all non-essential personnel out of the area. Use water spray to keep fire exposed containers cool. Contain run-off by diking to prevent contamination of water supplies.

6. ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Personal Precautions: Avoid inhalation of vapors and spray mist and contact with skin and eyes. Ensure adequate ventilation. Wear suitable protective clothing.

6.2 ENVIRONMENTAL PRECAUTIONS

Environmental Precautions: Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters. This pesticide is highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops/plants or weeds if bees are foraging. This product is toxic to wildlife and highly toxic to aquatic invertebrates.
This chemical demonstrates the properties and characteristics associated with chemicals detected in groundwater. The use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in ground water contamination.

6.3 METHODS AND MATERIALS FOR CONTAINMENT AND CLEAN-UP

Methods for Clean-Up: Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. After removal flush contaminated area thoroughly with water.
Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to Remove residual contamination.
Never return spills to original containers for re-use.

7. HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING:

Advice on Safe Handling: Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

7.2 CONDITIONS FOR SAFE STORAGE:

Requirements for Storage Areas and Containers: Store in a cool, dry place and in such a manner as to prevent cross contamination with other pesticides, fertilizers, food, and feed. Store in original container and out of the reach of children, preferably in a locked storage area. Handle and open container in a manner as to prevent spillage. If the container is leaking, invert to prevent leakage. If container is leaking or material spilled for any reason or cause, carefully dam up spilled material to prevent runoff. Refer to Precautionary Statements on label for hazards associated with the handling of this material. Do not walk through spilled material. Absorb spilled material with absorbing type compounds and dispose of as directed for pesticides below. In spill or leak incidents, keep unauthorized people away. Do not contaminate water, food or feed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 CONTROL PARAMETERS:

OCCUPATIONAL EXPOSURE LIMITS

U.S. Workplace Exposure Level (ACGIH) TLVs

Components	Type	Value
No listings		

U.S. Workplace Exposure Level (OSHA) PELs

Components	Type	Value
No listings		

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Specimen
No listings		

8.2 EXPOSURE CONTROLS:

Engineering Measures

Provide adequate general and local exhaust ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of vapors and spray mists. Provide eyewash station and safety shower.

Individual Protection Measures:

Eye / Face Protection: Goggles or shielded safety glasses are recommended.

Skin Protection: Long-sleeved shirt and long pants. Chemical-resistant gloves. Shoes plus socks.

Respiratory Protection: In case of inadequate ventilation or risk of inhalation of mists or vapors, use suitable respiratory equipment such as MSHA/NIOSH TC-84A with NIOSH equipped N, R, or P class filter media. Wear respiratory protection during operations where spraying or misting occurs. If respirators are used, a program should be in place to assure compliance with 29 CFR 1910.134, the OSHA Respiratory Protection standard. Wear air supplied respiratory protection if exposure concentrations are unknown.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 APPEARANCE : Liquid suspension
ODOR: Negligible.
ODOR THRESHOLD: No data available.
COLOR: Brown.
pH: 7.36.
MELTING POINT / FREEZING POINT: No data available.
BOILING POINT: No data available.
FLASH POINT: Not applicable.
FLAMMABILILITY (solid, gas): No data available.
UPPER / LOWER FLAMMABILITY OR EXPLOSIVE LIMITS: No data available.
VAPOR PRESSURE: No data available.
SOLUBILITY: Dispersible.
PARTITION CO-EFFICIENT, n-OCTANOL / WATER: No data available.
AUTO-IGNITION TEMPERATURE: No data available.
DECOMPOSITION TEMPERATURE: No data available.
VISCOSITY: No data available.
SPECIFIC GRAVITY (Water = 1): 1.206 g/ml
DENSITY: 10.06 lbs./gal | 1.21 kg/L

Note: These physical data are typical values based on material tested but may vary from sample to sample.
Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.

10. STABILITY AND REACTIVITY

10.1 REACTIVITY
Stable
10.2 CHEMICAL STABILITY
Stable under normal temperature conditions.
10.3 POSSIBILITY OF HAZARDOUS REACTIONS
Will not polymerize at normal temperatures.
10.4 CONDITIONS TO AVOID
None known.
10.5 INCOMPATIBILE MATERIALS
None known.
10.6 HAZARDOUS DECOMPOSITION PRODUCTS
Hydrogen chloride and oxides of nitrogen from thermal decomposition.

11 TOXICOLOGICAL INFORMATION

11.3 LIKELY ROUTES OF EXPOSURE
Ingestion. Skin absorption. Inhalation.
LC_{50} (rat): 2.1 mg/L (4 HR)
LD_{50} Oral (rat): 4,960 mg/kg
LD_{50} Dermal (rat): > 5,050 mg/kg
Acute Toxicity Estimates: No data available
Skin Irritation (rabbit): Not an irritant.
Eye Irritation (rabbit): Minimal irritation.
Specific Target Organ Toxicity: No data available.
Aspiration: No data available.
Skin Sensitization (guinea pig): Sensitizer
Carcinogenicity: No data available.
Germ Cell Mutagenicity: No data available
Interactive Effects: None known

12 ECOLOGICAL INFORMATION

12.3 ECOTOXICITY
The product is highly toxic to aquatic invertebrates. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
Ecotoxicological Data

	Species	Test Results
Imidacloprod	Apis mellifera	0.005 – 0.07 µg/bee – LD_{50} acute oral
	Apis mellifera	0.024 µg/bee – LD_{50} contact

Drift or runoff may adversely affect non-target plants.
Do not apply directly to water.
Do not contaminate water when disposing of equipment wash water.
Do not apply when weather conditions favor drift from target area.

12.2 PERSISTENCE AND DEGRADABILITY
Biodegradability: No data available.
12.3 BIOACCUMULATIVE POTENTIAL
Bioaccumulation: No data available
12.4 MOBILITY IN SOIL
No data available
12.5 OTHER ADVERSE EFFECTS
Assessment: No data available.

13 DISPOSAL CONSIDERATIONS

13.1 WASTE TREATMENT METHODS

Wastes may be disposed of on site or at an approved waste disposal facility. Triple rinse (or equivalent), adding rinse water to spray tank. Offer container for recycling or dispose of in a sanitary landfill or by other procedures approved by appropriate authorities. Recycling decontaminated containers is the best option of container disposal. The Agricultural Container Recycling Council (ACRC) operates the national recycling program. To contact your state and local ACRC recycler visit the ACRC web page at http://www.acrecycle.org/. Do not contaminate water, food or feed by storage or disposal.

14 TRANSPORT INFORMATION

14.3 LAND TRANSPORT

DOT Shipping Description: NOT REGULATED BY DOT
U.S. Surface Freight Classification: INSECTICIDES OR FUNGICIDES, INSECT OR ANIMAL REPELLENTS, NOI, OTHER THAN POISON (NMFC 102120, CLASS: 60)

15 REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS

NFPA & HMIS Hazard Ratings:

NFPA				HMIS	
2	Health	0	Least	2	Health
1	Flammability	1	Slight	1	Flammability
0	Instability	2	Moderate	0	Reactivity
		3	High	B	PPE
		4	Severe		

SARA Hazard Notification/Reporting
SARA Title III Hazard Category:

Immediate	N	Fire	N	Sudden Release of Pressure	N
Delayed	N	Reactive	N		

Reportable Quantity (RQ) under U.S. CERCLA: Not listed.
SARA, Title III, Section 313: Not listed.
RCRA Waste Code: Not listed.
CA Proposition 65: Not applicable.

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

CAUTION
Harmful if swallowed, absorbed through skin, or inhaled.
Avoid breathing vapor or spray mist.
Wash thoroughly with soap and water after handling.
Remove contaminated clothing and wash before reuse.

16 OTHER INFORMATION

SDS STATUS: Format revised.

PREPARED BY: Registrations and Regulatory Affairs **REVIEWED BY:** Environmental Health and Safety

EPA REG. NO.: 34704-931

Wrangler is a registered trademark of Loveland Products, Inc.

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Safety Data Sheet

syngenta®

TILT®

Date: 7/6/2015
Replaces: 5/5/2015

1. PRODUCT IDENTIFICATION

Product identifier on label: **TILT®**
Product No.: A6140A
Use: Fungicide
Manufacturer: Syngenta Crop Protection, LLC
Post Office Box 18300
Greensboro NC 27419

Manufacturer Phone: 1-800-334-9481

Emergency Phone: 1-800-888-8372

2. HAZARDS IDENTIFICATION

Classifications:
Skin Corrosion/Irritation: Category 2
Oral: Category 4
Skin Sensitizer: Category 1B
Carcinogenicity: Category 2
Specific Target Organ Toxicity: Repeated Category 2
Specific Target Organ Toxicity: Drowsiness Category 3
Specific Target Organ Toxicity: Respiratory Irritation Category 3
Aspiration Hazard: Category 1
Flammable Liquid: Category 3
Eye Damage/Irritation: Category 2B

Signal Word (OSHA): Danger

Hazard Statements:
Flammable liquid and vapor
Harmful if swallowed
May be fatal if swallowed and enters airways
Causes skin irritation
May cause an allergic skin reaction
Causes eye irritation
May cause respiratory irritation
May cause drowsiness or dizziness
Suspected of causing cancer
May cause damage to organs through prolonged or repeated exposure

Hazard Symbols:

Precautionary Statements:

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical advice.

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Keep away from heat, sparks, open flames, hot surfaces. No smoking.

Keep container tightly closed.

Ground and bond container and receiving equipment.

Use explosion-proof electrical, ventilating, lighting equipment.

Use only non-sparking tools.

Take precautionary measures against static discharge.

Do not breathe mist, vapors, spray.

Wash hands and face thoroughly after handling.

Do not eat, drink or smoke when using this product.

Use only outdoors or in a well-ventilated area.

Contaminated work clothing must not be allowed out of the workplace.

Wear protective gloves, protective clothing, eye protection.

If swallowed: Call a poison center, doctor or Syngenta if you feel unwell. Rinse mouth.

If on skin: Wash with plenty of soap and water.

If on skin or hair: Take off immediately all contaminated clothing. Rinse skin with water.

If skin irritation or rash occurs: Get medical advice.

If inhaled: Remove person to fresh air and keep comfortable for breathing.

If exposed or concerned: Get medical advice/attention.

Call a poison center, doctor or Syngenta if you feel unwell.

See Section 4 First Aid Measures.

Do NOT induce vomiting.

Take off contaminated clothing and wash it before reuse.

In case of fire: Use dry chemical, foam or CO_2 for extinction.

Store in a well-ventilated place. Keep cool.

Store locked up.

Dispose of contents and container in accordance with local regulations.

Other Hazard Statements: None

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Common Name	CAS Number	Concentration
Ethyl Benzene	Ethyl Benzene	100-41-4	<5.0%
Xylene	Xylene	1330-20-7	<15.0%
1,2,4-Trimethylbenzene	1,2,4-Trimethylbenzene	95-63-6	<20.0%

Petroleum Solvent	Petroleum Solvent	Trade Secret	Trade Secret
Other ingredients	Other ingredients	Trade Secret	>18.2%
1-[[2-(2,4-dichlorophenyl)-4-propyl-1,3-dioxolan-2-yl]methyl]-1H-1,2,4-triazole	Propiconazole	60207-90-1	41.8%

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.

4. FIRST AID MEASURES

Have the product container, label or Safety Data Sheet with you when calling Syngenta (800-888-8372), a poison contol center or doctor, or going for treatment.

Ingestion: If swallowed: Call Syngenta (800-888-8372), a poison control center or doctor immediately for treatment advice. Do not give any liquid to the person. Do not induce vomiting unless told to do so after calling 800-888-8372 or by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

Eye Contact: If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.

Skin Contact: If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.

Inhalation: If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call Syngenta (800-888-8372), a poison control center or doctor for further treatment advice.

Most important symptoms/effects:

Eye irritation

Skin irritation

Allergic skin reaction

Drowsiness or dizziness

Respiratory irritation

Indication of immediate medical attention and special treatment needed:

There is no specific antidote if this product is ingested.

Treat symptomatically.

Persons suffering a temporary allergic reaction may respond to treatment with antihistamines or steroid creams and/or systemic steroids.

Contains petroleum distillate - vomiting may cause aspiration pneumonia.

5. FIRE FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media:

Use dry chemical, foam or CO2 extinguishing media. If water is used to fight fire, dike and collect runoff.

Specific Hazards:

Flammable liquid. Can release vapors that form explosive mixtures at temperatures at or above the flash point. Heavy vapors can flow along surfaces to distant ignition sources and flash back.

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

Special protective equipment and precautions for firefighters:

Wear full protective clothing and self-contained breathing apparatus. Evacuate nonessential personnel from the area to prevent human exposure to fire, smoke, fumes or products of combustion.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures:

Follow exposure controls/personal protection outlined in Section 8.

Methods and materials for containment and cleaning up:

Warning - flammable vapors may be present. Eliminate sources of ignition and ventilate spill area. Use non-sparking clean-up equipment to prevent vapor ignition.

Control the spill at its source. Contain the spill to prevent from spreading or contaminating soil or from entering sewage and drainage systems or any body of water. Clean up spills immediately, observing precautions in Protective Equipment Section. Cover entire spill with absorbing material and place into compatible disposal container. Scrub area with hard water detergent (e.g. commercial products such as Tide, Joy, Spic and Span). Pick up wash liquid with additional absorbent and place into compatible disposal container. Once all material is cleaned up and placed in a disposal container, seal container and arrange for disposition.

7. HANDLING AND STORAGE

Precautions for safe handling:

Store the material in a well-ventilated, secure area out of reach of children and domestic animals. Do not store food, beverages or tobacco products in the storage area. Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

Conditions for safe storage, including any incompatibilities:

Store locked up.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION AND PACKAGING OF THIS PRODUCT.

FOR COMMERCIAL APPLICATIONS AND/OR ON-FARM APPLICATIONS CONSULT THE PRODUCT LABEL.

Occupational Exposure Limits:

Chemical Name	OSHA PEL	ACGIH TLV	Other	Source
Ethyl Benzene	100 ppm TWA	20 ppm TWA; 125 ppm STEL	100 ppm TWA; 125 ppm STEL	Manufacturer
Xylene	100 ppm TWA	100 ppm TWA; 150 ppm STEL	100 ppm TWA	NIOSH
1,2,4-Trimethylbenzene	Not Established	25 ppm TWA	25 ppm TWA	NIOSH
Petroleum Solvent	Not Established	Not Established	100 mg/m³ TWA	Manufacturer
Other ingredients	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Propiconazole	Not Established	Not Established	5 mg/m³ TWA	Syngenta

Appropriate engineering controls:

Use effective engineering controls to comply with occupational exposure limits (if applicable).

Individual protection measures:

Ingestion:

Prevent eating, drinking, tobacco usage and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

Eye Contact:

Where eye contact is likely, use chemical splash goggles. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

Skin Contact:

Where contact is likely, wear chemical-resistant (such as barrier laminate or Viton) gloves, coveralls, socks and chemical-resistant footwear.

Inhalation:

A combination particulate/ organic vapor respirator may be necessary until effective engineering controls are installed to comply with occupational exposure limits. Use a NIOSH approved respirator with an organic vapor (OV) cartridge or canister with an HE prefilter.

Use a self-contained breathing apparatus in cases of emergency spills, when exposure levels are unknown, or under any circumstances where air-purifying respirators may not provide adequate protection.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Amber liquid

Odor: Aromatic solvent

Odor Threshold: Not Available

pH: 4 - 7 (1% solution in H2O @ 77°F (25°C))

Melting point/freezing point: Not Available

Initial boiling point and boiling range: 356°F (180°C)

Flash Point (Test Method): 100°F

Flammable Limits (% in Air): Not Available

Flammability: Flammable liquid and vapor

Vapor Pressure: Propiconazole 4.2 x 10(-7) mmHg @ 77°F (25°C)

Vapor Density: Not Available

Relative Density: 1.0306 g/cm³ ; 8.60 lbs/gal @ 68°F (20°C)

Solubility (ies): Propiconazole 0.1 g/l @ 68°F (20°C)

Partition coefficient: n-octanol/water: Not Available

Autoignition Temperature: > 752°F

Decomposition Temperature: Not Available

Viscosity: Not Available

Other: None

10. STABILITY AND REACTIVITY

Reactivity: Not reactive.

Chemical stability: Stable under normal use and storage conditions.

Possibility of hazardous reactions: Will not occur.

Conditions to Avoid: Not Available

Incompatible materials: None known.

Hazardous Decomposition Products: Not Available

11. TOXICOLOGICAL INFORMATION

Health effects information

Likely routes of exposure: Dermal, Inhalation

Symptoms of exposure: Eye irritation, Drowsiness or dizziness, Skin irritation, Respiratory irritation

Delayed, immediate and chronic effects of exposure: Eye irritation, Skin irritation, Allergic skin reaction, Drowsiness or dizziness, Respiratory irritation

Numerical measures of toxicity (acute toxicity/irritation studies (finished product))

Ingestion:	Oral (LD50 Rat) :	1310 mg/kg body weight
Dermal:	Dermal (LD50 Rabbit) :	> 5000 mg/kg body weight
Inhalation:	Inhalation (LC50 Rat) :	> 2.5 mg/l air - 4 hours
Eye Contact:	Moderately Irritating (Rabbit)	
Skin Contact:	Moderately Irritating (Rabbit)	
Skin Sensitization:	Sensitizing (Guinea Pig)	

Reproductive/Developmental Effects

Propiconazole: None observed.

Chronic/Subchronic Toxicity Studies

Propiconazole: None observed.

Carcinogenicity

Propiconazole: Increased hepatocellular adenomas, combined adenomas/carcinomas, and hepatocellular carcinomas observed in male mice in a chronic oral feeding study. However, animals in the high dose group for this study showed excessive toxicity; furthermore, the high dose exceeded the Maximum Tolerated Dose determined in the 90-day range finding study. No treatment-related tumors were seen in female mice in this mouse chronic feeding study. No tumors were noted in a chronic rat study.

Chemical Name	NTP/IARC/OSHA Carcinogen
Ethyl Benzene	IARC Group 2B
Xylene	IARC Group 3
1,2,4-Trimethylbenzene	No
Petroleum Solvent	No
Other ingredients	No
1-[[2-(2,4-dichlorophenyl)-4-propyl-1,3-dioxolan-2-yl]methyl]-1H-1,2,4-triazole	No

Other Toxicity Information

None

Toxicity of Other Components

1,2,4-Trimethylbenzene

Inhalation of 1,2,4-trimethylbenzene at high concentrations can cause central nervous system depression, respiratory tract irritation, asphyxiation, cardiac stress and coma. Effects of chronic exposure to this solvent can include blood disorders (anemia, leukopenia) and kidney or liver damage.

Ethyl Benzene

Inhalation of ethyl benzene at high concentrations can cause central nervous system depression, respiratory tract irritation, asphyxiation, cardiac stress and coma.

Other ingredients

Not Applicable

Petroleum Solvent

Respiratory irritation, dizziness, nausea, loss of consciousness.

Xylene

Inhalation of xylene at high concentrations can cause central nervous system depression, respiratory tract irritation, asphyxiation, cardiac stress and coma.

Target Organs

Active Ingredients

Propiconazole:	Liver

Inert Ingredients

1,2,4-Trimethylbenzene:	CNS, liver, kidney, blood, respiratory tract, skin, eye
Ethyl Benzene:	CNS, respiratory tract, skin
Other ingredients:	Not Applicable
Petroleum Solvent:	Respiratory tract, CNS, skin
Xylene:	CNS, respiratory tract, skin

12. ECOLOGICAL INFORMATION

Eco-Acute Toxicity

Propiconazole:

Fish (Rainbow Trout) 96-hour LC50 0.83 ppm

Invertebrate (Water Flea) 48-hour EC50 3.2 ppm

Green Algae 9-day EC50 0.72 ppm

Bird (Mallard Duck) 14-day LD50 2510 mg/kg

Environmental Fate

Propiconazole:

The information presented here is for the active ingredient, propiconazole.
Low bioaccumulation potential. Not persistent in soil. Stable in water. Low mobility in soil. Sinks in water (after 24 h).

13. DISPOSAL CONSIDERATIONS

Disposal:

Do not reuse product containers. Dispose of product containers, waste containers, and residues according to local, state, and federal health and environmental regulations.

Characteristic Waste: Ignitable D001

Listed Waste: Not Applicable

14. TRANSPORT INFORMATION

DOT Classification

Ground Transport - NAFTA
Proper Shipping Name: Flammable Liquid, N.O.S. (Xylene/Ethylbenzene)
Hazard Class: Class 3
Identification Number: UN 1993
Packing Group: PG III
Note: RQ = 1000 gal. for Xylene

Comments

Water Transport - International
Proper Shipping Name: Flammable Liquid, N.O.S. (Xylene/Ethylbenzene), Marine Pollutant, (Propiconazole)
Hazard Class: Class 3
Identification Number: UN 1993
Packing Group: PG III

Air Transport
Proper Shipping Name: Flammable Liquid, N.O.S. (Xylene/Ethylbenzene)
Hazard Class: Class 3
Identification Number: UN 1993
Packing Group: PG III

15. REGULATORY INFORMATION

Pesticide Registration:

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

Warning: Causes substantial but temporary eye injury. Do not get in eyes, on skin, or on clothing. Harmful if swallowed, inhaled, or absorbed through skin. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Avoid breathing spray mist. This product may cause skin sensitization reactions in certain individuals.

EPA Registration Number(s):

100-617

EPCRA SARA Title III Classification:

Section 311/312 Hazard Classes:	Acute Health Hazard
	Fire Hazard
Section 313 Toxic Chemicals:	Propiconazole 41.8% (CAS No. 60207-90-1)
	Ethyl Benzene <5.0% (CAS No. 100-41-4)
	Xylene <15.0% (CAS No. 1330-20-7)
	1,2,4-Trimethylbenzene <20.0% (CAS No. 95-63-6)

California Proposition 65:

This product contains trace amounts of chemical(s) known to the State of California to cause cancer as unintended impurities resulting from other entities manufacturing or processing operations which Syngenta cannot control.

CERCLA/SARA 304 Reportable Quantity (RQ):

Report product spills > 1,000 gal. (based on p-xylene [RQ = 100 lbs.] content in the formulation)

RCRA Hazardous Waste Classification (40 CFR 261):

Ignitable D001

TSCA Status:

Exempt from TSCA, subject to FIFRA

16. OTHER INFORMATION

NFPA Hazard Ratings		HMIS Hazard Ratings	
Health:	2	Health:	2
Flammability:	2	Flammability:	2
Instability:	0	Reactivity:	0

0	Minimal
1	Slight
2	Moderate
3	Serious
4	Extreme
*	Chronic

Syngenta Hazard Category: C,S

For non-emergency questions about this product call:

1-800-334-9481

Original Issued Date: 11/15/1985
Revision Date: 7/6/2015 Replaces: 5/5/2015
Section(s) Revised: 2

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.

Dow AgroSciences

SAFETY DATA SHEET
DOW AGROSCIENCES LLC

Product name: GOAL™ 2XL Herbicide

Issue Date: 10/28/2015
Print Date: 11/02/2015

DOW AGROSCIENCES LLC encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: GOAL™ 2XL Herbicide

Recommended use of the chemical and restrictions on use
Identified uses: End use herbicide product

COMPANY IDENTIFICATION
DOW AGROSCIENCES LLC
9330 ZIONSVILLE RD
INDIANAPOLIS IN 46268-1053
UNITED STATES

Customer Information Number: 800-992-5994
info@dow.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 800-992-5994
Local Emergency Contact: 352-323-3500

2. HAZARDS IDENTIFICATION

Hazard classification
This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.
Skin irritation - Category 2
Eye irritation - Category 2A
Skin sensitisation - Sub-category 1B
Carcinogenicity - Category 2
Reproductive toxicity - Category 1B
Specific target organ toxicity - single exposure - Category 3
Aspiration hazard - Category 1

Label elements
Hazard pictograms

Signal word: **DANGER!**

Hazards
May be fatal if swallowed and enters airways.
Causes skin irritation.
May cause an allergic skin reaction.
Causes serious eye irritation.
May cause respiratory irritation.
Suspected of causing cancer.
May damage fertility or the unborn child.

Precautionary statements

Prevention
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing should not be allowed out of the workplace.
Wear eye protection/ face protection.
Wear protective gloves.
Use personal protective equipment as required.

Response
IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
IF ON SKIN: Wash with plenty of soap and water.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical advice/ attention.
Do NOT induce vomiting.
If skin irritation or rash occurs: Get medical advice/ attention.
If eye irritation persists: Get medical advice/ attention.
Take off contaminated clothing and wash before reuse.

Storage
Store in a well-ventilated place. Keep container tightly closed.
Store locked up.

Disposal
Dispose of contents/ container to an approved waste disposal plant.

Other hazards
No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature: Mixture
This product is a mixture.

Component	CASRN	Concentration
Oxyfluorfen	42874-03-3	22.3%
2-Methylnaphthalene	91-57-6	15.0%
N-Methyl-2-pyrrolidone	872-50-4	10.0%
Benzenesulfonic acid, dodecyl-, calcium salt	26264-06-2	9.1%
Naphthalene	91-20-3	>= 0.4 - < 8.6 %
1-Methylnaphthalene	90-12-0	7.2%
Isobutanol	78-83-1	>= 1.0 - <= 1.6 %

4. FIRST AID MEASURES

Description of first aid measures
General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice.

Skin contact: Take off contaminated clothing. Wash skin with soap and plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. Wash clothing before reuse. Shoes and other leather items which cannot be decontaminated should be disposed of properly. Suitable emergency safety shower facility should be available in work area.

Eye contact: Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice. Suitable emergency eye wash facility should be immediately available.

Ingestion: Immediately call a poison control center or doctor. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give any liquid to the person. Do not give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed: Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and

special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed
Notes to physician: Repeated excessive exposure may aggravate preexisting lung disease. Skin contact may aggravate preexisting dermatitis. Maintain adequate ventilation and oxygenation of the patient. May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants, antitussives and corticosteroids may be of help. If burn is present, treat as any thermal burn, after decontamination. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. The decision of whether to induce vomiting or not should be made by a physician. Administer 100% oxygen to relieve headache and a general sense of weakness. Determine methemoglobin concentration of blood every 3 to 6 hours for first 24 hours. It should return to normal within 24 hours. The treatment of toxic methemoglobinemia may include the intravenous administration of methylene blue. If methemoglobin >10-20% consider methylene blue 1-2 mg/kg body weight as 1% solution intravenously over 5 minutes followed by 15-30 cc flush (Price D, Methemoglobinemia, Goldfrank Toxicologic Emergencies, 5th ed., 1994). Also provide 100% oxygen. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

Unsuitable extinguishing media: Do not use direct water stream. May spread fire.

Special hazards arising from the substance or mixture
Hazardous combustion products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Nitrogen oxides. Hydrogen fluoride. Hydrogen chloride. Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Dense smoke is produced when product burns.

Advice for firefighters
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Consider feasibility of a controlled burn to minimize environment damage. Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers,

boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to section 7, Handling, for additional precautionary measures. Keep upwind of spill. Keep personnel out of low areas. Ventilate area of leak or spill. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. Spills or discharge to natural waterways is likely to kill aquatic organisms.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling: Keep out of reach of children. Do not swallow. Avoid contact with eyes, skin, and clothing. Avoid breathing vapor. Avoid prolonged or repeated contact with skin. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage: Store in a dry place. Store in original container. Keep container tightly closed. Do not store near food, foodstuffs, drugs or potable water supplies.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Oxyfluorfen	Dow IHG	TWA	0.2 mg/m3
2-Methylnaphthalene	ACGIH	TWA	0.5 ppm
N-Methyl-2-pyrrolidone	US WEEL	TWA	10 ppm
	US WEEL	TWA	SKIN
Naphthalene	Dow IHG	TWA	10 ppm
	Dow IHG	TWA	SKIN
	Dow IHG	STEL	15 ppm
	Dow IHG	STEL	SKIN
	ACGIH	TWA	10 ppm
	ACGIH	TWA	SKIN
	OSHA Z-1	TWA	50 mg/m3 10 ppm
1-Methylnaphthalene	ACGIH	TWA	0.5 ppm

Isobutanol	ACGIH	TWA		50 ppm
	OSHA Z-1	TWA	300 mg/m3	100 ppm
	OSHA P0	TWA	150 mg/m3	50 ppm

RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.

Exposure controls

Engineering controls: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use chemical goggles.

Skin protection

Hand protection: Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Chlorinated polyethylene. Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl alcohol ("PVA"). Polyvinyl chloride ("PVC" or "vinyl"). Styrene/butadiene rubber. Viton. Examples of acceptable glove barrier materials include: Butyl rubber. Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator.
The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	Liquid.
Color	Yellow to brown
Odor	Sweet
Odor Threshold	No test data available
pH	*7 pH Electrode*
Melting point/range	Not applicable
Freezing point	No test data available

Boiling point (760 mmHg)	201.7 °C (395.1 °F)
Flash point	**closed cup** 98 °C (208 °F) *Setaflash Closed Cup ASTM D3828*
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammability (solid, gas)	Flammable liquid
Lower explosion limit	1.3 % vol Solvent
Upper explosion limit	11.8 % vol Solvent
Vapor Pressure	0.29 hPa at 20 °C (68 °F)
Relative Vapor Density (air = 1)	5.2
Relative Density (water = 1)	1.077 at 20 °C (68 °F) *Digital Density Meter (Oscillating Coil)*
Water solubility	emulsifiable
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	346 °C (655 °F)
Decomposition temperature	290 °C (554 °F)
Dynamic Viscosity	5.9 mPa.s at 39.9 °C (103.8 °F)
Kinematic Viscosity	No data available
Explosive properties	No
Oxidizing properties	yes
Liquid Density	1.077 g/cm3 at 20 °C (68 °F) *Digital density meter*
Molecular weight	No data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: No dangerous reaction known under conditions of normal use.

Chemical stability: Thermally stable at typical use temperatures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Some components of this product can decompose at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible materials: Avoid contact with: Acids. Amines. Bases. Halogens.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Carbon monoxide. Carbon dioxide. Hydrogen chloride. Hydrogen fluoride. Nitrogen oxides. Toxic gases are released during decomposition.

11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Acute toxicity

Acute oral toxicity
Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

As product:
LD50, Rat, female, 3,129 mg/kg

Acute dermal toxicity
Prolonged skin contact is unlikely to result in absorption of harmful amounts.

As product:
LD50, Rat, male and female, > 5,000 mg/kg

Acute inhalation toxicity
No adverse effects are anticipated from single exposure to mist. Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs.

As product:
LC50, Rat, male and female, 4 Hour, dust/mist, > 5.12 mg/l OECD Test Guideline 403 No deaths occurred at this concentration.

Skin corrosion/irritation
Brief contact may cause severe skin irritation with pain and local redness.
May cause drying and flaking of the skin.
Prolonged contact may cause skin irritation, even a burn.

Serious eye damage/eye irritation
May cause moderate eye irritation which may be slow to heal.
May cause slight corneal injury.

Sensitization
Has caused allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)
May cause respiratory irritation.

Specific Target Organ Systemic Toxicity (Repeated Exposure)
For the active ingredient(s):
In animals, effects have been reported on the following organs:
Liver.
Blood.
Spleen.

Contains component(s) which have been reported to cause effects on the following organs in animals:
Blood-forming organs (Bone marrow & Spleen).
Excessive exposure may cause hemolysis, thereby impairing the blood's ability to transport oxygen.

Liver.
Cataracts and other eye effects have been reported in humans repeatedly exposed to naphthalene vapor or dust.
Ingestion of naphthalene by humans has caused hemolytic anemia.
Central nervous system.
Excessive exposure to solvent(s) may cause respiratory irritation and central nervous system depression.

Carcinogenicity
Contains naphthalene which has caused cancer in some laboratory animals. In humans, there is limited evidence of cancer in workers involved in naphthalene production. Limited oral studies in rats were negative.

For the active ingredient(s): An increase in spontaneously occurring tumors observed in mice is of questionable relevance. No increases in tumors were observed in rats.

Teratogenicity
For the active ingredient(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Active ingredient did not cause birth defects in laboratory animals.

For the solvent(s): Did not cause birth defects or any other fetal effects in laboratory animals.

N-methyl pyrrolidone has caused toxic effects to the fetus in laboratory animals at high dose levels with either mild or undetectable maternal toxicity.

Reproductive toxicity
For the active ingredient(s): In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

Mutagenicity
In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Based on information for component(s): In vitro genetic toxicity studies were negative in some cases and positive in other cases.

Aspiration Hazard
May be fatal if swallowed and enters airways.

Carcinogenicity

Component	List	Classification
Naphthalene	IARC	Group 2B: Possibly carcinogenic to humans
	US NTP	Reasonably anticipated to be a human carcinogen
	ACGIH	A3: Confirmed animal carcinogen with unknown relevance to humans.

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

Toxicity

Oxyfluorfen

Acute toxicity to fish
Material is very highly toxic to aquatic organisms on an acute basis (LC50/EC50 <0.1 mg/L in the most sensitive species).
LC50, Rainbow trout (Oncorhynchus mykiss), static test, 96 Hour, 0.25 mg/l

Acute toxicity to aquatic invertebrates
EC50, water flea Daphnia magna, 48 Hour, 0.072 mg/l

Acute toxicity to algae/aquatic plants
EbC50, diatom Navicula sp., static test, 96 Hour, Biomass, 0.031 mg/l, OECD Test Guideline 201 or Equivalent

Chronic toxicity to fish
NOEC, Pimephales promelas (fathead minnow), flow-through test, 33 d, survival, 0.038 mg/l
NOEC, Pimephales promelas (fathead minnow), flow-through test, 265 d, survival, 0.005 mg/l
NOEC, Cyprinodon variegatus (sheepshead minnow), flow-through test, 34 d, growth, 0.0047 mg/l

Chronic toxicity to aquatic invertebrates
NOEC, water flea Daphnia magna, flow-through test, 21 d, 0.013 mg/l

Toxicity to Above Ground Organisms
Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).
Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).
LD50, Colinus virginianus (Bobwhite quail), > 2,150 mg/kg
LC50, Anas platyrhynchos (Mallard duck), 8 d, > 5,000 mg/kg
oral LD50, Apis mellifera (bees), 48 Hour, > 100micrograms/bee
contact LD50, Apis mellifera (bees), 48 Hour, > 100.0micrograms/bee
dietary LC50, Colinus virginianus (Bobwhite quail), > 5,000 mg/kg

2-Methylnaphthalene

Acute toxicity to fish
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).
LC50, Oncorhynchus mykiss (rainbow trout), 96 Hour, 1.5 mg/l

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), 48 Hour, 1.5 mg/l

N-Methyl-2-pyrrolidone

Acute toxicity to fish
Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).
LC50, Oncorhynchus mykiss (rainbow trout), static test, 96 Hour, > 5,000 mg/l
LC50, Pimephales promelas (fathead minnow), static test, 96 Hour, 1,072 mg/l

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), static test, 24 Hour, > 1,000 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants

ErC50, Desmodesmus subspicatus (green algae), static test, 72 Hour, Growth rate inhibition, > 500 mg/l, OECD Test Guideline 201 or Equivalent

Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), semi-static test, 21 d, 12.5 mg/l

Benzenesulfonic acid, dodecyl-, calcium salt

Acute toxicity to fish
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).
LC50, Cyprinus carpio (Carp), 96 Hour, 2.8 - 4.2 mg/l, Method Not Specified.
LC50, Oryzias latipes (Orange-red killifish), 48 Hour, 3.0 - 5.3 mg/l, Method Not Specified.

Naphthalene

Acute toxicity to fish
Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested).
LC50, Oncorhynchus mykiss (rainbow trout), 96 Hour, 0.11 mg/l

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), static test, 48 Hour, 1.6 - 24.1 mg/l

Acute toxicity to algae/aquatic plants
ErC50, Skeletonema costatum (marine diatom), Growth rate inhibition, 72 Hour, 0.4 mg/l

Chronic toxicity to fish
NOEC, Other, flow-through, 40 d, mortality, 0.37 mg/l

1-Methylnaphthalene

Acute toxicity to fish
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).
LC50, Pimephales promelas (fathead minnow), 96 Hour, 9 mg/l

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), 48 Hour, 1.2 - 1.4 mg/l

Isobutanol

Acute toxicity to fish
Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).
LC50, Pimephales promelas (fathead minnow), flow-through test, 96 Hour, 1,430 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates
EC50, Daphnia pulex (Water flea), static test, 48 Hour, 1,100 mg/l

Acute toxicity to algae/aquatic plants
ErC50, Pseudokirchneriella subcapitata (green algae), static test, 72 Hour, Growth rate inhibition, 1,799 mg/l

Toxicity to bacteria
IC50, activated sludge, static test, 16 Hour, Growth inhibition, > 1,000 mg/l

Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), 21 d, number of offspring, 20 mg/l
MATC (Maximum Acceptable Toxicant Level), Daphnia magna (Water flea), 21 d, number of offspring, 28 mg/l

Persistence and degradability

Oxyfluorfen

Biodegradability: Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.

Theoretical Oxygen Demand: 1.305 mg/mg

Stability in Water (1/2-life)
Hydrolysis, 3.9 d, pH 5 - 9, Half-life Temperature 20 °C

2-Methylnaphthalene

Biodegradability: Expected to degrade slowly in the environment.

N-Methyl-2-pyrrolidone

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Pass
Biodegradation: 91 %
Exposure time: 28 d
Method: OECD Test Guideline 301B or Equivalent
10-day Window: Not applicable
Biodegradation: 73 %
Exposure time: 28 d
Method: OECD Test Guideline 301C or Equivalent
10-day Window: Not applicable
Biodegradation: > 90 %
Exposure time: 8 d
Method: OECD Test Guideline 302B or Equivalent

Theoretical Oxygen Demand: 2.58 mg/mg

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 0.486 d
Method: Estimated.

Benzenesulfonic acid, dodecyl-, calcium salt

Biodegradability: For similar material(s): Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Pass
Biodegradation: 95 %
Exposure time: 28 d
Method: OECD Test Guideline 301E or Equivalent

Naphthalene

Biodegradability: Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%).

Theoretical Oxygen Demand: 3.00 mg/mg

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	57.000 %
10 d	71.000 %
20 d	71.000 %

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 5.9 Hour
Method: Estimated.

1-Methylnaphthalene

Biodegradability: Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.
10-day Window: Not applicable
Biodegradation: 0 - 2 %
Exposure time: 28 d
Method: OECD Test Guideline 301C or Equivalent

Isobutanol

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Pass
Biodegradation: 70 - 80 %
Exposure time: 28 d
Method: OECD Test Guideline 301D or Equivalent
10-day Window: Not applicable
Biodegradation: 90 %
Exposure time: 14 d
Method: OECD Test Guideline 301C or Equivalent

Theoretical Oxygen Demand: 2.59 mg/mg Estimated.

Chemical Oxygen Demand: 2.29 mg/mg Dichromate

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	64 - 69 %
10 d	73 - 79 %
20 d	72 - 81 %

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals

Atmospheric half-life: 1.55 d
Method: Estimated.

Bioaccumulative potential

Oxyfluorfen
Bioconcentration factor (BCF): 184 - 1,151 Lepomis macrochirus (Bluegill sunfish) 168 Hour

2-Methylnaphthalene
Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water(log Pow): 3.86 Estimated.

N-Methyl-2-pyrrolidone
Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): -0.38 Measured

Benzenesulfonic acid, dodecyl-, calcium salt
Bioaccumulation: Bioconcentration potential is high (BCF > 3000 or Log Pow between 5 and 7).
Partition coefficient: n-octanol/water(log Pow): 6.78 estimated

Naphthalene
Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water(log Pow): 3.3 Measured
Bioconcentration factor (BCF): 40 - 300 Fish 28 d Measured

1-Methylnaphthalene
Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water(log Pow): 3.87 Estimated.

Isobutanol
Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): 0.76 Measured
Bioconcentration factor (BCF): 2 Estimated.

Mobility in soil

Oxyfluorfen
Expected to be relatively immobile in soil (Koc > 5000).
Partition coefficient(Koc): 6831

2-Methylnaphthalene
No relevant data found.

N-Methyl-2-pyrrolidone
Potential for mobility in soil is very high (Koc between 0 and 50).
Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.
Partition coefficient(Koc): 21 Estimated.

Benzenesulfonic acid, dodecyl-, calcium salt

No relevant data found.

Naphthalene

Potential for mobility in soil is medium (Koc between 150 and 500).
Partition coefficient(Koc): 240 - 1300 Measured

Isobutanol

Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient(Koc): 2 Estimated.

13. DISPOSAL CONSIDERATIONS

Disposal methods: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

14. TRANSPORT INFORMATION

DOT

Proper shipping name	Environmentally hazardous substance, liquid, n.o.s.(Naphthalene)
UN number	UN 3082
Class	9
Packing group	III
Reportable Quantity	Naphthalene

Classification for SEA transport (IMO-IMDG):

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(Oxyfluorfen, Naphthalene)
UN number	UN 3082
Class	9
Packing group	III
Marine pollutant	Oxyfluorfen, Naphthalene
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Proper shipping name	Environmentally hazardous substance, liquid, n.o.s.(Oxyfluorfen, Naphthalene)
UN number	UN 3082
Class	9

Packing group III

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312
Acute Health Hazard
Chronic Health Hazard

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

Components	CASRN
N-Methyl-2-pyrrolidone	872-50-4
Naphthalene	91-20-3
Oxyfluorfen	42874-03-3

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
WARNING: This product contains a chemical(s) known to the State of California to cause birth defects or other reproductive harm.

Pennsylvania (Worker and Community Right-To-KnowAct): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:
The following product components are cited in the Pennsylvania Hazardous Substance List and/or the Pennsylvania Environmental Substance List, and are present at levels which require reporting.

Components	CASRN
2-Methylnaphthalene	91-57-6
N-Methyl-2-pyrrolidone	872-50-4
Benzenesulfonic acid, dodecyl-, calcium salt	26264-06-2
Naphthalene	91-20-3
1-Methylnaphthalene	90-12-0
Isobutanol	78-83-1

Pennsylvania (Worker and Community Right-To-KnowAct): Pennsylvania Special Hazardous Substances List:

To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

United States TSCA Inventory (TSCA)
This product contains chemical substance(s) exempt from U.S. EPA TSCA Inventory requirements. It is regulated as a pesticide subject to Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requirements.

Federal Insecticide, Fungicide and Rodenticide Act
EPA Registration Number: 62719-424
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

WARNING

Causes skin irritation
Causes moderate eye irritation
Harmful or fatal if swallowed or absorbed through the skin

16. OTHER INFORMATION

Hazard Rating System
NFPA

Health	Fire	Reactivity
2	1	0

Revision
Identification Number: 101223292 / A211 / Issue Date: 10/28/2015 / Version: 5.0
DAS Code: GF-1243
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

ACGIH	USA. ACGIH Threshold Limit Values (TLV)
Dow IHG	Dow Industrial Hygiene Guideline
OSHA P0	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
OSHA Z-1	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
SKIN	Absorbed via skin
STEL	Short term exposure limit
TWA	Time weighted average
US WEEL	USA. Workplace Environmental Exposure Levels (WEEL)

Information Source and References
This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

DOW AGROSCIENCES LLC urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

FORMULATED FOR:

LOVELAND PRODUCTS, INC.
P.O. Box 1286 • Greeley, CO 80632-1286

24-Hour Emergency Phone: 1-800-424-9300
Medical Emergencies: 1-866-944-8565
U.S. Coast Guard National Response Center: 1-800-424-8802

PRODUCT NAME: INITIATE® 720 FLOWABLE FUNGICIDE
CHEMICAL NAME: Chlorothalonil: Tetrachloroisophthalonitrile
CHEMICAL FAMILY: Chlorinated Benzonitrile Fungicide
EPA REG. NO.: 34704-881
MSDS Number: 000881-09b-LPI **MSDS Revisions:** Section 14 **Date of Issue:** 02/19/09 **Supersedes:** 02/04/09

2. HAZARDS IDENTIFICATION SUMMARY

KEEP OUT OF REACH OF CHILDREN – CAUTION – Harmful if swallowed, absorbed through skin, or inhaled. Causes moderate eye irritation. Avoid contact with eyes, skin, or clothing. Avoid breathing spray mist. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

This product is a light gray liquid with slight odor. Primary routes of entry are skin contact, eye contact, and inhalation.

NOTES TO PHYSICIAN: Persons suffering with temporary skin reactions may respond to treatment with oral antihistamines and topical or oral steroids.

3. COMPOSITION, INFORMATION ON INGREDIENTS

Chemical Ingredients:	Percentage by Weight:	CAS No.	TLV (Units)
Chlorothalonil	54.00	1897-45-6	not listed
Other Ingredients, including	46.00		
Propylene Glycol		57-55-6	not listed
Silica, amorphous		112926-00-8	10 mg/m^3

4. FIRST AID MEASURES

If swallowed: Call a poison control center or doctor immediately fore treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth to mouth, if possible. Call a poison control center or doctor for further treatment advice.

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: **1-866-944-8565.** Have the product label or container with you when calling a poison control center or doctor, or going for treatment.

5. FIRE FIGHTING MEASURES

FLASH POINT (°F/Test Method): Does not flash.
FLAMMABLE LIMITS (LFL & UFL): Not applicable.
EXTINGUISHING MEDIA Dry chemical, foam, or CO_2.
HAZARDOUS COMBUSTION PRODUCTS: May thermally decompose under fire conditions emitting irritating and possibly toxic gases and vapors generated by thermal decomposition or combustion.
SPECIAL FIRE FIGHTING PROCEDURES: Wear self-contained breathing apparatus with full protective clothing. Evacuate area and fight fire from a safe distance. Minimize the amount of water used for firefighting. Equipment should be completely decontaminated after use.
UNUSUAL FIRE AND EXPLOSION HAZARDS: If water is used to fight fire or cool containers, contain runoff, using dikes to prevent contamination of water supplies. Avoid using heavy water streams.

6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

Small spill or leak: Avoid bodily contact. Confine spill by diking with suitable absorbent material. Pick up absorbed spill and place in a suitable container for proper disposal in accordance with all Federal, State and Local regulations.

Large spill or leak: Follow basic procedure as outlined in small spill or leak steps above. To clean and neutralize spill area, tools and equipment, scrub with a solution of hard water detergent (e.g. commercial products such as Tide®, Joy®, Spic and Span®). Absorb any excess liquid and add to the drums of waste collected. Repeat if necessary. Dispose in accordance with Federal, State and Local regulations.

CAUTION: Keep spills and cleaning runoff out of municipal sewers and open bodies of water.

7. HANDLING AND STORAGE

HANDLING: Do not breathe vapors or spray mist. Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

STORAGE: Store in a cool place. Protect from excessive heat. Do not contaminate water, food or feed by storage or disposal.

Personal Protective Equipment (PPE): Mixers, loaders applicators and all other handlers must wear: long sleeved shirt and long pants, chemical-resistant gloves made of any waterproof material – Category A (e.g. barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, polyethylene, polyvinyl chloride (PVC), or Viton®), shoes plus socks. Follow manufacturer's instructions for cleaning and maintaining PPE. If no instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets with requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40CFR 170.240 (d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.
Control airborne concentrations below the exposure guidelines. Local exhaust may be necessary when used in a confined area. Eye wash facility and safety shower should be available.

RESPIRATORY PROTECTION: Wear a NIOSH approved dust/mist filtering respirator (approval number prefix TC-23C) when using in an area with inadequate ventilation.

EYE PROTECTION: Chemical goggles or shielded safety glasses.

SKIN PROTECTION: Wear protective clothing: coveralls over long-sleeved shirts and pants, chemical-resistant footwear plus socks. Wear chemical-resistant gloves.

	OSHA PEL 8 hr TWA	ACGIH TLV-TWA
Silica, amorphous	80 mg/m^3/% SiO_2	10 mg/m^3

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR: Light gray liquid with slight odor
SOLUBILITY: Disperses
SPECIFIC GRAVITY (Water = 1): 1.34 g/ml
BULK DENSITY: 11.18 lbs/gal.
pH: 6.5-8.5
VAPOR PRESSURE: 5.72 x 10^{-7} torr (based on technical data)
BOILING POINT: 212°F / 100°C (lowest boiling component)
PERCENT VOLATILE (by volume): Not established
EVAPORATION RATE: Not established

Note: These physical data are typical values based on material tested but may vary from sample to sample.
Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.

10. STABILITY AND REACTIVITY

STABILITY: Stable
CONDITIONS TO AVOID: None known.
INCOMPATIBILITY: Highly alkaline conditions.

HAZARDOUS DECOMPOSITION PRODUCTS: May thermally decompose under fire conditions emitting irritating and possibly toxic gases and vapors generated by thermal decomposition or combustion

HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION

Acute Oral LD_{50} (rat): 9000 mg/kg
Acute Dermal LD_{50} (rabbit): >2020 mg/kg
Eye Irritation (rabbit): Moderate eye irritant
Skin Irritation (rabbit): Mildly irritating
Inhalation LC_{50} (rat): 0.704 mg/L (4 hr).
Skin Sensitization (guinea pig): A skin sensitizer
Carcinogenic Potential: None listed in OSHA, NTP, ACGIH or IARC.

12. ECOLOGICAL INFORMATION

This product is toxic to aquatic invertebrates and wildlife. DO NOT apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Drift and runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. DO NOT contaminate water when disposing of equipment wash water or rinsate. Chlorothalonil is known to leach through soil into groundwater under certain conditions as a result of label use. Chlorothalonil can contaminate surface water through spray drift. Do not apply when weather conditions favor drift from target area.

13. DISPOSAL CONSIDERATIONS

Pesticide wastes are toxic. Improper disposal of excess pesticide, pesticide spray or rinsate is a violation of federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.
CONTAINER DISPOSAL: Nonrefillable container. Do not reuse this container to hold materials other than pesticides or dilute pesticides (rinsate). After emptying and cleaning, it may be allowable to temporarily hold rinsate or other pesticide-related materials in the container. Contact your state regulatory agency to determine allowable practices in your state. Once cleaned, some agricultural plastic pesticide containers can be taken to a container collection site or picked up for recycling. To find the nearest site, contact your chemical dealer or manufacturer, or contact The Agricultural Container Recycling Council (ACRC) at www.acrecycle.org. Triple rinse or pressure rinse container (or equivalent) promptly after emptying.
For packages up to 5 gallons: Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. **Pressure rinse as follows:** Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip. **For packages greater than 5 gallons and less than 56 gallons: Triple rinse as follows:** Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ full with water. Replace and tighten closures.Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. **Pressure rinse as follows:** Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip. **For packages greater than 56 gallons:** To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. **For refillable containers:** Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

14. TRANSPORT INFORMATION

DOT Shipping Description: 120 GALLONS AND GREATER: ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S. (CHLOROTHALONIL), 9, UN3082, III MARINE POLLUTANT ERG GUIDE 171
DOT Shipping Description: NOT REGULATED BY USDOT FOR SURFACE TRANSPORTATION IN CONTAINERS 119 GALLONS OR LESS
U.S. Surface Freight Classification: INSECTICIDES OR FUNGICIDES, INSECT OR ANIMAL REPELLENTS; NOI; OTHER THAN POISON (NMFC 102120; CLASS: 60)

Consult appropriate ICAO/IATA and IMDG regulations for shipment requirements in the Air and Maritime shipping modes.

15. REGULATORY INFORMATION

NFPA & HMIS Hazard Ratings:

NFPA			HMIS	
2	Health	0 Least	2	Health
1	Flammability	1 Slight	1	Flammability
0	Instability	2 Moderate	0	Reactivity
		3 High	H	PPE
		4 Severe		

SARA Hazard Notification/Reporting
SARA Title III Hazard Category:

Immediate	Y	Fire	N	Sudden Release of Pressure	N
Delayed	Y	Reactive	N		

Reportable Quantity (RQ) under U.S. CERCLA: Not listed
SARA, Title III, Section 313: Chlorothalonil (CAS: 1897-45-6) 54.0%
RCRA Waste Code: Not listed
CA Proposition 65: WARNING: This product contains chemicals known to the State of California to cause cancer or birth defects or other reproductive harm.

16. OTHER INFORMATION

MSDS STATUS: Section 14 revised

PREPARED BY: Registrations and Regulatory Affairs

REVIEWED BY: Environmental/ Regulatory Services

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Safety Data Sheet

United Phosphorus, Inc.

Preparation Date 01-May-2015 **Revision date** 25-Mar-2016 **Revision Number:** 2

1. Identification of the Substance/Preparation and of the Company/Undertaking

Product identifier

Product Description: Manzate Max Fungicide

Other means of identification

Item#: 12-394X
Synonyms Not Available
Registration number(s) 70506-194

Recommended use of the chemical and restrictions on use

Recommended use Fungicide.
Uses advised against Activties contrary to label recomendation

Details of the Supplier of the Safety Data Sheet

Supplier Address
United Phosphorus Inc.
630 Freedom Business Center
Suite 402
King of Prussia, PA 19406

Emergency telephone number

Company Phone Number 1-800-438-6071
Emergency telephone number Chemtrec: (800) 424-9300 (24hrs) or (703) 527-3887
Medical: Rocky Mountain Poison Control Center
(866) 673-6671 (24hrs)

2. Hazards Identification

Classification

OSHA Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute toxicity - Inhalation (Vapors)	Category 3
Skin sensitization	Category 1
Reproductive Toxicity	Category 1B

Label elements

EMERGENCY OVERVIEW

DANGER

hazard statements
Toxic if inhaled
May cause an allergic skin reaction
May damage fertility or the unborn child

appearance Yellow Green	**Physical state** liquid	**Odor** pungent

Precautionary Statements - Prevention
Do not handle until all safety precautions have been read and understood
Wear cold insulating gloves/face shield/eye protection
Do not get in eyes, on skin, or on clothing
Use only outdoors or in a well-ventilated area
Contaminated work clothing should not be allowed out of the workplace
Wear protective gloves

Precautionary Statements - Response
IF exposed or concerned: Get medical advice/attention
IF ON SKIN: Wash with plenty of soap and water
If skin irritation or rash occurs: Get medical advice/attention
Wash contaminated clothing before reuse
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor/physician

Precautionary Statements - Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Hazards Not Otherwise Classified (HNOC)
OTHER INFORMATION
• Very toxic to aquatic life
• May be harmful in contact with skin

3. Composition/information on Ingredients

Chemical name	CAS-No	Weight %	Trade secret
1,2-Benziosothiazolin-3-one (Proxel GXL)	2634-33-5	0.16	
Zinc manganese ethylenebis dithiocarbamate	8018-01-7	37	
Ethylene thiourea	96-45-7	0-0.5	

If CAS number is "proprietary", the specific chemical identity and percentage of composition has been withheld as a trade secret.

4. First aid measures

FIRST AID MEASURES

Eye contact Hold eye open and rinse slowly and gently with water for 15 - 20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

Skin contact Remove and wash contaminated clothing before re-use. Wash off immediately with soap and plenty of water for at least 15 minutes. Call poison control center or doctor for treatment advice.

Inhalation Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a physician or poison control center immediately.

Ingestion Call a physician or poison control center immediately. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person.

Protection of First-aiders Use personal protective equipment.

Most Important Symptoms and Effects, Both Acute and Delayed

Most Important Symptoms and Effects No information available.

Indication of Any Immediate Medical Attention and Special Treatment Needed

Notes to physician Treat symptomatically.

5. Fire-fighting measures

Suitable extinguishing media
Carbon dioxide (CO2).
Use:. Dry chemical. Water spray. alcohol-resistant foam.

Unsuitable extinguishing media No information available.

Specific hazards arising from the chemical
Thermal decomposition can lead to release of irritating gases and vapours.

Hazardous combustion products Carbon disulfide, ethylene thiourea (ETU).

Explosion data
Protective equipment and precautions for firefighters
Use personal protective equipment. As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal Precautions Avoid contact with the skin and the eyes. Wear protective gloves/clothing and eye/face protection. Wash thoroughly after handling.

Environmental Precautions

Environmental precautions Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinenet environmental permits.

Methods and material for containment and cleaning up

Methods for Clean-Up Soak up with inert absorbent material. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Sweep up and shovel into suitable containers for disposal.

7. Handling and Storage

Precautions for safe handling

Handling Do not eat, drink or smoke when using this product. Avoid contact with skin and eyes. Wear personal protective equipment. Do not breathe vapours or spray mist. Wash thoroughly after handling. Remove and wash contaminated clothing before re-use.

Conditions for safe storage, including any incompatibilities

Storage Keep containers tightly closed in a cool, well-ventilated place.

incompatible materials Strong oxidizing agents.

8. Exposure Controls/Personal Protection

Exposure guidelines This product does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Engineering controls Investigate engineering techniques to reduce exposures. Local mechanical exhaust ventilation is preferred. Consult ACGIH ventilation manual or NFPA Standard 91 for design of exhaust systems.

Personal protective equipment

Eye/Face Protection Use eye protection to avoid eye contact. Where there is potential for eye contact have eye flushing equipment available. Safety glasses with side-shields. If splashes are likely to occur, wear:. Goggles. Face-shield.

Skin protection Long sleeved clothing. Chemical resistant gloves. Chemical resistant footwear plus socks.

Respiratory protection Where airborne exposure is likely, use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. Full facepiece equipment is recommended and, if used, replaces need for face shield and/or chemical goggles. If exposures cannot be kept at a minimum with engineering controls, consult respirator manufacturer to determine appropriate type equipment for given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where there may be a potential for significant exposure, use an approved full face positive-pressure, self-contained breathing apparatus. Respiratory protection programs must comply with 29 CFR 1910.134.

General hygiene considerations

Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing before re-use. Wear suitable gloves and eye/face protection. Wash hands before breaks and immediately after handling the product.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Physical state	liquid		
appearance	Yellow Green	**Odor**	pungent
color	No information available		

Property	VALUES	Remarks/ • Method
pH	8	
Melting point/freezing point	9 °C / 48 °F	
Boiling Point/Range	No information available	
Flash Point	No information available	
Evaporation Rate	No information available	
flammability (solid, gas)	No information available	
Flammability limit in air		
Upper Flammability Limit	No information available	
Lower Flammability Limit	No information available	
vapor pressure	No information available	
Vapor Density	No information available	
Specific gravity	1.27-1.33	
Water solubility	No information available	
Solubility in Other Solvents	No information available	
Partition coefficient: n-octanol/water	No information available	
Autoignition temperature	No information available	
decomposition temperature	No information available	
Viscosity, kinematic	No information available	
Dynamic viscosity	No information available	
Explosive properties	No information available	
Oxidizing properties	No information available	

OTHER INFORMATION

Softening point	No information available
molecular weight	No information available

VOC Content	No information available
density	No information available
Bulk density	1270 kg/m^3

10. Stability and Reactivity

Reactivity
no data available

Chemical stability
Stable under normal conditions. Hazardous polymerisation does not occur.
Possibility of hazardous reactions
None under normal processing.
Hazardous polymerization Hazardous polymerisation does not occur.

Conditions to avoid
No information available.
incompatible materials
Strong oxidizing agents.
Hazardous decomposition products
Carbon oxides.

11. Toxicological Information

Information on Likely Routes of Exposure

Product information
Manzate Max=
Acute oral LD50 = >5,000 mg/kg
Acute dermal LD50 = >5,000 mg/kg
Acute inhalation LC50 = >2.02 mg/L
Eye irritation = Slight
Dermal irritation = Slight
Skin sensitizer = Not a sensitizer

Inhalation Harmful by inhalation.

Eye contact May cause slight irritation.

Skin contact May be harmful if absorbed through the skin.

Ingestion HARMFUL IF SWALLOWED.

Information on Toxicological Effects

Symptoms No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

sensitization No information available.
Mutagenic effects No information available.
Carcinogenicity The information below indicates whether any agency has listed any ingredient as a carcinogen.

Chemical name	ACGIH	IARC	NTP	OSHA
Ethylene thiourea 96-45-7	-	Group 3	Reasonably Anticipated	X

Reproductive effects Not Available.
STOT - Single Exposure No information available.
STOT - repeated exposure No information available.
Chronic toxicity Avoid repeated exposure.
Aspiration hazard No information available.

Numerical Measures of Toxicity - Product information

LD50 Oral	> 5000 mg/kg (rat)
LD50 Dermal	> 5000 mg/kg (rat)
LC50 Inhalation:	> 2.02 mg/l

12. Ecological Information

ecotoxicity

Manzate:
96 hr LC50
Rainbow trout -= 0.73 mg/L
Fathead minnow = 0.57 mg/L
Bluegill sunfish = 0.84 mg/L
72 hr EC50
Freshwater algae = 0.43 mg/L

Persistence/Degradability
No information available.

Bioaccumulation/ Accumulation
Bioaccumulative potential.

Chemical name	Log Pow
1,2-Benziosothiazolin-3-one (Proxel GXL) 2634-33-5	1.3

Other Adverse Effects
No information available

13. Disposal Considerations

Waste Treatment Methods

Waste Disposal Method Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide or rinsate is a violation of Federal law. If the wastes cannot be disposed of by use or according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Contaminated packaging Refer to product label.

Chemical name	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
Ethylene thiourea	U116	Included in waste streams: K123, K124, K125, K126		U116

14. Transport Information

DOT Not regulated when shipped domestically by highway in non-buk containers as per 49 CFR 171.4 When shipped in bulk, by vessel, or internationally use the IMDG shipping description:

IATA

UN-No	UN3082
Proper shipping name	Environmentally hazardous substances, liquid, n.o.s (Mancozeb)

Hazard class	9
Packing group	PG III
Description	Marine pollutant

IMDG/IMO

UN-No	UN3082
Proper shipping name	Environmentally hazardous substances, liquid, n.o.s (Mancozeb)
Hazard class	9
Packing group	PG III
Marine Pollutant	Marine Pollutant

15. Regulatory Information

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

signal word	CAUTION
Ventilation Control	PESTICIDE APPLICATORS & WORKERS THESE WORKERS MUST REFER TO PRODUCT LABELING AND DIRECTIONS FOR USE IN ACCORDANCE WITH EPA WORKER PROTECTION STANDARD 40 CFR PART 170.

Keep out of Reach of Children. Harmful if swallowed. Harmful if inhaled or absorbed through skin. Toxic to fish and aquatic organisms.

International Inventories

USINV	Not determined
DSL/NDSL	Not determined
EINECS/ ELINCS	Does not comply
ENCS	Does not comply
China	Complies
KECL	Complies
PICCS	Complies
AICS	Complies
TSCA	Does not comply

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and and Title 40n of the Code of Federal Regulations, Part 372:

Chemical name	SARA 313 - Threshold Values
Ethylene thiourea - 96-45-7	0.1

SARA 311/312 Hazardous Categorization

Acute health hazard	yes

Chronic health hazard	yes
Fire hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	yes

Chemical name	RQ	CERCLA EHS RQs	RQ
Ethylene thiourea 96-45-7	10 lb		RQ 10 lb final RQ RQ 4.54 kg final RQ

CERCLA

Component	RQ
Ethylene thiourea 96-45-7 (0-0.5)	10 lb

SARA Product RQ 0

RCRA

Component	RCRA - D Series Wastes	RCRA - P Series Wastes	RCRA - U Series Wastes
Ethylene thiourea 96-45-7 (0-0.5)			U116

Pesticide Information

State Regulations

Component	CAS-No	CATEGORY	California Prop. 65	Non-additive, corrosive chemical type
Zinc manganese ethylenebis dithiocarbamate 8018-01-7 (37)	8018-01-7	Carcinogen	Carcinogen	
Ethylene thiourea 96-45-7 (0-0.5)	96-45-7	Carcinogen	Carcinogen Developmental	

State Right-to-Know

Chemical name	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Zinc manganese ethylenebis dithiocarbamate				X	
Ethylene thiourea	X	X	X	X	

International regulations

U.S. EPA Label information

EPA Pesticide registration number 70506-194

16. Other Information

NFPA **HEALTH** 1 **flammability** 0 **Instability** 0 **Physical hazard** -

Preparation Date 01-May-2015
Revision date 25-Mar-2016
Revision Summary
Update section 14

Disclaimer

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End of MSDS

SAFETY DATA SHEET

1. Identification

Product identifier	**BRANDT Insect Bait**
Other means of identification	
Product code	06009
Recommended use	Agricultural/ Horticultural Use- Insect Bait-refer to product label
Recommended restrictions	None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company name	Brandt Consolidated, Inc.	
Address	2935 South Koke Mill Road Springfield, IL 62711 United States	
Telephone	Corporate Office	1-217-547-5800
Website	www.brandt.co	
E-mail	msds@brandt.co	
Contact person	EH&S / Regulatory Department	
Emergency phone number	Not available. CHEMTREC (24 hours): USA, Canada, Puerto Rico Virgin Islands International Maritime	 1-800-424-9300 1-800-424-9300 +1 (703) 527-3887

2. Hazard(s) identification

Physical hazards	Not classified.	
Health hazards	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 2
Environmental hazards	Not classified.	
OSHA defined hazards	Not classified.	

Label elements

Signal word	Warning
Hazard statement	Causes skin irritation. Causes serious eye irritation.
Precautionary statement	
Prevention	Wash thoroughly after handling. Wear protective gloves. Wear eye/face protection.
Response	If on skin: Wash with plenty of water. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Specific treatment (see this label). If skin irritation occurs: Get medical advice/attention. If eye irritation persists: Get medical advice/attention. Take off contaminated clothing and wash before reuse.
Storage	Store away from incompatible materials.
Disposal	Dispose of waste and residues in accordance with local authority requirements.
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Sodium hydroxide, (Na(OH))		1310-73-2	< 0.1
Other components below reportable levels			90 - 100

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Inhalation Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact Remove contaminated clothing. Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.

Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

Ingestion Rinse mouth. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause redness and pain. Severe eye irritation.

Indication of immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

General information Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire-fighting equipment/instructions Move containers from fire area if you can do so without risk.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling Avoid contact with eyes. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities Store in original tightly closed container. Keep container tightly closed. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Sodium hydroxide, (Na(OH)) (CAS 1310-73-2)	PEL	2 mg/m3

US. ACGIH Threshold Limit Values

Components	Type	Value
Sodium hydroxide, (Na(OH)) (CAS 1310-73-2)	Ceiling	2 mg/m3

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Sodium hydroxide, (Na(OH)) (CAS 1310-73-2)	Ceiling	2 mg/m3

Biological limit values No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection Wear appropriate chemical resistant gloves.

Other Wear appropriate chemical resistant clothing.

Respiratory protection In case of insufficient ventilation, wear suitable respiratory equipment. Respiratory protection not required.

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance Liquid. Viscous.

Physical state Liquid.

Form Liquid. Viscous.

Color Brown.

Odor faint sweet odor

Odor threshold Not available.

pH 3.5 - 4.5

Salt-Out / Crystallization Temp Not available.

Melting point/freezing point Not available.

Initial boiling point and boiling range 212 °F (100 °C) estimated

Flash point Not available.

Evaporation rate Not available.

Flammability (solid, gas) Not available.

Upper/lower flammability or explosive limits

Flammability limit - lower (%) Not available.

Flammability limit - upper (%) Not available.

Explosive limit - lower (%) Not available.

Explosive limit - upper (%)	Not available.
Vapor pressure	2.3 hPa at 20 C estimated
Vapor density	Not available.
Relative density	1.12 - 1.2 g/cm3 typical
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Pounds per gallon	9.4 - 10 lb/gal typical

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Ingestion	Expected to be a low ingestion hazard.
Inhalation	Prolonged inhalation may be harmful.
Skin contact	Causes skin irritation.
Eye contact	Causes serious eye irritation.
Symptoms related to the physical, chemical and toxicological characteristics	Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. Severe eye irritation. May cause redness and pain.

Information on toxicological effects

Acute toxicity

Product	Species	Test Results
BRANDT Insect Bait (CAS Mixture)		
Acute		
Dermal		
LD50	Rat	> 5000 mg/kg, 14 days All animals survived, gained body weight, and appeared active and healthy during the study.
Oral		
LD50	Rat	> 5000 mg/kg, 14 days All animals survived, gained body weight, and appeared active and healthy during the study.

Components	Species	Test Results
Sodium hydroxide, (Na(OH)) (CAS 1310-73-2)		
Acute		
Other		
LD50	Mouse	40 mg/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation Causes skin irritation.

Serious eye damage/eye irritation Causes serious eye irritation.

Iris lesion value 1.0000

Conjunctival reddening value 2.0000

Conjunctival oedema value 1.0000

Recover days 3

Respiratory or skin sensitization

Respiratory sensitization Not available.

Skin sensitization This product is not expected to cause skin sensitization.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Not available.

Chronic effects Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Components		Species	Test Results
Sodium hydroxide, (Na(OH)) (CAS 1310-73-2)			
Aquatic			
Crustacea	EC50	Water flea (Ceriodaphnia dubia)	34.59 - 47.13 mg/l, 48 hours
Fish	LC50	Western mosquitofish (Gambusia affinis)	125 mg/l, 96 hours

* Estimates for product may be based on additional component data not shown.

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential Not available.

Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

15. Regulatory information

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.
This product is not known to be a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Sodium hydroxide, (Na(OH)) (CAS 1310-73-2) Listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical No

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations

US. Massachusetts RTK - Substance List

Sodium hydroxide, (Na(OH)) (CAS 1310-73-2)

US. New Jersey Worker and Community Right-to-Know Act

Sodium hydroxide, (Na(OH)) (CAS 1310-73-2)

US. Pennsylvania Worker and Community Right-to-Know Law

Sodium hydroxide, (Na(OH)) (CAS 1310-73-2)

US. Rhode Island RTK

Sodium hydroxide, (Na(OH)) (CAS 1310-73-2)

US. California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 06-30-2015

Revision date 07-23-2015

Version # 05

Disclaimer Brandt Consolidated, Inc. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. While the information contained herein are presented in good faith and believed to be accurate, it is provided for your guidance only. Because many factors may affect processing or application, we recommend that you make tests to determine the suitability of a product for your particular purpose prior to use. No warranties of any kind, either expressed or implied, including warranties of merchantability or fitness for a particular purpose, are made regarding products described or information set forth, or that the products, or information may be used without infringing the intellectual property rights of others. In no case shall the information provided be considered a part of our terms and conditions of sale. Further, you expressly understand and agree that the information furnished by our company hereunder are given gratis and we assume no obligation or liability for the information given or results obtained, all such being given and accepted at your risk.

Revision Information Physical & Chemical Properties: Multiple Properties
Toxicological Information: Toxicological Data
GHS: Classification

Gowan
The Go To Company
Printing date 08/29/2016

Safety Data Sheet
acc. to OSHA

Reviewed on 08/29/2016

1 Identification

· **Product identifier**

· **Trade name: Onager® Optek**
EPA Registration No.:10163-337
· **CAS Number:** Active Ingredient: Hexythiazox (11.93%), CAS:78587-05-0
· **Application of the substance / the mixture** Agricultural miticide

· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Gowan Company
P.O. Box 5569
Yuma, Arizona 85366-5569
(928) 783-8844

· **Information department:** sds@gowanco.com
· **Emergency telephone number:**
Chemtrec® Emergency Telephone 24 - Hours: (Spills, leak or fire) Inside U.S. & Canada: (800) 424-9300
Outside the U.S. & Canada: +011 (703) 527-3887

For medical emergency (Prosar®): (888) 478-0798

2 Hazard(s) identification

· **Classification of the substance or mixture**
This SDS is based on classification according to US OSHA Hazard Communication Standard (29 CFR 1910.1200)

GHS07

Acute Tox. 4 H302 Harmful if swallowed.
Acute Tox. 4 H332 Harmful if inhaled.

Aquatic Acute 2 H401 Toxic to aquatic life.

· **Label elements**
· **GHS label elements**
The product is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms**

GHS07

· **Signal word** Warning
· **Hazard statements**
Harmful if swallowed or if inhaled.
Toxic to aquatic life.
· **Precautionary statements**
Avoid breathing dust/fume/gas/mist/vapors/spray
Avoid release to the environment.
Wash thoroughly after handling.
IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Dispose of contents/container in accordance with local/regional/national/international regulations.

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Trade name: Onager® Optek
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· **Hazard description:**
Harmful if swallowed, inhaled or absorbed through skin. Causes moderate eye irritation. Avoid breathing vapor or spray mist. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove contaminated clothing and wash clothing before reuse.

· **Classification system:**
· **NFPA ratings (scale 0 - 4)**

Health = 1
Fire = 0
Reactivity = 0

HAZARD INDEX:
4 Severe Hazard
3 Serious Hazard
2 Moderate Hazard
1 Slight Hazard
0 Minimal Hazard

· **HMIS-ratings (scale 0 - 4)**

Health = 1
Fire = 0
Reactivity = 0

HAZARD INDEX:
4 Severe Hazard
3 Serious Hazard
2 Moderate Hazard
1 Slight Hazard
0 Minimal Hazard

· **Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** *Not applicable in US.*
· **vPvB:** *Not applicable in US.*

*
3 Composition/information on ingredients

· **Chemical characterization: Mixtures**
· **Description:** *Only the identities of the active ingredient(s) and any hazardous inert ingredients are listed.*

· **Dangerous components:**

78587-05-0	hexythiazox	Aquatic Acute 1, H400; Aquatic Chronic 1, H410	11.93%

*
4 First-aid measures

· **Description of first aid measures**
· **General information:**
Have the product container or label with you when calling a poison control center or doctor, or going for treatment.
You may also contact 1-888-478-0798 for emergency medical treatment information.
· **After inhalation:**
• *Move person to fresh air.*
• *If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.*

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- Call poison control center or doctor for further treatment advice.

· **After skin contact:**
- Take off contaminated clothing.
- Rinse skin immediately with plenty of water for 15-20 minutes.
- Call a poison control center or doctor for treatment advice.

· **After eye contact:**
- Hold eye open and rinse slowly and gently with water for 15-20 minutes.
- Remove contact lenses, if present, after first 5 minutes, then continue rinsing eyes.
- Call a poison control center or doctor for treatment advice.

· **After swallowing:**
- Immediately call a poison control center or doctor.
- Do not induce vomiting unless told to do so by the poison control center or doctor.
- Do not give ANY liquid to the person.
- Do not give anything by mouth to an unconscious person.

· **Information for doctor:**
· **Most important symptoms and effects, both acute and delayed** Unknown
· **Indication of any immediate medical attention and special treatment needed**
May pose an aspiration pneumonia hazard. Contains petroleum distillate.

5 Fire-fighting measures

· **Extinguishing media**
· **Suitable extinguishing agents:** CO_2, extinguishing powder or water spray. Fight larger fires with water spray.

· **Special hazards arising from the substance or mixture**
Nitrogen oxides (NOx)
Hydrogen chloride (HCl)

· **Advice for firefighters**
Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus. Use water spray. Cool tank/container with water spray. If area is heavily exposed to fire and if conditions permit, let fire burn itself out since water will increase contamination hazard.
· **Protective equipment:** Wear self-contained respiratory protective device.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**
Keep unnecessary people away and isolate hazard area. Wear appropriate personal protective equipment described in Section 8.

· **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.

· **Methods and material for containment and cleaning up:**
Keep unnecessary people away and isolate hazard area. Wear appropriate personal protective equipment described in Section 8. If spilled material is a liquid, prevent from entering sewers, waterways or low areas. Use an absorbent to absorb material, then shovel or sweep up and place into a clean container for disposal.

· **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

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7 Handling and storage

· **Handling:**
· **Precautions for safe handling**
Harmful if swallowed, inhaled or absorbed through skin. Causes moderate eye irritation. Avoid breathing vapor or spray mist. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove contaminated clothing and wash clothing before reuse.
· **Information about protection against explosions and fires:** *No special measures required.*

· **Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements to be met by storerooms and receptacles:**
DO NOT contaminate water, food or feed by storage or disposal.
PESTICIDE STORAGE: Store product in original container only, away from other pesticides, fertilizers, food or feed.
· **Information about storage in one common storage facility:** *Store away from foodstuffs.*
· **Further information about storage conditions:** *Store product in original container only.*
· **Specific end use(s)** *No further relevant information available.*

*

8 Exposure controls/personal protection

· **Additional information about design of technical systems:** *No further data; see item 7.*

· **Control parameters**
· **Components with limit values that require monitoring at the workplace:**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
· **Additional information:**
Harmful if swallowed, inhaled or absorbed through skin. Causes moderate eye irritation. Avoid breathing vapor or spray mist. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove contaminated clothing and wash clothing before reuse.

· **Exposure controls**
· **Personal protective equipment:**
· **General protective and hygienic measures:**
Users should:
- *Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.*
- *Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing*

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.
· **Breathing equipment:** *Not required.*
· **Protection of hands:**

Protective gloves

· **Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

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· **Body protection:**
Applicators and other handlers must wear:
- Long sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks

9 Physical and chemical properties

· **Information on basic physical and chemical properties**	
· **General Information**	
· **Appearance:**	
· **Form:**	Liquid
· **Color:**	Pale yellow
· **Odor:**	Aromatic
· **Odor threshold:**	Not determined.
· **pH-value at 20 °C (68 °F):**	5.8
· **Change in condition**	
· **Melting point/Melting range:**	Undetermined.
· **Boiling point/Boiling range:**	Undetermined.
· **Flash point:**	Not applicable.
· **Flammability (solid, gaseous):**	Not applicable.
· **Ignition temperature:**	
· **Decomposition temperature:**	Not determined.
· **Auto igniting:**	Product is not self-igniting.
· **Danger of explosion:**	Product does not present an explosion hazard.
· **Explosion limits:**	
· **Lower:**	Not determined.
· **Upper:**	Not determined.
· **Vapor pressure:**	Not determined.
· **Density at 20 °C (68 °F):**	1.0476 g/cm³ (8.742 lbs/gal)
· **Relative density**	Not determined.
· **Vapor density**	Not determined.
· **Evaporation rate**	Not determined.
· **Solubility in / Miscibility with**	
· **Water:**	Dispersible.
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity:**	
· **Dynamic:**	Not determined.
· **Kinematic:**	Not determined.
· **Other information**	No further relevant information available.

US

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* 10 Stability and reactivity

· **Reactivity** No further relevant information available.
· **Chemical stability** Stable under normal conditions
· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
· **Possibility of hazardous reactions** No dangerous reactions known.
· **Conditions to avoid** No further relevant information available.
· **Incompatible materials:** No further relevant information available.
· **Hazardous decomposition products:**
Nitrogen oxides (NOx)
Hydrogen chloride (HCl)

* 11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**

· LD/LC50 values that are relevant for classification:		
Oral	LD50	>5000 mg/kg (rat)
Dermal	LD50	>5000 mg/kg (rat)
Inhalative	LC50/4 h	>2.0 mg/l (rat)

· **Primary irritant effect:**
· **on the skin:** Moderately irritating to the skin (rabbits)
· **on the eye:** Moderately and mildly irritating to the unrinsed and rinsed eye, respectively.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
The product is not subject to classification according to internally approved calculation methods for preparations:
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

· **Carcinogenic categories**

· IARC (International Agency for Research on Cancer)
None of the ingredients are listed.
· NTP (National Toxicology Program)
None of the ingredients are listed.
· OSHA-Ca (Occupational Safety & Health Administration)
None of the ingredients are listed.

* 12 Ecological information

· **Toxicity**
This pesticide is toxic to fish and aquatic invertebrates. Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Drift and runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when cleaning equipment or when disposing of equipment washwaters.
· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability** No further relevant information available.

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· **Behavior in environmental systems:**
· **Bioaccumulative potential** No further relevant information available.
· **Mobility in soil** No further relevant information available.
· **Additional ecological information:**
· **General notes:**
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even small quantities leak into the ground.
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **Other adverse effects** No further relevant information available.

*

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation:**
Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

· **Uncleaned packagings:**
· **Recommendation:**
Nonrefillable container. Do not reuse or refill this container. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

*

14 Transport information

· **UN-Number**	
· **DOT, ADR, ADN, IMDG, IATA**	Not regulated
· **UN proper shipping name**	
· **ADR, ADN, IMDG, IATA**	Not regulated
· **Transport hazard class(es)**	
· **ADR, ADN, IMDG, IATA**	
· **Class**	Not regulated
· **Packing group**	
· **ADR, IMDG, IATA**	Not regulated
· **Environmental hazards:**	Product contains environmentally hazardous substances: hexythiazox
· **Marine pollutant:**	No
· **Special precautions for user**	Not applicable
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable

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Safety Data Sheet
acc. to OSHA

Printing date 08/29/2016 Reviewed on 08/29/2016

Trade name: Onager® Optek
EPA Registration No.:10163-337

(Contd. of page 7)

· **UN "Model Regulation":** Not regulated

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**
EPA /FIFRA Information:
This chemical is a pesticide product registered by the Environmental Protection Agency (EPA) and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals.

· **SARA Title III**

· **Section 355 (extremely hazardous substances):**
None of the ingredients are listed.

· **Section 313 (Specific toxic chemical listings):**
None of the ingredients are listed.

· **TSCA (Toxic Substances Control Act):**
None of the ingredients are listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**
None of the ingredients are listed.

· **Chemicals known to cause reproductive toxicity for females:**
None of the ingredients are listed.

· **Chemicals known to cause reproductive toxicity for males:**
None of the ingredients are listed.

· **Chemicals known to cause developmental toxicity:**
None of the ingredients are listed.

· **Carcinogenicity categories**

· **EPA (Environmental Protection Agency)**
None of the ingredients are listed.

· **TLV (Threshold Limit Value established by ACGIH)**
None of the ingredients are listed.

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**
None of the ingredients are listed.

· **GHS label elements**
The product is classified and labeled according to the Globally Harmonized System (GHS).

· **Hazard pictograms**
Not applicable

· **Signal word**
(US EPA) CAUTION

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Trade name: Onager® Optek
EPA Registration No.:10163-337

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· **Hazard statements**
Harmful if inhaled
Harmful if swallowed or if inhaled.
Toxic to aquatic life.

· **Precautionary statements**
Harmful if swallowed, inhaled or absorbed through skin. Causes moderate eye irritation. Avoid breathing vapor or spray mist. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove contaminated clothing and wash clothing before reuse.
Avoid breathing dust/fume/gas/mist/vapors/spray
Avoid release to the environment.
Wash thoroughly after handling.
IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Chemical safety assessment:** *A Chemical Safety Assessment has not been carried out.*

*

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Department issuing SDS:** *Supply Chain*
· **Contact:** *sds@gowanco.com*
· **Date of preparation / last revision** *08/29/2016 / 9*
· **Abbreviations and acronyms:**
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Assaciation
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Acute Tox. 4: Acute toxicity – Category 4
Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1
Aquatic Acute 2: Hazardous to the aquatic environment - acute aquatic hazard – Category 2
Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1
· **Sources** *Onager® is a registered trademark of Gowan Company, L.L.C.*
· *** Data compared to the previous version altered.**

Gowan
The Go To Company

Safety Data Sheet
acc. to OSHA

Printing date 03/14/2016

Reviewed on 03/14/2016

1 Identification

· **Product identifier**

· **Trade name: Onager® EW Miticide**
EPA Registration No.:10163-337
· **CAS Number:** Active Ingredient: Hexythiazox (11.93%), CAS:78587-05-0
· **Application of the substance / the mixture** Agricultural miticide

· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Gowan Company
P.O. Box 5569
Yuma, Arizona 85366-5569
(928) 783-8844

· **Information department:** sds@gowanco.com
· **Emergency telephone number:**
Chemtrec® Emergency Telephone 24 - Hours: (Spills, leak or fire) Inside U.S. & Canada: (800) 424-9300
Outside the U.S. & Canada: +011 (703) 527-3887

For medical emergency (Prosar®): (888) 478-0798

2 Hazard(s) identification

· **Classification of the substance or mixture**
This SDS is based on classification according to US OSHA Hazard Communication Standard (29 CFR 1910.1200)

GHS07

Acute Tox. 4	H302	Harmful if swallowed.
Acute Tox. 4	H332	Harmful if inhaled.
Aquatic Acute 2	H401	Toxic to aquatic life.

· **Label elements**
· **GHS label elements**
The product is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms**

GHS07

· **Signal word** Warning
· **Hazard statements**
Harmful if swallowed or if inhaled.
Toxic to aquatic life.
· **Precautionary statements**
Avoid breathing dust/fume/gas/mist/vapors/spray
Avoid release to the environment.
Wash thoroughly after handling.
IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Dispose of contents/container in accordance with local/regional/national/international regulations.

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Safety Data Sheet
acc. to OSHA

Printing date 03/14/2016 Reviewed on 03/14/2016

Trade name: Onager® EW Miticide
EPA Registration No.:10163-337

(Contd. of page 1)

· **Hazard description:**
Harmful if swallowed, inhaled or absorbed through skin. Causes moderate eye irritation. Avoid breathing vapor or spray mist. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove contaminated clothing and wash clothing before reuse.

· **Classification system:**

· **NFPA ratings (scale 0 - 4)**

Health = 1
Fire = 0
Reactivity = 0

HAZARD INDEX:
4 Severe Hazard
3 Serious Hazard
2 Moderate Hazard
1 Slight Hazard
0 Minimal Hazard

· **HMIS-ratings (scale 0 - 4)**

Health = 1
Fire = 0
Reactivity = 0

HAZARD INDEX:
4 Severe Hazard
3 Serious Hazard
2 Moderate Hazard
1 Slight Hazard
0 Minimal Hazard

· **Other hazards**

· **Results of PBT and vPvB assessment**

· **PBT:** *Not applicable in US.*

· **vPvB:** *Not applicable in US.*

* 3 Composition/information on ingredients

· **Chemical characterization: Mixtures**

· **Description:** *Only the identities of the active ingredient(s) and any hazardous inert ingredients are listed.*

· **Dangerous components:**

78587-05-0	hexythiazox	Aquatic Acute 1, H400; Aquatic Chronic 1, H410	11.93%

* 4 First-aid measures

· **Description of first aid measures**

· **General information:**
Have the product container or label with you when calling a poison control center or doctor, or going for treatment.
You may also contact 1-888-478-0798 for emergency medical treatment information.

· **After inhalation:**
- *Move person to fresh air.*
- *If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.*

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Safety Data Sheet
acc. to OSHA

Printing date 03/14/2016 Reviewed on 03/14/2016

Trade name: Onager® EW Miticide
EPA Registration No.:10163-337

(Contd. of page 2)

- *Call poison control center or doctor for further treatment advice.*

· **After skin contact:**
- *Take off contaminated clothing.*
- *Rinse skin immediately with plenty of water for 15-20 minutes.*
- *Call a poison control center or doctor for treatment advice.*

· **After eye contact:**
- *Hold eye open and rinse slowly and gently with water for 15-20 minutes.*
- *Remove contact lenses, if present, after first 5 minutes, then continue rinsing eyes.*
- *Call a poison control center or doctor for treatment advice.*

· **After swallowing:**
- *Immediately call a poison control center or doctor.*
- *Do not induce vomiting unless told to do so by the poison control center or doctor.*
- *Do not give ANY liquid to the person.*
- *Do not give anything by mouth to an unconscious person.*

· **Information for doctor:**

· **Most important symptoms and effects, both acute and delayed** *Unknown*

· **Indication of any immediate medical attention and special treatment needed**

May pose an aspiration pneumonia hazard. Contains petroleum distillate.

*

5 Fire-fighting measures

· **Extinguishing media**

· **Suitable extinguishing agents:** *CO2, extinguishing powder or water spray. Fight larger fires with water spray.*

· **Special hazards arising from the substance or mixture**

Nitrogen oxides (NOx)
Hydrogen chloride (HCl)

· **Advice for firefighters**

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus. Use water spray. Cool tank/container with water spray. If area is heavily exposed to fire and if conditions permit, let fire burn itself out since water will increase contamination hazard.

· **Protective equipment:** *Wear self-contained respiratory protective device.*

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**

Keep unnecessary people away and isolate hazard area. Wear appropriate personal protective equipment described in Section 8.

· **Environmental precautions:** *Do not allow to enter sewers/ surface or ground water.*

· **Methods and material for containment and cleaning up:**

Keep unnecessary people away and isolate hazard area. Wear appropriate personal protective equipment described in Section 8. If spilled material is a liquid, prevent from entering sewers, waterways or low areas. Use an absorbent to absorb material, then shovel or sweep up and place into a clean container for disposal.

· **Reference to other sections**

See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

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Safety Data Sheet
acc. to OSHA

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Trade name: Onager® EW Miticide
EPA Registration No.:10163-337

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7 Handling and storage

· **Handling:**
· **Precautions for safe handling**
Harmful if swallowed, inhaled or absorbed through skin. Causes moderate eye irritation. Avoid breathing vapor or spray mist. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove contaminated clothing and wash clothing before reuse.
· **Information about protection against explosions and fires:** *No special measures required.*

· **Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements to be met by storerooms and receptacles:**
DO NOT contaminate water, food or feed by storage or disposal.
PESTICIDE STORAGE: Store product in original container only, away from other pesticides, fertilizers, food or feed.
· **Information about storage in one common storage facility:** *Store away from foodstuffs.*
· **Further information about storage conditions:** *Store product in original container only.*
· **Specific end use(s)** *No further relevant information available.*

*

8 Exposure controls/personal protection

· **Additional information about design of technical systems:** *No further data; see item 7.*

· **Control parameters**
· **Components with limit values that require monitoring at the workplace:**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
· **Additional information:**
Harmful if swallowed, inhaled or absorbed through skin. Causes moderate eye irritation. Avoid breathing vapor or spray mist. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove contaminated clothing and wash clothing before reuse.

· **Exposure controls**
· **Personal protective equipment:**
· **General protective and hygienic measures:**
Users should:
- *Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.*
- *Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing*

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.
· **Breathing equipment:** *Not required.*
· **Protection of hands:**

Protective gloves

· **Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

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Trade name: Onager® EW Miticide
EPA Registration No.:10163-337

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· **Body protection:**
Applicators and other handlers must wear:
- Long sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks

9 Physical and chemical properties

· **Information on basic physical and chemical properties**	
· **General Information**	
· **Appearance:**	
· **Form:**	Liquid
· **Color:**	Pale yellow
· **Odor:**	Aromatic
· **Odor threshold:**	Not determined.
· **pH-value at 20 °C (68 °F):**	5.8
· **Change in condition**	
· **Melting point/Melting range:**	Undetermined.
· **Boiling point/Boiling range:**	Undetermined.
· **Flash point:**	Not applicable.
· **Flammability (solid, gaseous):**	Not applicable.
· **Ignition temperature:**	
· **Decomposition temperature:**	Not determined.
· **Auto igniting:**	Product is not self-igniting.
· **Danger of explosion:**	Product does not present an explosion hazard.
· **Explosion limits:**	
· **Lower:**	Not determined.
· **Upper:**	Not determined.
· **Vapor pressure:**	Not determined.
· **Density at 20 °C (68 °F):**	1.0476 g/cm³ (8.742 lbs/gal)
· **Relative density**	Not determined.
· **Vapor density**	Not determined.
· **Evaporation rate**	Not determined.
· **Solubility in / Miscibility with**	
· **Water:**	Dispersible.
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity:**	
· **Dynamic:**	Not determined.
· **Kinematic:**	Not determined.
· **Other information**	No further relevant information available.

US

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Printing date 03/14/2016 Reviewed on 03/14/2016

Trade name: Onager® EW Miticide
EPA Registration No.:10163-337

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* 10 Stability and reactivity

· **Reactivity** No further relevant information available.
· **Chemical stability** Stable under normal conditions
· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
· **Possibility of hazardous reactions** No dangerous reactions known.
· **Conditions to avoid** No further relevant information available.
· **Incompatible materials:** No further relevant information available.
· **Hazardous decomposition products:**
Nitrogen oxides (NOx)
Hydrogen chloride (HCl)

* 11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**

· LD/LC50 values that are relevant for classification:		
Oral	LD50	>5000 mg/kg (rat)
Dermal	LD50	>5000 mg/kg (rat)
Inhalative	LC50/4 h	>2.0 mg/l (rat)

· **Primary irritant effect:**
· **on the skin:** Moderately irritating to the skin (rabbits)
· **on the eye:** Moderately and mildly irritating to the unrinsed and rinsed eye, respectively.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
The product is not subject to classification according to internally approved calculation methods for preparations:
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

· **Carcinogenic categories**

· IARC (International Agency for Research on Cancer)
None of the ingredients are listed.
· NTP (National Toxicology Program)
None of the ingredients are listed.
· OSHA-Ca (Occupational Safety & Health Administration)
None of the ingredients are listed.

* 12 Ecological information

· **Toxicity**
This pesticide is toxic to fish and aquatic invertebrates. Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Drift and runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when cleaning equipment or when disposing of equipment washwaters.
· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability** No further relevant information available.

(Contd. on page 7)

Safety Data Sheet
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Printing date 03/14/2016 Reviewed on 03/14/2016

Trade name: Onager® EW Miticide
EPA Registration No.:10163-337

(Contd. of page 6)

· **Behavior in environmental systems:**
· **Bioaccumulative potential** No further relevant information available.
· **Mobility in soil** No further relevant information available.
· **Additional ecological information:**
· **General notes:**
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even small quantities leak into the ground.
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **Other adverse effects** No further relevant information available.

*

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation:**
Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

· **Uncleaned packagings:**
· **Recommendation:**
Nonrefillable container. Do not reuse or refill this container. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

*

14 Transport information

· **UN-Number**	
· **DOT, ADR, ADN, IMDG, IATA**	Not regulated
· **UN proper shipping name**	
· **ADR, ADN, IMDG, IATA**	Not regulated
· **Transport hazard class(es)**	
· **ADR, ADN, IMDG, IATA**	
· **Class**	Not regulated
· **Packing group**	
· **ADR, IMDG, IATA**	Not regulated
· **Environmental hazards:**	Product contains environmentally hazardous substances: hexythiazox
· **Marine pollutant:**	No
· **Special precautions for user**	Not applicable
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable

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Safety Data Sheet
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Trade name: Onager® EW Miticide
EPA Registration No.:10163-337

(Contd. of page 7)

· **UN "Model Regulation":** Not regulated

* **15 Regulatory information**

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**
EPA /FIFRA Information:
This chemical is a pesticide product registered by the Environmental Protection Agency (EPA) and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals.

· **SARA Title III**

· **Section 355 (extremely hazardous substances):**
None of the ingredients are listed.

· **Section 313 (Specific toxic chemical listings):**
None of the ingredients are listed.

· **TSCA (Toxic Substances Control Act):**
None of the ingredients are listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**
None of the ingredients are listed.

· **Chemicals known to cause reproductive toxicity for females:**
None of the ingredients are listed.

· **Chemicals known to cause reproductive toxicity for males:**
None of the ingredients are listed.

· **Chemicals known to cause developmental toxicity:**
None of the ingredients are listed.

· **Carcinogenicity categories**

· **EPA (Environmental Protection Agency)**
None of the ingredients are listed.

· **TLV (Threshold Limit Value established by ACGIH)**
None of the ingredients are listed.

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**
None of the ingredients are listed.

· **GHS label elements**
The product is classified and labeled according to the Globally Harmonized System (GHS).

· **Hazard pictograms**
Not applicable

· **Signal word**
(US EPA) CAUTION

(Contd. on page 9)

Safety Data Sheet
acc. to OSHA

Printing date 03/14/2016 Reviewed on 03/14/2016

Trade name: Onager® EW Miticide
EPA Registration No.:10163-337

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· **Hazard statements**
Harmful if inhaled
Harmful if swallowed or if inhaled.
Toxic to aquatic life.

· **Precautionary statements**
Harmful if swallowed, inhaled or absorbed through skin. Causes moderate eye irritation. Avoid breathing vapor or spray mist. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove contaminated clothing and wash clothing before reuse.

Avoid breathing dust/fume/gas/mist/vapors/spray
Avoid release to the environment.
Wash thoroughly after handling.

· **Chemical safety assessment:** *A Chemical Safety Assessment has not been carried out.*

*

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Department issuing SDS:** *Supply Chain*
· **Contact:** *sds@gowanco.com*
· **Date of preparation / last revision** *03/14/2016 / 8*
· **Abbreviations and acronyms:**
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Acute Tox. 4: Acute toxicity, Hazard Category 4
Aquatic Acute 1: Hazardous to the aquatic environment - AcuteHazard, Category 1
Aquatic Acute 2: Hazardous to the aquatic environment - AcuteHazard, Category 2
Aquatic Chronic 1: Hazardous to the aquatic environment - Chronic Hazard, Category 1
· **Sources** *Onager® is a registered trademark of Gowan Company, L.L.C.*
· *** Data compared to the previous version altered.**

Gowan
The Go To Company

Safety Data Sheet
acc. to OSHA

Printing date 03/14/2016

Reviewed on 03/14/2016

1 Identification

· **Product identifier**

· **Trade name: Onager® EW Miticide**
EPA Registration No.:10163-337
· **CAS Number:** Active Ingredient: Hexythiazox (11.93%), CAS:78587-05-0
· **Application of the substance / the mixture** Agricultural miticide

· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Gowan Company
P.O. Box 5569
Yuma, Arizona 85366-5569
(928) 783-8844

· **Information department:** sds@gowanco.com
· **Emergency telephone number:**
Chemtrec® Emergency Telephone 24 - Hours: (Spills, leak or fire) Inside U.S. & Canada: (800) 424-9300
Outside the U.S. & Canada: +011 (703) 527-3887

For medical emergency (Prosar®): (888) 478-0798

2 Hazard(s) identification

· **Classification of the substance or mixture**
This SDS is based on classification according to US OSHA Hazard Communication Standard (29 CFR 1910.1200)

GHS07

Acute Tox. 4	H302	Harmful if swallowed.
Acute Tox. 4	H332	Harmful if inhaled.
Aquatic Acute 2	H401	Toxic to aquatic life.

· **Label elements**
· **GHS label elements**
The product is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms**

GHS07

· **Signal word** Warning
· **Hazard statements**
Harmful if swallowed or if inhaled.
Toxic to aquatic life.
· **Precautionary statements**
Avoid breathing dust/fume/gas/mist/vapors/spray
Avoid release to the environment.
Wash thoroughly after handling.
IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Dispose of contents/container in accordance with local/regional/national/international regulations.

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Safety Data Sheet
acc. to OSHA

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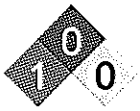
Trade name: Onager® EW Miticide
EPA Registration No.:10163-337

(Contd. of page 1)

· **Hazard description:**
Harmful if swallowed, inhaled or absorbed through skin. Causes moderate eye irritation. Avoid breathing vapor or spray mist. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove contaminated clothing and wash clothing before reuse.

· **Classification system:**

· **NFPA ratings (scale 0 - 4)**



Health = 1
Fire = 0
Reactivity = 0

HAZARD INDEX:
4 Severe Hazard
3 Serious Hazard
2 Moderate Hazard
1 Slight Hazard
0 Minimal Hazard

· **HMIS-ratings (scale 0 - 4)**

Health = 1
Fire = 0
Reactivity = 0

HAZARD INDEX:
4 Severe Hazard
3 Serious Hazard
2 Moderate Hazard
1 Slight Hazard
0 Minimal Hazard

· **Other hazards**

· **Results of PBT and vPvB assessment**

· **PBT:** *Not applicable in US.*

· **vPvB:** *Not applicable in US.*

* 3 Composition/information on ingredients

· **Chemical characterization: Mixtures**

· **Description:** *Only the identities of the active ingredient(s) and any hazardous inert ingredients are listed.*

· **Dangerous components:**

78587-05-0	hexythiazox	Aquatic Acute 1, H400; Aquatic Chronic 1, H410	11.93%

* 4 First-aid measures

· **Description of first aid measures**

· **General information:**
Have the product container or label with you when calling a poison control center or doctor, or going for treatment.
You may also contact 1-888-478-0798 for emergency medical treatment information.

· **After inhalation:**

- *Move person to fresh air.*
- *If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.*

(Contd. on page 3)

Safety Data Sheet
acc. to OSHA

Printing date 03/14/2016 Reviewed on 03/14/2016

Trade name: Onager® EW Miticide
EPA Registration No.:10163-337

(Contd. of page 2)

- *Call poison control center or doctor for further treatment advice.*

· **After skin contact:**
- *Take off contaminated clothing.*
- *Rinse skin immediately with plenty of water for 15-20 minutes.*
- *Call a poison control center or doctor for treatment advice.*

· **After eye contact:**
- *Hold eye open and rinse slowly and gently with water for 15-20 minutes.*
- *Remove contact lenses, if present, after first 5 minutes, then continue rinsing eyes.*
- *Call a poison control center or doctor for treatment advice.*

· **After swallowing:**
- *Immediately call a poison control center or doctor.*
- *Do not induce vomiting unless told to do so by the poison control center or doctor.*
- *Do not give ANY liquid to the person.*
- *Do not give anything by mouth to an unconscious person.*

· **Information for doctor:**

· **Most important symptoms and effects, both acute and delayed** *Unknown*

· **Indication of any immediate medical attention and special treatment needed**

May pose an aspiration pneumonia hazard. Contains petroleum distillate.

*

5 Fire-fighting measures

· **Extinguishing media**

· **Suitable extinguishing agents:** *CO2, extinguishing powder or water spray. Fight larger fires with water spray.*

· **Special hazards arising from the substance or mixture**

Nitrogen oxides (NOx)
Hydrogen chloride (HCl)

· **Advice for firefighters**

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus. Use water spray. Cool tank/container with water spray. If area is heavily exposed to fire and if conditions permit, let fire burn itself out since water will increase contamination hazard.

· **Protective equipment:** *Wear self-contained respiratory protective device.*

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**

Keep unnecessary people away and isolate hazard area. Wear appropriate personal protective equipment described in Section 8.

· **Environmental precautions:** *Do not allow to enter sewers/ surface or ground water.*

· **Methods and material for containment and cleaning up:**

Keep unnecessary people away and isolate hazard area. Wear appropriate personal protective equipment described in Section 8. If spilled material is a liquid, prevent from entering sewers, waterways or low areas. Use an absorbent to absorb material, then shovel or sweep up and place into a clean container for disposal.

· **Reference to other sections**

See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

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Safety Data Sheet
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Trade name: Onager® EW Miticide
EPA Registration No.:10163-337

(Contd. of page 3)

7 Handling and storage

· **Handling:**
· **Precautions for safe handling**
Harmful if swallowed, inhaled or absorbed through skin. Causes moderate eye irritation. Avoid breathing vapor or spray mist. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove contaminated clothing and wash clothing before reuse.
· **Information about protection against explosions and fires:** *No special measures required.*

· **Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements to be met by storerooms and receptacles:**
DO NOT contaminate water, food or feed by storage or disposal.
PESTICIDE STORAGE: Store product in original container only, away from other pesticides, fertilizers, food or feed.
· **Information about storage in one common storage facility:** *Store away from foodstuffs.*
· **Further information about storage conditions:** *Store product in original container only.*
· **Specific end use(s)** *No further relevant information available.*

*

8 Exposure controls/personal protection

· **Additional information about design of technical systems:** *No further data; see item 7.*

· **Control parameters**
· **Components with limit values that require monitoring at the workplace:**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
· **Additional information:**
Harmful if swallowed, inhaled or absorbed through skin. Causes moderate eye irritation. Avoid breathing vapor or spray mist. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove contaminated clothing and wash clothing before reuse.

· **Exposure controls**
· **Personal protective equipment:**
· **General protective and hygienic measures:**
Users should:
- *Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.*
- *Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing*

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.
· **Breathing equipment:** *Not required.*
· **Protection of hands:**

Protective gloves

· **Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

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Trade name: Onager® EW Miticide
EPA Registration No.:10163-337

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· **Body protection:**
Applicators and other handlers must wear:
- Long sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks

9 Physical and chemical properties

· **Information on basic physical and chemical properties**	
· **General Information**	
· **Appearance:**	
· **Form:**	Liquid
· **Color:**	Pale yellow
· **Odor:**	Aromatic
· **Odor threshold:**	Not determined.
· **pH-value at 20 °C (68 °F):**	5.8
· **Change in condition**	
· **Melting point/Melting range:**	Undetermined.
· **Boiling point/Boiling range:**	Undetermined.
· **Flash point:**	Not applicable.
· **Flammability (solid, gaseous):**	Not applicable.
· **Ignition temperature:**	
· **Decomposition temperature:**	Not determined.
· **Auto igniting:**	Product is not self-igniting.
· **Danger of explosion:**	Product does not present an explosion hazard.
· **Explosion limits:**	
· **Lower:**	Not determined.
· **Upper:**	Not determined.
· **Vapor pressure:**	Not determined.
· **Density at 20 °C (68 °F):**	1.0476 g/cm³ (8.742 lbs/gal)
· **Relative density**	Not determined.
· **Vapor density**	Not determined.
· **Evaporation rate**	Not determined.
· **Solubility in / Miscibility with**	
· **Water:**	Dispersible.
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity:**	
· **Dynamic:**	Not determined.
· **Kinematic:**	Not determined.
· **Other information**	No further relevant information available.

US

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* 10 Stability and reactivity

· **Reactivity** No further relevant information available.
· **Chemical stability** Stable under normal conditions
· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
· **Possibility of hazardous reactions** No dangerous reactions known.
· **Conditions to avoid** No further relevant information available.
· **Incompatible materials:** No further relevant information available.
· **Hazardous decomposition products:**
Nitrogen oxides (NOx)
Hydrogen chloride (HCl)

* 11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**

· LD/LC50 values that are relevant for classification:		
Oral	LD50	>5000 mg/kg (rat)
Dermal	LD50	>5000 mg/kg (rat)
Inhalative	LC50/4 h	>2.0 mg/l (rat)

· **Primary irritant effect:**
· **on the skin:** Moderately irritating to the skin (rabbits)
· **on the eye:** Moderately and mildly irritating to the unrinsed and rinsed eye, respectively.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
The product is not subject to classification according to internally approved calculation methods for preparations:
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

· **Carcinogenic categories**

· IARC (International Agency for Research on Cancer)
None of the ingredients are listed.

· NTP (National Toxicology Program)
None of the ingredients are listed.

· OSHA-Ca (Occupational Safety & Health Administration)
None of the ingredients are listed.

* 12 Ecological information

· **Toxicity**
This pesticide is toxic to fish and aquatic invertebrates. Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Drift and runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when cleaning equipment or when disposing of equipment washwaters.
· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability** No further relevant information available.

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Trade name: Onager® EW Miticide
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· **Behavior in environmental systems:**
· **Bioaccumulative potential** No further relevant information available.
· **Mobility in soil** No further relevant information available.
· **Additional ecological information:**
· **General notes:**
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even small quantities leak into the ground.
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **Other adverse effects** No further relevant information available.

*

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation:**
Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

· **Uncleaned packagings:**
· **Recommendation:**
Nonrefillable container. Do not reuse or refill this container. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

*

14 Transport information

· **UN-Number**	
· **DOT, ADR, ADN, IMDG, IATA**	Not regulated
· **UN proper shipping name**	
· **ADR, ADN, IMDG, IATA**	Not regulated
· **Transport hazard class(es)**	
· **ADR, ADN, IMDG, IATA**	
· **Class**	Not regulated
· **Packing group**	
· **ADR, IMDG, IATA**	Not regulated
· **Environmental hazards:**	Product contains environmentally hazardous substances: hexythiazox
· **Marine pollutant:**	No
· **Special precautions for user**	Not applicable
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable

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EPA Registration No.:10163-337

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· **UN "Model Regulation":** Not regulated

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**
EPA /FIFRA Information:
This chemical is a pesticide product registered by the Environmental Protection Agency (EPA) and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals.

· **SARA Title III**

· **Section 355 (extremely hazardous substances):**
None of the ingredients are listed.

· **Section 313 (Specific toxic chemical listings):**
None of the ingredients are listed.

· **TSCA (Toxic Substances Control Act):**
None of the ingredients are listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**
None of the ingredients are listed.

· **Chemicals known to cause reproductive toxicity for females:**
None of the ingredients are listed.

· **Chemicals known to cause reproductive toxicity for males:**
None of the ingredients are listed.

· **Chemicals known to cause developmental toxicity:**
None of the ingredients are listed.

· **Carcinogenicity categories**

· **EPA (Environmental Protection Agency)**
None of the ingredients are listed.

· **TLV (Threshold Limit Value established by ACGIH)**
None of the ingredients are listed.

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**
None of the ingredients are listed.

· **GHS label elements**
The product is classified and labeled according to the Globally Harmonized System (GHS).

· **Hazard pictograms**
Not applicable

· **Signal word**
(US EPA) CAUTION

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Trade name: Onager® EW Miticide
EPA Registration No.:10163-337

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· **Hazard statements**
Harmful if inhaled
Harmful if swallowed or if inhaled.
Toxic to aquatic life.

· **Precautionary statements**
Harmful if swallowed, inhaled or absorbed through skin. Causes moderate eye irritation. Avoid breathing vapor or spray mist. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove contaminated clothing and wash clothing before reuse.

Avoid breathing dust/fume/gas/mist/vapors/spray
Avoid release to the environment.
Wash thoroughly after handling.

· **Chemical safety assessment:** *A Chemical Safety Assessment has not been carried out.*

*

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Department issuing SDS:** *Supply Chain*
· **Contact:** *sds@gowanco.com*
· **Date of preparation / last revision** *03/14/2016 / 8*
· **Abbreviations and acronyms:**
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Acute Tox. 4: Acute toxicity, Hazard Category 4
Aquatic Acute 1: Hazardous to the aquatic environment - AcuteHazard, Category 1
Aquatic Acute 2: Hazardous to the aquatic environment - AcuteHazard, Category 2
Aquatic Chronic 1: Hazardous to the aquatic environment - Chronic Hazard, Category 1
· **Sources** *Onager® is a registered trademark of Gowan Company, L.L.C.*
· *** Data compared to the previous version altered.**

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product identifier	
Trade name	REQUIEM® EC
Product code (UVP)	80871880
SDS Number	102000027652
EPA Registration No.	264-1159
Relevant identified uses of the substance or mixture and uses advised against	
Use	Insecticide, Acaricide
Restrictions on use	See product label for restrictions.
Information on supplier	
Supplier	Bayer CropScience 2 T.W. Alexander Drive Research Triangle PK, NC 27709 United States
Responsible Department	Email: SDSINFO.BCS-NA@bayer.com
Emergency telephone no.	
Emergency Telephone Number (24hr/ 7 days)	1-800-334-7577
Product Information Telephone Number	1-866-99BAYER (1-866-992-2937)

SECTION 2: HAZARDS IDENTIFICATION

Classification in accordance with regulation HCS 29CFR §1910.1200
Aspiration hazard: Category 1
Skin sensitisation: Category 1
Flammable liquids: Category 4

Signal word: Danger

Hazard statements
May be fatal if swallowed and enters airways.
May cause an allergic skin reaction.
Combustible liquid

Precautionary statements

Avoid breathing mist and spray.
Contaminated work clothing should not be allowed out of the workplace.
Keep away from open flames/hot surfaces. - No smoking.
Wear protective gloves and eye protection/face protection.
IF SWALLOWED: Immediately call a POISON CENTER/doctor/physician.
Do NOT induce vomiting.
IF ON SKIN: Wash with plenty of water/soap.
If skin irritation or rash occurs: Get medical advice/attention.
Specific treatment (see supplemental first aid instructions on this label).
Wash contaminated clothing before reuse.
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
Store locked up.
Store in a well-ventilated place. Keep cool.
Dispose of contents/container in accordance with local regulation.

Other hazards
No other hazards known.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Component Name	CAS-No.	Concentration % by weight
Terpene Constituents of Extract of Chenopodium ambrosioides near ambrosioides as Synthetically Manufactured		16.75

SECTION 4: FIRST AID MEASURES

Description of first aid measures

General advice	When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.
Inhalation	Move to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a physician or poison control center immediately.
Skin contact	Take off contaminated clothing and shoes immediately. Wash off immediately with plenty of water for at least 15 minutes. Call a physician or poison control center immediately.
Eye contact	Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a physician or poison control center immediately.
Ingestion	Call a physician or poison control center immediately. Rinse out mouth and give water in small sips to drink. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person. Do not leave victim unattended.

Most important symptoms and effects, both acute and delayed

Symptoms	Aspiration may cause pulmonary oedema and pneumonitis.

Indication of any immediate medical attention and special treatment needed

Treatment	Appropriate supportive and symptomatic treatment as indicated by the patient's condition is recommended. There is no specific antidote.

SECTION 5: FIREFIGHTING MEASURES

Extinguishing media

Suitable	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Unsuitable	None known.
Special hazards arising from the substance or mixture	Dangerous gases are evolved in the event of a fire.

Advice for firefighters

Special protective equipment for fire-fighters	Firefighters should wear NIOSH approved self-contained breathing apparatus and full protective clothing.
Further information	Use appropriate extinguishing media for material that is supplying fuel. Keep out of smoke. Fight fire from upwind position. Cool closed containers exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water courses.
Flash point	87.2 °C
Autoignition temperature	no data available
Lower explosion limit	no data available
Upper explosion limit	no data available
Explosivity	not applicable

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Precautions	Keep unauthorized people away. Isolate hazard area. Avoid contact with spilled product or contaminated surfaces.

Methods and materials for containment and cleaning up

Methods for cleaning up	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Collect and transfer the product into a properly labelled and tightly closed container. Clean contaminated floors and objects thoroughly, observing environmental regulations.

Additional advice	Use personal protective equipment. Do not allow to enter soil, waterways or waste water canal.
Reference to other sections	Information regarding safe handling, see section 7. Information regarding personal protective equipment, see section 8. Information regarding waste disposal, see section 13.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling	Ensure adequate ventilation. Handle and open container in a manner as to prevent spillage.
Hygiene measures	Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics. Remove Personal Protective Equipment (PPE) immediately after handling this product. Remove soiled clothing immediately and clean thoroughly before using again. Wash thoroughly and put on clean clothing.

Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	Store in a cool, dry place and in such a manner as to prevent cross contamination with other crop protection products, fertilizers, food, and feed. Store in original container and out of the reach of children, preferably in a locked storage area. Keep away from direct sunlight.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

No control parameters known.

Exposure controls

Personal protective equipment
In normal use and handling conditions please refer to the label and/or leaflet. In all other cases the following recommendations would apply.

Respiratory protection	When respirators are required, select NIOSH approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industry recommendations.
Hand protection	Chemical resistant nitrile rubber gloves
Eye protection	Safety glasses with side-shields
Skin and body protection	Wear long-sleeved shirt and long pants and shoes plus socks.
General protective measures	Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and warm/tepid water.

Keep and wash PPE separately from other laundry.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	light brown
Physical State	liquid emulsion
Odor	aromatic
Odour Threshold	no data available
pH	5.6 - 7.3 at 100 % (23 °C)
Vapor Pressure	no data available
Vapor Density (Air = 1)	no data available
Density	ca. 0.91 g/ml at 20 °C
Evapouration rate	no data available
Boiling Point	> 100 °C / 212 °F
Melting / Freezing Point	no data available
Water solubility	emulsifiable
Minimum Ignition Energy	not applicable
Decomposition temperature	no data available
Partition coefficient: n-octanol/water	no data available
Viscosity	11.5 - 13.8 mPa.s at 21 °C
Flash point	87.2 °C
Autoignition temperature	no data available
Lower explosion limit	no data available
Upper explosion limit	no data available
Explosivity	not applicable

SECTION 10: STABILITY AND REACTIVITY

Reactivity	
Thermal decomposition	no data available
Chemical stability	Stable under recommended storage conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.

Conditions to avoid	Extremes of temperature and direct sunlight. Heat, flames and sparks.
Incompatible materials	no data available
Hazardous decomposition products	No decomposition products expected under normal conditions of use.

SECTION 11: TOXICOLOGICAL INFORMATION

Exposure routes	Eye contact, Skin contact, Inhalation
Immediate Effects	
Eye	Mild eye irritation.
Skin	Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.
Inhalation	Mists may cause respiratory tract irritation.

Information on toxicological effects

Acute oral toxicity	LD50 (rat) > 5,000 mg/kg
Acute inhalation toxicity	LC50 (rat) 5.19 mg/l Determined in the form of liquid aerosol. Highest attainable concentration. No deaths
Acute dermal toxicity	LD50 (rabbit) > 2,020 mg/kg
Skin irritation	No skin irritation (rabbit)
Eye irritation	Mild eye irritation. (rabbit)
Sensitisation	Non-sensitizing. (guinea pig) OECD Test Guideline 406, Buehler test Sensitising (mouse) OECD Test Guideline 429, local lymph node assay (LLNA)

ACGIH

None.

NTP

None.

IARC

None.

OSHA

None.

Further information

Acute toxicity studies have not been performed on this product as formulated.
Acute toxicity studies have been bridged from a similar formulation(s).
The non-acute information pertains to the active ingredient(s).

SECTION 12: ECOLOGICAL INFORMATION

Environmental precautions
Do not allow to get into surface water, drains and ground water.
Do not contaminate surface or ground water by cleaning equipment or disposal of wastes, including equipment wash water.
Apply this product as specified on the label.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods

Product
Dispose in accordance with all local, state/provincial and federal regulations.
Do not contaminate water, food, or feed by disposal.
Never place unused product down any indoor or outdoor drain.
Follow advice on product label and/or leaflet.

Contaminated packaging
Follow advice on product label and/or leaflet.
Do not re-use empty containers.
Triple rinse containers.
Puncture container to avoid re-use.
Completely empty container into application equipment, then dispose of empty container in a sanitary landfill, by incineration or by other procedures approved by state/provincial and local authorities.
If burned, stay out of smoke.

RCRA Information
Characterization and proper disposal of this material as a special or hazardous waste is dependent upon Federal, State and local laws and are the user's responsibility. RCRA classification may apply.

SECTION 14: TRANSPORT INFORMATION

49CFR

NA-Number	**1993**
Packaging group	III
Marine pollutant	Marine pollutant
Proper shipping name	COMBUSTIBLE LIQUID, N.O.S. (CYMENES)

IMDG

UN number	**3082**
Class	9
Packaging group	III

Marine pollutant	YES
Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CYMENES SOLUTION)

IATA

UN number	**3082**
Class	9
Packaging group	III
Environm. Hazardous Mark	YES
Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CYMENES SOLUTION)

This transportation information is not intended to convey all specific regulatory information relating to this product. It does not address regulatory variations due to package size or special transportation requirements.

SECTION 15: REGULATORY INFORMATION

EPA Registration No. 264-1159
US Federal Regulations
TSCA list
None.
US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)
None.
SARA Title III - Section 302 - Notification and Information
None.
SARA Title III - Section 313 - Toxic Chemical Release Reporting
None.
US States Regulatory Reporting
CA Prop65
This product does not contain any substances known to the State of California to cause cancer.

This product does not contain any substances known to the State of California to cause reproductive harm.

US State Right-To-Know Ingredients
None.

Canadian Regulations
Canadian Domestic Substance List
None.

Environmental
CERCLA
None.
Clean Water Section 307 Priority Pollutants
None.

Safe Drinking Water Act Maximum Contaminant Levels
None.

EPA/FIFRA Information:
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information required on the pesticide label:

Signal word:	Caution!
Hazard statements:	Avoid contact with skin, eyes and clothing. Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics. Remove and wash contaminated clothing before re-use. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

SECTION 16: OTHER INFORMATION

Abbreviations and acronyms

49CFR	Code of Federal Regulations, Title 49
ACGIH	US. ACGIH Threshold Limit Values
CAS-Nr.	Chemical Abstracts Service number
EINECS	European inventory of existing commercial substances
ELINCS	European list of notified chemical substances
IARC	US. IARC Monographs on Occupational Exposures to Chemical Agents
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
N.O.S.	Not otherwise specified
NTP	US. National Toxicology Program (NTP) Report on Carcinogens
OECD	Organization for Economic Co-operation and Development
TDG	Transportation of Dangerous Goods
TWA	Time weighted average
UN	United Nations
WHO	World health organisation

NFPA 704 (National Fire Protection Association):
Health - 1 Flammability - 2 Instability - 0 Others - none

HMIS (Hazardous Materials Identification System, based on the Third Edition Ratings Guide)
Health - 1 Flammability - 2 Physical Hazard - 0 PPE -

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

Reason for Revision: Revised according to the current OSHA Hazard Communication Standard (29CFR1910.1200)

Revision Date: 08/07/2015

This information is provided in good faith but without express or implied warranty. The customer assumes all responsibility for safety and use not in accordance with label instructions. The product names are registered trademarks of Bayer.

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date: 05/03/2016 Revision: 05/03/2016

1 Identification

· **Product identifier**

· **Trade name:** Kocide® 3000

· **Article number:** No other identifiers

· **Recommended use and restriction on use**
· **Recommended use:** Fungicide
· **Restrictions on use:** Contact manufacturer

· **Details of the supplier of the Safety Data Sheet**
· **Manufacturer/Supplier:**
Kocide LLC
9145 Guilford Road, Suite 175
Columbia, MD 21046
USA
Tel: +1 301-604-5365

Distributed by:
Certis USA L.L.C.
9145 Guilford Road, Suite 175
Columbia, MD 21046
USA

· **Emergency telephone number:**
ChemTel Inc.
(800)255-3924, +1 (813)248-0585

2 Hazard(s) identification

· **Classification of the substance or mixture**

Acute Tox. 4 H302 Harmful if swallowed.
Acute Tox. 4 H332 Harmful if inhaled.
Eye Irrit. 2B H320 Causes eye irritation.

· **Additional information:**
See Section 15 for specific EPA FIFRA label information.
To avoid risks to human health and the environment, comply with the instructions for use.
0 % of the mixture consists of component(s) of unknown toxicity.

· **Label elements**
· **GHS label elements**
The product is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms:**

GHS07

· **Signal word:** Warning
· **Hazard statements:**
H302+H332 Harmful if swallowed or if inhaled.
H320 Causes eye irritation.
· **Precautionary statements:**
P261 Avoid breathing dust.
P264 Wash thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.

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P271	Use only outdoors or in a well-ventilated area.
P305+P351+P338	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P337+P313	If eye irritation persists: Get medical advice/attention.
P301+P312	IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
P330	Rinse mouth.
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Other hazards** There are no other hazards not otherwise classified that have been identified.

3 Composition/information on ingredients

· **Chemical characterization: Mixtures**

· **Components:**		
20427-59-2	copper dihydroxide Acute Tox. 3, H301; Acute Tox. 3, H331 Eye Dam. 1, H318	46.1%
	2-propenoic acid, homopolymer	5-10%
	Clay minerals	1-5%

· **Additional information:**
For the listed ingredient(s), the identity and/or exact percentage(s) are being withheld as a trade secret.

4 First-aid measures

· **Description of first aid measures**

· **General information:**
Immediately remove any clothing soiled by the product.
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
Take affected persons out into the fresh air.

· **After inhalation:**
Supply fresh air.
Seek immediate medical advice.
Provide oxygen treatment if affected person has difficulty breathing.

· **After skin contact:**
Immediately wash with water and soap and rinse thoroughly.
If skin irritation continues, consult a doctor.

· **After eye contact:**
Remove contact lenses if worn.
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

· **After swallowing:**
Rinse out mouth and then drink plenty of water.
Do not induce vomiting; immediately call for medical help.

· **Most important symptoms and effects, both acute and delayed:**
Coughing

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Irritant to eyes.
Gastric or intestinal disorders when ingested.
Nausea in case of ingestion.

· **Danger:**
Danger of convulsion.
Danger of impaired breathing.
Causes serious eye irritation.
Harmful if swallowed or if inhaled.

· **Indication of any immediate medical attention and special treatment needed:**
If necessary oxygen respiration treatment.
Treat symptomatically.

5 Fire-fighting measures

· **Extinguishing media**

· **Suitable extinguishing agents:**
Foam
Carbon dioxide
Fire-extinguishing powder
Water spray

· **For safety reasons unsuitable extinguishing agents:** Water stream.

· **Special hazards arising from the substance or mixture**
Formation of toxic gases is possible during heating or in case of fire.

· **Advice for firefighters**

· **Protective equipment:**
Wear self-contained respiratory protective device.
Wear fully protective suit.

· **Additional information:**
Collect contaminated fire fighting water separately. It must not enter the sewage system.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures:**
Use respiratory protective device against the effects of fumes/dust/aerosol.
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation.
Isolate area and prevent access.

· **Environmental precautions:**
Do not allow to enter sewers/ surface or ground water.
Inform respective authorities in case of seepage into water course or sewage system.

· **Methods and material for containment and cleaning up:**
Pick up mechanically.
Dispose contaminated material as waste according to item 13.
Send for recovery or disposal in suitable receptacles.
Do not flush with water or aqueous cleansing agents

· **Reference to other sections:**
See Section 7 for information on safe handling.

(Cont'd. on page 4)

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See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

· **Handling**
· **Precautions for safe handling:**
Thorough dedusting.
Any deposit of dust which cannot be avoided must be regularly removed.
Use only in well ventilated areas.
Use personal protective equipment as required.
Wash contaminated clothing before reuse.
· **Information about protection against explosions and fires:**
Dust can combine with air to form an explosive mixture.
Protect from heat.

· **Conditions for safe storage, including any incompatibilities**
· **Storage**
· **Requirements to be met by storerooms and receptacles:**
Store only in the original receptacle.
Provide ventilation for receptacles.
· **Information about storage in one common storage facility:**
Protect from humidity and water.
Store away from foodstuffs.
Do not store together with acids.
· **Further information about storage conditions:**
Keep containers tightly sealed.
Storage Temperatures : <95 °F / <35 °C.
· **Specific end use(s):** No relevant information available.

8 Exposure controls/personal protection

· **Control parameters**
· **Components with limit values that require monitoring at the workplace:**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

· **Exposure controls**
· **Engineering measures**
Ensure adequate ventilation, especially in confined areas. Provide for appropriate exhaust ventilation and dust collection at machinery. Use sufficient ventilation to keep employee exposure below recommended limits.
· **Personal protective equipment:**
· **General protective and hygienic measures:**
The usual precautionary measures for handling chemicals should be followed.
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.

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Store protective clothing separately.
Avoid breathing dust.

· **Engineering controls:** No relevant information available.

· **Breathing equipment:**

Manufacturing and processing work: Half mask with a particle filter FFP2 (EN149)
Mixer and loaders must wear: Half mask with a particle filter FFP2 (EN149)
Spray application - outdoor: Tractor / sprayer with hood: No personal respiratory protective equipment normally required.
Tractor / sprayer without hood: Low application (horticulture, field crops): Half mask with a particle filter FFP2 (EN149)
Middle-height application: Half mask with a particle filter P2 (EN 143).
Backpack / knapsack sprayer: Low application (horticulture, field crops): Half mask with a particle filter FFP2 (EN149)
Middle-height application: Half mask with a particle filter P2 (EN 143).
Mechanical automatized spray application in closed tunnel: No personal respiratory protective equipment normally required.

· **Protection of hands:**

Glove thickness: 0,4 - 0,7 mm
Glove length: Gauntlets
Protection index: Class 6
Wearing time: > 480 min
The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. The suitability for a specific workplace should be discussed with the producers of the protective gloves. Before removing gloves clean them with soap and water. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough. Gauntlets shorter than 35 cm long shall be worn under the combination sleeve. Gloves must be inspected prior to use.

· **For the permanent contact gloves made of the following materials are suitable:** Nitrile rubber, NBR

· **Eye protection:**

Safety glasses with side-shields conforming to OSHA or EN166

Follow relevant national guidelines concerning the use of protective eyewear.

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· **Body protection:**

Manufacturing and processing work: Full protective clothing Type 5 (EN 13982-2)
Mixer and loaders must wear: Full protective clothing Type 5 + 6 (EN ISO 13982-2 / EN 13034) Rubber apron Nitrile rubber boots (EN 13832-3 / EN ISO 20345).
Spray application - outdoor: Tractor / sprayer with hood: No personal body protection normally required.
Tractor / sprayer without hood: Low application (horticulture, field crops): Full protective clothing Type 4 (EN 14605) Nitrile rubber boots (EN 13832-3 / EN ISO 20345).
Middle-height application: Full protective clothing Type 4 (EN 14605) Nitrile rubber boots (EN 13832-3 / EN ISO 20345).
Backpack / knapsack sprayer: Low application (horticulture, field crops): Full protective clothing Type 4 (EN 14605) Nitrile rubber boots (EN 13832-3 / EN ISO 20345).
Middle-height application: Full protective clothing Type 4 (EN 14605) Nitrile rubber boots (EN 13832-3 / EN ISO 20345).
Mechanical automatized spray application in closed tunnel: No personal body protection normally required.
When exceptional circumstances require an access to the treated area before the end of re-entry periods, wear full protective clothing Type 6 (EN 13034), nitrile rubber gloves class 3 (EN 374) and nitrile rubber boots (EN 13832-3 / EN ISO 20345).

To optimize the ergonomy it may be recommended to use cotton underwear when wearing some fabrics. Take advice from supplier. Garment materials that are resistant to both water vapour and air will maximise wearing comfort. Materials should be robust to maintain the integrity and barrier in use. The permeation resistance of the fabric must be verified independently of the « type » protection recommended, to ensure an appropriate performance level of the material adequate to the corresponding agent and type of exposure.

9 Physical and chemical properties

· **Information on basic physical and chemical properties**

· **Appearance:**	
Form:	Solid Granulate
Color:	Blue
· **Odor:**	Characteristic
· **Odor threshold:**	Not determined.
· **pH-value:**	Not applicable.
· **Melting point/Melting range:**	Not determined.
· **Boiling point/Boiling range:**	Not determined.
· **Flash point:**	Not applicable.
· **Flammability (solid, gaseous):**	Product is not flammable.
· **Auto-ignition temperature:**	340 °C (644 °F)
· **Decomposition temperature:**	Not determined.
· **Danger of explosion:**	Product does not present an explosion hazard.

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· **Explosion limits**	
Lower:	Not determined.
Upper:	Not determined.
· **Vapor pressure:**	Not applicable.
· **Density:**	Not determined.
· **Relative density:**	Not determined.
· **Vapor density:**	Not applicable.
· **Evaporation rate:**	Not applicable.
· **Solubility in / Miscibility with**	
Water:	Dispersible.
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity**	
Dynamic:	Not applicable.
Kinematic:	Not applicable.
· **Other information**	No relevant information available.

10 Stability and reactivity

· **Reactivity:** No relevant information available.
· **Chemical stability:**
· **Thermal decomposition / conditions to be avoided:**
No decomposition if used and stored according to specifications.
To avoid thermal decomposition, do not overheat.
· **Possibility of hazardous reactions:**
Reacts with strong acids.
As the product is supplied it is not capable of dust explosion; however enrichment with fine dust causes risk of dust explosion.
· **Conditions to avoid:**
Temperatures exceeding: 284 °F / 140 °C.
Prevent formation of dust.
· **Incompatible materials:** No relevant information available.
· **Hazardous decomposition products:** Copper oxides.

11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**

· **LD/LC50 values that are relevant for classification:**

Oral	LD50	1847 mg/kg (rat)
Dermal	LD50	>2000 mg/kg (rabbit)
Inhalative	LC50/4h	>2000 mg/m3 (rat)

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20427-59-2 copper dihydroxide		
Oral	LD50	489 mg/kg (rat)
Inhalative	LC50/4h	0.451 mg/l (rat)

· **Primary irritant effect:**
· **On the skin:** Based on available data, the classification criteria are not met.
· **On the eye:** Irritating effect.
· **Sensitization:** No sensitizing effects known.
· **Subacute to chronic toxicity:** No relevant information available.

· **Carcinogenic categories**

· IARC (International Agency for Research on Cancer):
None of the ingredients are listed.

· NTP (National Toxicology Program):
None of the ingredients are listed.

· OSHA-Ca (Occupational Safety & Health Administration):
None of the ingredients are listed.

· **Probable route(s) of exposure:**
Inhalation.
Eye contact.
Skin contact.
· **Acute effects (acute toxicity, irritation and corrosivity):**
Harmful if swallowed.
Harmful if inhaled.
Irritating to eyes.
· **Repeated dose toxicity:** No relevant information available.
· **CMR effects (carcinogenity, mutagenicity and toxicity for reproduction)**
· **Germ cell mutagenicity:** Based on available data, the classification criteria are not met.
· **Carcinogenicity:** Based on available data, the classification criteria are not met.
· **Reproductive toxicity:** Based on available data, the classification criteria are not met.
· **STOT-single exposure:** Based on available data, the classification criteria are not met.
· **STOT-repeated exposure:** Based on available data, the classification criteria are not met.
· **Aspiration hazard:** Based on available data, the classification criteria are not met.

12 Ecological information

· **Toxicity**
· **Aquatic toxicity**
Toxic for aquatic organisms

LC50	0.24 mg/l (Oncorhynchus mykiss) (96h)
EC50 (static)	0.118 mg/l (daphnia) (48h)
ErC50	0.00939 mg/l (Pseudokirchneriella subcapitata) (72h)
NOEC	0.03 mg/l (Pseudokirchneriella subcapitata) (21d)
	0.0017 mg/l (Pseudokirchneriella subcapitata) (90d)

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20427-59-2 copper dihydroxide	
EC50	0.0422 mg/l (daphnia)
	0.135 mg/l (Oncorhynchus mykiss)
ErC50	0.00939 mg/l (Pseudokirchneriella subcapitata)
NOEC	0.0017 mg/l (fish) (90 d)

· **Persistence and degradability**
Not readily biodegradable. Estimation based on data obtained on active ingredient.
· **Bioaccumulative potential:**
Not readily biodegradable. Estimation based on data obtained on active ingredient.
· **Mobility in soil:**
Under actual use conditions, there is no reasonable expectation of any movement of the product from the top soil layer.
· **Ecotoxical effects:**
· **Remark:** Very toxic for fish
· **Additional ecological information**
· **General notes:**
Do not allow product to reach ground water, water course or sewage system, even in small quantities.
Danger to drinking water if even extremely small quantities leak into the ground.
Also poisonous for fish and plankton in water bodies.
Very toxic for aquatic organisms
Due to available data on eliminability/decomposition and bioaccumulation potential prolonged term damage of the environment can not be excluded.
· **Other adverse effects:** No relevant information available.

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation:**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
In accordance with local and national regulations. It must undergo special treatment, e.g. at suitable disposal site, to comply with local regulations. Do not contaminate ponds, waterways or ditches with chemical or used container.
The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes. Residual materials should be treated as hazardous.

· **Uncleaned packagings**
· **Recommendation:**
Do not re-use empty containers.
Disposal must be made according to official regulations.

14 Transport information

· **UN-Number**
· **DOT** Classification as a MARINE POLLUTANT is based on MARPOL and DOT rules. Labeling as a MARINE

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·	POLLUTANT is not required for non-bulk single package shipments by motor vehicle, rail car or aircraft. Bulk packaging consists of a maximum capacity of greater than 450L (119 gallons) for a liquid and a maximum net mass greater than 400kg (882 pounds) for a solid.
· **ADR, IMDG, IATA**	UN3077
· **UN proper shipping name**	
· **DOT**	See above.
· **ADR**	3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (copper dihydroxide)
· **IMDG, IATA**	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (copper dihydroxide)
· **Transport hazard class(es)**	
· **DOT**	
· **Class**	See above.
· **ADR**	
· **Class**	9 (M7) Miscellaneous dangerous substances and articles
· **Label**	9
· **IMDG, IATA**	
· **Class**	9 Miscellaneous dangerous substances and articles
· **Label**	9
· **Packing group**	
· **DOT**	See above.
· **ADR, IMDG, IATA**	III
· **Environmental hazards**	
· **Marine pollutant:**	Yes Symbol (fish and tree)
· **Special precautions for user**	Warning: Miscellaneous dangerous substances and articles
· **Danger code (Kemler):**	90
· **EMS Number:**	F-A,S-F

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· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.
· **Transport/Additional information:**	Not regulated when carried in single or combination packaging containing a net quantity of 5L or less for liquids or 5 kg or less for solids per the following: DOT: 171.4(c)(2) ADR: SP 375 IMDG: 2.10.2.7 IATA: special provision A197

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**

· **United States (USA)**

· **SARA**

· **Section 302 (extremely hazardous substances):**

None of the ingredients are listed.

· **Section 304 (emergency release notification):**

None of the ingredients are listed.

· **Sections 311/312 (hazardous chemical threshold planning quantity in pounds):**

None of the ingredients are listed.

· **Section 355 (extremely hazardous substances):**

None of the ingredients are listed.

· **Section 313 (Specific toxic chemical listings):**

20427-59-2	copper dihydroxide

· **TSCA (Toxic Substances Control Act)**

All ingredients are listed.

· **Proposition 65 (California)**

· **Chemicals known to cause cancer:**

WARNING! This product contains a chemical or chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

· **Chemicals known to cause reproductive toxicity for females:**

WARNING! This product contains a chemical or chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

· **Chemicals known to cause reproductive toxicity for males:**

WARNING! This product contains a chemical or chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

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· **Chemicals known to cause developmental toxicity:**

WARNING! This product contains a chemical or chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency):**

None of the ingredients are listed.

· **Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)**

EPA Product Registration #: 91411-2-70051.

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label: CAUTION Causes moderate eye irritation. Harmful if swallowed, absorbed through the skin or inhaled. Do not get in eyes, skin, or on clothing. Avoid breathing dust. Wash thoroughly with soap and water after handling.

FIRST AID

IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

IF SWALLOWED: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

IF INHALED: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

IF ON SKIN: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may

also contact 1-800-255-3924 for emergency medical treatment information.

NOTE TO PHYSICIAN :Probable mucosal damage may contraindicate use of gastric lavage. See Label for Additional Precautions and Directions for use.

USER SAFETY RECOMMENDATIONS

USERS SHOULD: Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. As soon as possible, wash thoroughly and change into clean clothing. Wash the outside of gloves before removing.

· **IARC (International Agency for Research on Cancer):**

None of the ingredients are listed.

· **NIOSH-Ca (National Institute for Occupational Safety and Health):**

None of the ingredients are listed.

16 Other Information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling,

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use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The above information relates only to the specific material(s) designated herein and may not be valid for such material(s) used in combination with any other materials or in any process or if the material is altered or processed, unless specified in the text.

· **Date of preparation / last revision** 05/03/2016 / -

· **Abbreviations and acronyms:**

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
CAS: Chemical Abstracts Service (division of the American Chemical Society)
DNEL: Derived No-Effect Level (REACH)
PNEC: Predicted No-Effect Concentration (REACH)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Acute Tox. 3: Acute toxicity, Hazard Category 3
Acute Tox. 4: Acute toxicity, Hazard Category 4
Eye Dam. 1: Serious eye damage/eye irritation, Hazard Category 1
Eye Irrit. 2B: Serious eye damage/eye irritation, Hazard Category 2B

· **Sources**

SDS Prepared by:
ChemTel Inc.
1305 North Florida Avenue
Tampa, Florida USA 33602-2902
Toll Free North America 1-888-255-3924 Intl. +01 813-248-0573
Website: www.chemtelinc.com

BASF
We create chemistry

Safety Data Sheet
PROWL H2O HERBICIDE

1. Identification

Product identifier used on the label

PROWL H2O HERBICIDE

Recommended use of the chemical and restriction on use
Recommended use*: herbicide

* The "Recommended use" identified for this product is provided solely to comply with a Federal requirement and is not part of the seller's published specification. The terms of this Safety Data Sheet (SDS) do not create or infer any warranty, express or implied, including by incorporation into or reference in the seller's sales agreement.

Details of the supplier of the safety data sheet

Company:
BASF CORPORATION
100 Park Avenue
Florham Park, NJ 07932, USA

Telephone: +1 973 245-6000

Emergency telephone number

CHEMTREC: 1-800-424-9300
BASF HOTLINE: 1-800-832-HELP (4357)

Other means of identification

Substance number:	171005
EPA Registration number:	241-418
Molecular formula:	C13 H19 N3 O4
Chemical family:	aniline derivative
Synonyms:	pendimethalin

2. Hazards Identification

According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

Classification of the product

Skin Sens.	1B	Skin sensitization

Label elements

Pictogram:

Signal Word:
Danger

Hazard Statement:

H320	Causes eye irritation.
H315	Causes skin irritation.
H332	Harmful if inhaled.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317	May cause an allergic skin reaction.
H335	May cause respiratory irritation.

Precautionary Statements (Prevention):

P280	Wear protective gloves.
P273	Avoid release to the environment.
P261	Avoid breathing vapours/spray.

Precautionary Statements (Response):

P312	Call a POISON CENTER or doctor/physician if you feel unwell.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P314	Get medical advice/attention if you feel unwell.
P303 + P352	IF ON SKIN (or hair): Wash with plenty of soap and water.
P333 + P311	If skin irritation or rash occurs: Call a POISON CENTER or doctor/physician.
P332 + P313	If skin irritation occurs: Get medical advice/attention.
P362 + P364	Take off contaminated clothing and wash before reuse.
P337 + P311	If eye irritation persists: Call a POISON CENTER or doctor/physician.

Precautionary Statements (Storage):

P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.

Precautionary Statements (Disposal):

P501	Dispose of contents/container to hazardous or special waste collection point.

Hazards not otherwise classified

Labeling of special preparations (GHS):
The following percentage of the mixture consists of components(s) with unknown hazards regarding the acute toxicity: 28 % dermal
The following percentage of the mixture consists of components(s) with unknown hazards regarding the acute toxicity: 21 % oral
The following percentage of the mixture consists of components(s) with unknown hazards regarding the acute toxicity: 27 % Inhalation - vapour
The following percentage of the mixture consists of components(s) with unknown hazards regarding the acute toxicity: 27 % Inhalation - mist
Product contains the following components and may cause an allergic skin reaction: Preservative based on isothiazolones

CONTAINS ISOCYANATES. INHALATION OF ISOCYANATE MISTS OR VAPORS MAY CAUSE RESPIRATORY IRRITATION, BREATHLESSNESS, CHEST DISCOMFORT AND REDUCED PULMONARY FUNCTION. OVEREXPOSURE WELL ABOVE THE PEL MAY RESULT IN BRONCHITIS, BRONCHIAL SPASMS AND PULMONARY EDEMA. LONG-TERM EXPOSURE TO ISOCYANATES HAS BEEN REPORTED TO CAUSE LUNG DAMAGE, INCLUDING REDUCED LUNG FUNCTION WHICH MAY BE PERMANENT. ACUTE OR CHRONIC OVEREXPOSURE TO ISOCYANATES MAY CAUSE SENSITIZATION IN SOME INDIVIDUALS, RESULTING IN ALLERGIC RESPIRATORY REACTIONS INCLUDING WHEEZING, SHORTNESS OF BREATH AND DIFFICULTY BREATHING. ANIMAL TESTS INDICATE THAT SKIN CONTACT MAY PLAY A ROLE IN CAUSING RESPIRATORY SENSITIZATION.

According to Regulation 1994 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

Emergency overview

CAUTION:
Causes eye irritation.
HARMFUL IF ABSORBED THROUGH SKIN.
HARMFUL IF SWALLOWED.
KEEP OUT OF REACH OF CHILDREN.
KEEP OUT OF REACH OF DOMESTIC ANIMALS.
Avoid contact with the skin, eyes and clothing.

3. Composition / Information on Ingredients

According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

CAS Number	Weight %	Chemical name
40487-42-1	38.7 %	pendimethalin
101-68-8	< 1.0%	Diphenylmethane-4,4'-diisocyanate (MDI)
9016-87-9	< 1.0%	Isocyanic acid, polymethylenepolyphenylene ester

According to Regulation 1994 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

CAS Number	Weight %	Chemical name
40487-42-1	38.7 %	pendimethalin
	61.3 %	Proprietary ingredients

4. First-Aid Measures

Description of first aid measures

General advice:
First aid providers should wear personal protective equipment to prevent exposure. Remove contaminated clothing. Move person to fresh air. If person is not breathing, call 911 or ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or physician for treatment advice. Have the product container or label with you when calling a poison control center or doctor or going for treatment.

If inhaled:
Keep patient calm, remove to fresh air, seek medical attention.

If on skin:
Wash thoroughly with soap and water.

If in eyes:
Wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

Most important symptoms and effects, both acute and delayed

Symptoms: orange-red coloured urine caused by dye (not associated with methemoglobinemia)
The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11., Further important symptoms and effects are so far not known.

Indication of any immediate medical attention and special treatment needed

Note to physician

Antidote:	No known specific antidote.
Treatment:	Treat symptomatically.

5. Fire-Fighting Measures

Extinguishing media

Suitable extinguishing media:
foam, dry powder, carbon dioxide, water spray

Special hazards arising from the substance or mixture

Hazards during fire-fighting:
carbon monoxide, carbon dioxide, nitrogen dioxide, nitrogen oxide, Hydrocarbons,
If product is heated above decomposition temperature, toxic vapours will be released. The substances/groups of substances mentioned can be released in case of fire.

Advice for fire-fighters

Protective equipment for fire-fighting:
Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

Further information:
Evacuate area of all unnecessary personnel. Contain contaminated water/firefighting water. Do not allow to enter drains or waterways.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Take appropriate protective measures. Clear area. Shut off source of leak only under safe conditions. Extinguish sources of ignition nearby and downwind. Ensure adequate ventilation. Wear suitable personal protective clothing and equipment.

Environmental precautions

Do not discharge into the subsoil/soil. Do not discharge into drains/surface waters/groundwater. Contain contaminated water/firefighting water.

Methods and material for containment and cleaning up

Dike spillage. Pick up with suitable absorbent material. Place into suitable containers for reuse or disposal in a licensed facility. Spilled substance/product should be recovered and applied according to label rates whenever possible. If application of spilled substance/product is not possible, then

spills should be contained, solidified, and placed in suitable containers for disposal. After decontamination, spill area can be washed with water. Collect wash water for approved disposal.

7. Handling and Storage

Precautions for safe handling

RECOMMENDATIONS ARE FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS. PESTICIDE APPLICATORS & WORKERS must refer to the Product Label and Directions for Use attached to the product for Agricultural Use Requirements in accordance with the EPA Worker Protection Standard 40 CFR part 170. Ensure adequate ventilation. Provide good ventilation of working area (local exhaust ventilation if necessary). Keep away from sources of ignition - No smoking. Keep container tightly sealed. Protect contents from the effects of light. Protect against heat. Protect from air. Handle and open container with care. Do not open until ready to use. Once container is opened, content should be used as soon as possible. Avoid aerosol formation. Avoid dust formation. Provide means for controlling leaks and spills. Do not return residues to the storage containers. Follow label warnings even after container is emptied. The substance/ product may be handled only by appropriately trained personnel. Avoid all direct contact with the substance/product. Avoid contact with the skin, eyes and clothing. Avoid inhalation of dusts/mists/vapours. Wear suitable personal protective clothing and equipment.

Protection against fire and explosion:
The relevant fire protection measures should be noted. Fire extinguishers should be kept handy. Avoid all sources of ignition: heat, sparks, open flame. Sources of ignition should be kept well clear. Avoid extreme heat. Keep away from oxidizable substances. Electrical equipment should conform to national electric code. Ground all transfer equipment properly to prevent electrostatic discharge. Electrostatic discharge may cause ignition.

Conditions for safe storage, including any incompatibilities

Segregate from incompatible substances. Segregate from foods and animal feeds. Segregate from textiles and similar materials.

Further information on storage conditions: Keep only in the original container in a cool, dry, well-ventilated place away from ignition sources, heat or flame. Protect containers from physical damage. Protect against contamination. The authority permits and storage regulations must be observed.
Protect from temperatures below: -5 °C
Changes in the properties of the product may occur if substance/product is stored below indicated temperature for extended periods of time.
Protect from temperatures above: 40 °C
Changes in the properties of the product may occur if substance/product is stored above indicated temperature for extended periods of time.

8. Exposure Controls/Personal Protection

Users of a pesticidal product should refer to the product label for personal protective equipment requirements.

No occupational exposure limits known.

Advice on system design:
Whenever possible, engineering controls should be used to minimize the need for personal protective equipment.

Personal protective equipment

RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:

Respiratory protection:
Wear respiratory protection if ventilation is inadequate. Wear a NIOSH-certified (or equivalent) TC23C Chemical/Mechanical type filter system to remove a combination of particles, gas and vapours. For situations where the airborne concentrations may exceed the level for which an air purifying respirator is effective, or where the levels are unknown or Immediately Dangerous to Life or Health (IDLH), use NIOSH-certified full facepiece pressure demand self-contained breathing apparatus (SCBA) or a full facepiece pressure demand supplied-air respirator (SAR) with escape provisions.

Hand protection:
Chemical resistant protective gloves, Protective glove selection must be based on the user's assessment of the workplace hazards.

Eye protection:
Safety glasses with side-shields. Tightly fitting safety goggles (chemical goggles). Wear face shield if splashing hazard exists.

Body protection:
Body protection must be chosen depending on activity and possible exposure, e.g. head protection, apron, protective boots, chemical-protection suit.

General safety and hygiene measures:
Wear long sleeved work shirt and long work pants in addition to other stated personal protective equipment. Work place should be equipped with a shower and an eye wash. Handle in accordance with good industrial hygiene and safety practice. Personal protective equipment should be decontaminated prior to reuse. Gloves must be inspected regularly and prior to each use. Replace if necessary (e.g. pinhole leaks). Take off immediately all contaminated clothing. Store work clothing separately. Hands and/or face should be washed before breaks and at the end of the shift. No eating, drinking, smoking or tobacco use at the place of work. Keep away from food, drink and animal feeding stuffs.

9. Physical and Chemical Properties

Form:	microencapsulated, suspension
Odour:	faint odour, nutty
Odour threshold:	Not determined due to respiratory tract sensitizing properties.
Colour:	yellow to brown
pH value:	approx. 7 - 9 (21 °C) (measured with the undiluted substance)
Melting point:	approx. 0 °C Information applies to the solvent.
Flash point:	> 230 °F
Flammability:	not highly flammable
Lower explosion limit:	As a result of our experience with this product and our knowledge of its composition we do not expect any hazard as long as the product is used appropriately and in accordance with the intended use.

Upper explosion limit:	As a result of our experience with this product and our knowledge of its composition we do not expect any hazard as long as the product is used appropriately and in accordance with the intended use.	
Autoignition:	354 °C	(DIN EN 14522)
Density:	approx. 9.79 lb/USg (68 °F)	
Vapour density:	not applicable	
Partitioning coefficient n-octanol/water (log Pow):	not applicable	
Thermal decomposition:	carbon monoxide, carbon dioxide, nitrogen dioxide, nitrogen oxide, Hydrocarbons Stable at ambient temperature. If product is heated above decomposition temperature toxic vapours may be released.	
Viscosity, dynamic:	128 mPa.s (20 °C)	(OECD 114)
Viscosity, kinematic:	108.5 mm2/s (20 °C)	
Solubility in water:	dispersible	
Molar mass:	281.31 g/mol	
Evaporation rate:	not applicable	
Other Information:	If necessary, information on other physical and chemical parameters is indicated in this section.	

10. Stability and Reactivity

Reactivity
No hazardous reactions if stored and handled as prescribed/indicated.

Oxidizing properties:
not fire-propagating

Chemical stability
The product is stable if stored and handled as prescribed/indicated.

Possibility of hazardous reactions
The product is chemically stable.
Hazardous polymerization will not occur. No hazardous reactions if stored and handled as prescribed/indicated.

Conditions to avoid
Avoid all sources of ignition: heat, sparks, open flame. Avoid prolonged storage. Avoid electro-static discharge. Avoid contamination. Avoid prolonged exposure to extreme heat. Avoid extreme temperatures.

Incompatible materials
strong acids, strong bases, strong oxidizing agents

Hazardous decomposition products

Decomposition products:
No hazardous decomposition products if stored and handled as prescribed/indicated., Prolonged thermal loading can result in products of degradation being given off.

Thermal decomposition:

Possible thermal decomposition products:
carbon monoxide, carbon dioxide, nitrogen dioxide, nitrogen oxide, Hydrocarbons
Stable at ambient temperature. If product is heated above decomposition temperature toxic vapours may be released.

11. Toxicological information

Primary routes of exposure

Routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

Acute Toxicity/Effects

Acute toxicity
Assessment of acute toxicity: Relatively nontoxic after single ingestion. Relatively nontoxic after short-term inhalation. Relatively nontoxic after short-term skin contact.

Oral
Type of value: LD50
Species: rat (male/female)
Value: > 5,000 mg/kg (OECD Guideline 401)

Inhalation
Type of value: LC50
Species: rat (male/female)
Value: > 5.23 mg/l (OECD Guideline 403)
Exposure time: 4 h
An aerosol was tested.
No mortality was observed.

Dermal
Type of value: LD50
Species: rat (male/female)
Value: > 5,000 mg/kg (OECD Guideline 402)

Irritation / corrosion
Assessment of irritating effects: May cause slight but temporary irritation to the eyes. May cause slight irritation to the skin.

Skin
Species: rabbit
Result: Slightly irritating.

Eye
Species: rabbit
Result: Slightly irritating.

Sensitization
Assessment of sensitization: Skin sensitizing effects were not observed in animal studies.

Mouse Local Lymph Node Assay (LLNA)
Species: guinea pig
Result: sensitizing
Method: OECD Guideline 406

Chronic Toxicity/Effects

Repeated dose toxicity
Assessment of repeated dose toxicity: The product has not been tested. The statement has been derived from the properties of the individual components.

Information on: pendimethalin
Assessment of repeated dose toxicity: No substance-specific organtoxicity was observed after repeated administration to animals. Adaptive effects were observed after repeated exposure in animal studies.

Genetic toxicity
Assessment of mutagenicity: The product has not been tested. The statement has been derived from the properties of the individual components. Mutagenicity tests revealed no genotoxic potential.

Carcinogenicity
Assessment of carcinogenicity: The product has not been tested. The statement has been derived from the properties of the individual components.

Information on: pendimethalin
Assessment of carcinogenicity: In long-term studies in rats the substance induced thyroid tumors. The effect is caused by an animal specific mechanism that has no human counter part. In long-term studies in mice in which the substance was given by feed, a carcinogenic effect was not observed.

Reproductive toxicity
Assessment of reproduction toxicity: The product has not been tested. The statement has been derived from the properties of the individual components. The results of animal studies gave no indication of a fertility impairing effect.

Teratogenicity
Assessment of teratogenicity: The product has not been tested. The statement has been derived from the properties of the individual components.

Experiences in humans
Pendimethalin is a strongly orange-red compound - virtually an aniline dye. Cases have been described of of orange-yellow colouration of urine following heavy exposure of workers to the dust of pendimethalin. Despite its structure as both a nitro-compound and aromatic amine, exposure to pendimethalin is NOT associated with methemoglobinemia.

Other Information
Misuse can be harmful to health.

Symptoms of Exposure

orange-red coloured urine caused by dye (not associated with methemoglobinemia)
The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11., Further important symptoms and effects are so far not known.

Medical conditions aggravated by overexposure
Individuals with pre-existing diseases of the respiratory system, skin or eyes may have increased susceptibility to excessive exposures.

12. Ecological Information

Toxicity

Aquatic toxicity
Assessment of aquatic toxicity:
Very toxic (acute effect) to aquatic organisms.

Toxicity to fish
LC50 (96 h) 20.36 mg/l, Oncorhynchus mykiss (OECD Guideline 203, static)

Aquatic invertebrates
EC50 (48 h) > 100 mg/l, Daphnia magna (OECD Guideline 202, part 1, static)

Aquatic plants
EC50 (72 h) 1.49 mg/l (growth rate), Pseudokirchneriella subcapitata (OECD Guideline 201)

No observed effect concentration (72 h) 0.035 mg/l (growth rate), Pseudokirchneriella subcapitata (OECD Guideline 201)

EC50 (7 d) 19.25 mg/l (growth rate), Lemna gibba (OECD guideline 221)

No observed effect concentration (7 d) 1.0 mg/l (growth rate), Lemna gibba (OECD guideline 221)

Assessment of terrestrial toxicity
Acutely harmful to terrestrial organisms.

Other terrestrial non-mammals

Information on: pendimethalin
LD50 1,421 mg/kg, Anas platyrhynchos
Acutely harmful to terrestrial organisms.
LD50 49.8 ug/bee, Apis mellifera
Acutely harmful to terrestrial organisms.

Mobility in soil

Assessment transport between environmental compartments
The product has not been tested. The statement has been derived from the properties of the individual components.

Information on: pendimethalin

The substance will slowly evaporate into the atmosphere from the water surface.
Following exposure to soil, adsorption to solid soil particles is probable, therefore contamination of groundwater is not expected.

Additional information

Other ecotoxicological advice:
The ecological data given are those of the active ingredient. Do not release untreated into natural waters.

13. Disposal considerations

Waste disposal of substance:
Pesticide wastes are regulated. Improper disposal of excess pesticide, spray mix or rinsate is a violation of federal law. If pesticide wastes cannot be disposed of according to label instructions, contact the State Pesticide or Environmental Control Agency or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container disposal:
Rinse thoroughly at least three times (triple rinse) in accordance with EPA recommendations. Consult state or local disposal authorities for approved alternative procedures such as container recycling. Recommend crushing, puncturing or other means to prevent unauthorized use of used containers.

RCRA: D028
The waste codes are manufacturer's recommendations based on the designated use of the product. Other use and special waste disposal treatment on customer's location may require different waste-code assigments.

14. Transport Information

Land transport
USDOT

Not classified as a dangerous good under transport regulations

Sea transport
IMDG

Hazard class:	9
Packing group:	III
ID number:	UN 3082
Hazard label:	9, EHSM
Marine pollutant:	YES
Proper shipping name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains PENDIMETHALIN)

Air transport
IATA/ICAO

Hazard class:	9
Packing group:	III
ID number:	UN 3082
Hazard label:	9, EHSM
Proper shipping name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains PENDIMETHALIN)

Further information
DOT: This product is regulated if the amount in a single receptacle exceeds the Reportable Quantity (RQ). Please refer to Section 15 of this MSDS for the RQ for this product.

15. Regulatory Information

Federal Regulations

Registration status:

Crop Protection	TSCA, US	released / exempt
Chemical	TSCA, US	blocked / not listed

EPCRA 311/312 (Hazard categories): Acute; Chronic

EPCRA 313:

CAS Number	Chemical name
40487-42-1	pendimethalin

CERCLA RQ	CAS Number	Chemical name
100 LBS	107-06-2	1,2-dichloroethane

State regulations

State RTK	CAS Number	Chemical name
NJ	40487-42-1	pendimethalin

CA Prop. 65:
Risk assessment indicates No Significant Risk Levels for Carcinogens and No Maximum Allowable Dose Levels for Chemicals Causing Reproductive Toxicity are expected when using this product as labeled for agricultural or residential use.

NFPA Hazard codes:
Health : 1 Fire: 1 Reactivity: 1 Special:

Labeling requirements under FIFRA

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label.

CAUTION:
Causes eye irritation.
HARMFUL IF ABSORBED THROUGH SKIN.
HARMFUL IF SWALLOWED.
KEEP OUT OF REACH OF CHILDREN.
KEEP OUT OF REACH OF DOMESTIC ANIMALS.
Avoid contact with the skin, eyes and clothing.

16. Other Information

SDS Prepared by:
BASF NA Product Regulations
SDS Prepared on: 2015/10/07

We support worldwide Responsible Care® initiatives. We value the health and safety of our employees, customers, suppliers and neighbors, and the protection of the environment. Our commitment to Responsible Care is integral to conducting our business and operating our facilities in a safe and environmentally responsible fashion, supporting our customers and suppliers in ensuring

the safe and environmentally sound handling of our products, and minimizing the impact of our operations on society and the environment during production, storage, transport, use and disposal of our products.

IMPORTANT: WHILE THE DESCRIPTIONS, DESIGNS, DATA AND INFORMATION CONTAINED HEREIN ARE PRESENTED IN GOOD FAITH AND BELIEVED TO BE ACCURATE , IT IS PROVIDED FOR YOUR GUIDANCE ONLY. BECAUSE MANY FACTORS MAY AFFECT PROCESSING OR APPLICATION/USE, WE RECOMMEND THAT YOU MAKE TESTS TO DETERMINE THE SUITABILITY OF A PRODUCT FOR YOUR PARTICULAR PURPOSE PRIOR TO USE. NO WARRANTIES OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE MADE REGARDING PRODUCTS DESCRIBED OR DESIGNS, DATA OR INFORMATION SET FORTH, OR THAT THE PRODUCTS, DESIGNS, DATA OR INFORMATION MAY BE USED WITHOUT INFRINGING THE INTELLECTUAL PROPERTY RIGHTS OF OTHERS. IN NO CASE SHALL THE DESCRIPTIONS, INFORMATION, DATA OR DESIGNS PROVIDED BE CONSIDERED A PART OF OUR TERMS AND CONDITIONS OF SALE. FURTHER, YOU EXPRESSLY UNDERSTAND AND AGREE THAT THE DESCRIPTIONS, DESIGNS, DATA, AND INFORMATION FURNISHED BY OUR COMPANY HEREUNDER ARE GIVEN GRATIS AND WE ASSUME NO OBLIGATION OR LIABILITY FOR THE DESCRIPTION, DESIGNS, DATA AND INFORMATION GIVEN OR RESULTS OBTAINED, ALL SUCH BEING GIVEN AND ACCEPTED AT YOUR RISK.
END OF DATA SHEET

BASF
We create chemistry

Safety Data Sheet
MERIVON XEMIUM BRAND FUNGICIDE

1. Identification

Product identifier used on the label

MERIVON XEMIUM BRAND FUNGICIDE

Recommended use of the chemical and restriction on use
Recommended use*: fungicide

* The "Recommended use" identified for this product is provided solely to comply with a Federal requirement and is not part of the seller's published specification. The terms of this Safety Data Sheet (SDS) do not create or infer any warranty, express or implied, including by incorporation into or reference in the seller's sales agreement.

Details of the supplier of the safety data sheet

Company:
BASF CORPORATION
100 Park Avenue
Florham Park, NJ 07932, USA

Telephone: +1 973 245-6000

Emergency telephone number

CHEMTREC: 1-800-424-9300
BASF HOTLINE: 1-800-832-HELP (4357)

Other means of identification

Substance number:	619111
EPA Registration number:	7969-310
Synonyms:	fluxapyroxad + pyraclostrobin

2. Hazards Identification

According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

Classification of the product

Acute Tox.	3 (oral)	Acute toxicity
Acute Tox.	4 (Inhalation - mist)	Acute toxicity
Carc.	2	Carcinogenicity
STOT SE	3 (irritating to respiratory system)	Specific target organ toxicity — single exposure

Label elements

Pictogram:

Signal Word:
Danger

Hazard Statement:

H332	Harmful if inhaled.
H301	Toxic if swallowed.
H335	May cause respiratory irritation.
H351	Suspected of causing cancer.

Precautionary Statements (Prevention):

P280	Wear protective gloves/protective clothing/eye protection/face protection.
P271	Use only outdoors or in a well-ventilated area.
P201	Obtain special instructions before use.
P261	Avoid breathing mist.
P260	Do not breathe mist or vapour.
P202	Do not handle until all safety precautions have been read and understood.
P264	Wash with plenty of water and soap thoroughly after handling.

Precautionary Statements (Response):

P312	Call a POISON CENTER or doctor/physician if you feel unwell.
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P308 + P311	IF exposed or concerned: Call a POISON CENTER or doctor/physician.
P330	Rinse mouth.

Precautionary Statements (Storage):

P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.

Precautionary Statements (Disposal):

P501	Dispose of contents/container to hazardous or special waste collection point.

Hazards not otherwise classified

Labeling of special preparations (GHS):
The following percentage of the mixture consists of components(s) with unknown hazards regarding the acute toxicity: 6 % dermal
The following percentage of the mixture consists of components(s) with unknown hazards regarding the acute toxicity: 10 % Inhalation - vapour
The following percentage of the mixture consists of components(s) with unknown hazards regarding the acute toxicity: 10 % Inhalation - mist

According to Regulation 1994 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

Emergency overview

WARNING:
KEEP OUT OF REACH OF CHILDREN.
May be fatal if swallowed.
Avoid contact with the skin, eyes and clothing.

3. Composition / Information on Ingredients

According to Regulation 1994 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

CAS Number	Weight %	Chemical name
907204-31-3	21.6 %	Fluxapyroxad
175013-18-0	21.6 %	Pyraclostrobin
57-55-6	5.0 - 15.0%	Propylene glycol
	41.0 - 51.0%	Proprietary ingredients

4. First-Aid Measures

Description of first aid measures

General advice:
First aid personnel should pay attention to their own safety. If the patient is likely to become unconscious, place and transport in stable sideways position (recovery position). Immediately remove contaminated clothing.

If inhaled:
Keep patient calm, remove to fresh air, seek medical attention.

If on skin:
Immediately wash thoroughly with soap and water, seek medical attention.

If in eyes:
Wash affected eyes for at least 15 minutes under running water with eyelids held open.

If swallowed:
Immediately rinse mouth and then drink 200-300 ml of water, seek medical attention.

Most important symptoms and effects, both acute and delayed

Symptoms: The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11., Further important symptoms and effects are so far not known.

Indication of any immediate medical attention and special treatment needed

Note to physician
Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

5. Fire-Fighting Measures

Extinguishing media

Suitable extinguishing media:
water spray, carbon dioxide, foam, dry powder

Unsuitable extinguishing media for safety reasons:
water jet

Special hazards arising from the substance or mixture

Hazards during fire-fighting:
carbon monoxide, carbon dioxide, nitrogen oxides, chlorides, organochloric compounds, halogenated hydrocarbons
The substances/groups of substances mentioned can be released in case of fire.

Advice for fire-fighters

Protective equipment for fire-fighting:
Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

Further information:
In case of fire and/or explosion do not breathe fumes. Keep containers cool by spraying with water if exposed to fire. Collect contaminated extinguishing water separately, do not allow to reach sewage or effluent systems. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Do not breathe vapour/spray. Use personal protective clothing. Avoid contact with the skin, eyes and clothing.

Environmental precautions

Do not discharge into the subsoil/soil. Do not discharge into drains/surface waters/groundwater.

Methods and material for containment and cleaning up

Dike spillage. Pick up with suitable absorbent material. Place into suitable containers for reuse or disposal in a licensed facility. Spilled substance/product should be recovered and applied according to label rates whenever possible. If application of spilled substance/product is not possible, then spills should be contained, solidified, and placed in suitable containers for disposal. After decontamination, spill area can be washed with water. Collect wash water for approved disposal.

7. Handling and Storage

Precautions for safe handling

RECOMMENDATIONS ARE FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS. PESTICIDE APPLICATORS & WORKERS must refer to the Product Label and Directions for Use attached to the product for Agricultural Use Requirements in accordance with the EPA Worker Protection Standard 40 CFR part 170. Ensure adequate ventilation. Keep away from sources of ignition - No smoking. Keep container tightly sealed. Protect against heat. Handle and open container with care. Do not open until ready to use. Once container is opened, content should be used as soon as possible. Avoid aerosol formation. Avoid dust formation. Provide means for controlling leaks and spills. Do not return residues to the storage containers. Follow label warnings even after container is emptied. The substance/ product may be handled only by appropriately trained personnel. Avoid all direct contact with the substance/product. Avoid contact with the skin, eyes and clothing. Avoid inhalation of dusts/mists/vapours. Wear suitable personal protective clothing and equipment.

Protection against fire and explosion:
No special precautions necessary. The substance/product is non-combustible. Product is not explosive.

Conditions for safe storage, including any incompatibilities
Segregate from foods and animal feeds.

Further information on storage conditions: Keep away from heat. Protect from direct sunlight.
Protect from temperatures below: 0 °C
The product can crystallize below the limit temperature.
Protect from temperatures above: 40 °C
Changes in the properties of the product may occur if substance/product is stored above indicated temperature for extended periods of time.

8. Exposure Controls/Personal Protection

Users of a pesticidal product should refer to the product label for personal protective equipment requirements.

No occupational exposure limits known.

Advice on system design:
Whenever possible, engineering controls should be used to minimize the need for personal protective equipment.

Personal protective equipment

RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:

Respiratory protection:
Wear respiratory protection if ventilation is inadequate. Wear a NIOSH-certified (or equivalent) organic vapour/particulate respirator. For situations where the airborne concentrations may exceed the level for which an air purifying respirator is effective, or where the levels are unknown or Immediately Dangerous to Life or Health (IDLH), use NIOSH-certified full facepiece pressure demand self-contained breathing apparatus (SCBA) or a full facepiece pressure demand supplied-air respirator (SAR) with escape provisions.

Hand protection:
Chemical resistant protective gloves, Protective glove selection must be based on the user's assessment of the workplace hazards.

Eye protection:
Safety glasses with side-shields. Tightly fitting safety goggles (chemical goggles). Wear face shield if splashing hazard exists.

Body protection:
Body protection must be chosen depending on activity and possible exposure, e.g. head protection, apron, protective boots, chemical-protection suit.

General safety and hygiene measures:
Wear long sleeved work shirt and long work pants in addition to other stated personal protective equipment. Work place should be equipped with a shower and an eye wash. Handle in accordance with good industrial hygiene and safety practice. Personal protective equipment should be decontaminated prior to reuse. Gloves must be inspected regularly and prior to each use. Replace if

necessary (e.g. pinhole leaks). Take off immediately all contaminated clothing. Store work clothing separately. Hands and/or face should be washed before breaks and at the end of the shift. No eating, drinking, smoking or tobacco use at the place of work. Keep away from food, drink and animal feeding stuffs.

9. Physical and Chemical Properties

Form:	suspension	
Odour:	faint odour, fruity	
Odour threshold:	Not determined since harmful by inhalation.	
Colour:	beige	
pH value:	approx. 6 - 8 (1 %(m), 20 °C)	(pH Meter)
crystallization temperature:	approx. -6.7 °C	
Boiling point:	approx. 100 °C	
Flash point:	No flash point - Measurement made up to the boiling point.	
Flammability:	not highly flammable	(Directive 92/69/EEC, A.12)
Autoignition:	517 °C	(Directive 92/69/EEC, A.15)
Vapour pressure:	approx. 23 hPa (20 °C) Information applies to the solvent.	
Density:	approx. 1.18 g/cm3 (20 °C)	(OECD Guideline 109)
Vapour density:	not applicable	
Partitioning coefficient n-octanol/water (log Pow):	not applicable	
Thermal decomposition:	carbon monoxide, carbon dioxide, nitrogen oxide, nitrogen dioxide, Hydrocarbons Stable at ambient temperature. If product is heated above decomposition temperature, toxic vapours will be released.	
Viscosity, dynamic:	approx. 50 mPa.s (20 °C)	(OECD 114)
Solubility in water:	dispersible	
Evaporation rate:	not applicable	

10. Stability and Reactivity

Reactivity
No hazardous reactions if stored and handled as prescribed/indicated.

Oxidizing properties:
not fire-propagating (Directive 2004/73/EC, A.21)

Chemical stability
The product is stable if stored and handled as prescribed/indicated.

Possibility of hazardous reactions
No hazardous reactions if stored and handled as prescribed/indicated.

Conditions to avoid

Avoid all sources of ignition: heat, sparks, open flame. Avoid extreme temperatures. Avoid prolonged exposure to extreme heat. Avoid contamination. Avoid electro-static discharge. Avoid prolonged storage.

Incompatible materials
strong oxidizing agents, strong bases, strong acids

Hazardous decomposition products

Decomposition products:
Hazardous decomposition products: No hazardous decomposition products if stored and handled as prescribed/indicated.

Thermal decomposition:
Possible thermal decomposition products:
carbon monoxide, carbon dioxide, nitrogen oxide, nitrogen dioxide, Hydrocarbons
Stable at ambient temperature. If product is heated above decomposition temperature, toxic vapours will be released.

11. Toxicological information

Primary routes of exposure

Routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

Acute Toxicity/Effects

Acute toxicity
Assessment of acute toxicity: Moderately toxic after single ingestion. Relatively nontoxic after short-term skin contact. Relatively nontoxic after short-term inhalation.

Oral
Type of value: LD50
Species: rat (female)
Value: > 50 - < 300 mg/kg (OECD Guideline 423)

Inhalation
Type of value: LC50
Species: rat (female)
Value: 2.81 mg/l (OECD Guideline 403)
Exposure time: 4 h
An aerosol was tested.

Dermal
Type of value: LD50
Species: rat (male/female)
Value: > 5,000 mg/kg (OECD Guideline 402)
No mortality was observed.

Assessment other acute effects
Assessment of STOT single:
Causes temporary irritation of the respiratory tract.

The product has not been tested. The statement has been derived from the properties of the individual components.

Irritation / corrosion
Assessment of irritating effects: May cause slight but temporary irritation to the eyes. May cause moderate irritation to the skin.

Skin
Species: rabbit
Result: Irritant.
Method: OECD Guideline 404

Eye
Species: rabbit
Result: non-irritant
Method: OECD Guideline 405

Sensitization
Buehler test
Species: guinea pig
Result: Skin sensitizing effects were not observed in animal studies.
Method: OECD Guideline 406

Chronic Toxicity/Effects

Repeated dose toxicity
Assessment of repeated dose toxicity: The product has not been tested. The statement has been derived from the properties of the individual components.

Information on: Pyraclostrobin
Assessment of repeated dose toxicity: After repeated exposure the prominent effect is local irritation. The substance may cause damage to the olfactory epithelium after repeated inhalation.

Genetic toxicity
Assessment of mutagenicity: The product has not been tested. The statement has been derived from the properties of the individual components. Mutagenicity tests revealed no genotoxic potential.

Carcinogenicity
Assessment of carcinogenicity: The product has not been tested. The statement has been derived from the properties of the individual components.

Information on: Pyraclostrobin
Assessment of carcinogenicity: In long-term studies in rats and mice in which the substance was given by feed, a carcinogenic effect was not observed.

Information on: Fluxapyroxad
Assessment of carcinogenicity: Indication of possible carcinogenic effect in animal tests.

Reproductive toxicity
Assessment of reproduction toxicity: The product has not been tested. The statement has been derived from the properties of the individual components. The results of animal studies gave no indication of a fertility impairing effect.

Teratogenicity

Assessment of teratogenicity: The product has not been tested. The statement has been derived from the properties of the individual components. Animal studies gave no indication of a developmental toxic effect at doses that were not toxic to the parental animals.

Other Information
Misuse can be harmful to health.

Symptoms of Exposure

The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11., Further important symptoms and effects are so far not known.

12. Ecological Information

Toxicity

Aquatic toxicity
Assessment of aquatic toxicity:
Very toxic (acute effect) to fish. Very toxic (acute effect) to aquatic invertebrates. Acutely toxic for aquatic plants.

Toxicity to fish
LC50 (96 h) 0.032 mg/l, Oncorhynchus mykiss (OECD 203; ISO 7346; 92/69/EEC, C.1, static)

Aquatic invertebrates
EC50 (48 h) 0.068 mg/l, Daphnia magna (OECD Guideline 202, part 1, static)

Aquatic plants
EC50 (72 h) 3.56 mg/l (growth rate), Pseudokirchneriella subcapitata (OECD Guideline 201, static)

Additional information

Other ecotoxicological advice:
Do not discharge product into the environment without control.

13. Disposal considerations

Waste disposal of substance:
Pesticide wastes are regulated. Improper disposal of excess pesticide, spray mix or rinsate is a violation of federal law. If pesticide wastes cannot be disposed of according to label instructions, contact the State Pesticide or Environmental Control Agency or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container disposal:
Rinse thoroughly at least three times (triple rinse) in accordance with EPA recommendations. Consult state or local disposal authorities for approved alternative procedures such as container recycling. Recommend crushing, puncturing or other means to prevent unauthorized use of used containers.

14. Transport Information

Land transport
USDOT

Hazard class: 6.1

Packing group:	III
ID number:	UN 2902
Hazard label:	6.1, EHSM
Proper shipping name:	PESTICIDE, LIQUID, TOXIC, N.O.S. (contains PYRACLOSTROBIN)

Sea transport
IMDG

Hazard class:	6.1
Packing group:	III
ID number:	UN 2902
Hazard label:	6.1, EHSM
Marine pollutant:	YES
Proper shipping name:	PESTICIDE, LIQUID, TOXIC, N.O.S. (contains PYRACLOSTROBIN)

Air transport
IATA/ICAO

Hazard class:	6.1
Packing group:	III
ID number:	UN 2902
Hazard label:	6.1
Proper shipping name:	PESTICIDE, LIQUID, TOXIC, N.O.S. (contains PYRACLOSTROBIN)

Further information
This product may be classified as limited quantity in selected package sizes.

15. Regulatory Information

Federal Regulations

Registration status:

Chemical	TSCA, US	blocked / not listed
Crop Protection	TSCA, US	released / exempt

EPCRA 311/312 (Hazard categories): Acute; Chronic

State regulations

State RTK	CAS Number	Chemical name
PA	57-55-6	Propylene glycol
NJ	57-55-6	Propylene glycol

CA Prop. 65:
WARNING: THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

Labeling requirements under FIFRA

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label.

WARNING:
KEEP OUT OF REACH OF CHILDREN.
May be fatal if swallowed.
Avoid contact with the skin, eyes and clothing.

16. Other Information

SDS Prepared by:
BASF NA Product Regulations
SDS Prepared on: 2016/04/14

We support worldwide Responsible Care® initiatives. We value the health and safety of our employees, customers, suppliers and neighbors, and the protection of the environment. Our commitment to Responsible Care is integral to conducting our business and operating our facilities in a safe and environmentally responsible fashion, supporting our customers and suppliers in ensuring the safe and environmentally sound handling of our products, and minimizing the impact of our operations on society and the environment during production, storage, transport, use and disposal of our products.

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END OF DATA SHEET

SAFETY DATA SHEET

Willowood Teb 45DF Fungicide

Section 1. Identification

GHS product identifier	: Willowood Teb 45DF Fungicide
Chemical name	: Tebuconazole ([RS]-1-[4-chlorophenyl]-4,4-dimethyl-3-[1H-1,2,4-triazol-1-ylmethyl]-pentan-3-ol)
Other means of identification	: Triazole Fungicide
EPA Product Registration Number	: 87290-12
EPA Signal Word	: WARNING
Product type	: Solid.

Identified uses

Fungicide.

Supplier's details	: Willowood, LLC 1600 NW Garden Valley Blvd., Suite 120 Roseburg, Oregon 97471 Tel: 877-679-9963
Emergency telephone number (with hours of operation)	: CHEMTREC (24/7): U.S. :800-424-9300 International: +1-703-527-3887 24/7 Health Emergencies: Call 800-858-7378 (National Pesticide Information Center)

Section 2. Hazards identification

OSHA/HCS status	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture	: ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (inhalation) - Category 2 TOXIC TO REPRODUCTION (Unborn child) - Category 2 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2 AQUATIC HAZARD (ACUTE) - Category 1 AQUATIC HAZARD (LONG-TERM) - Category 2

GHS label elements

Hazard pictograms :

Signal word : Danger

Section 2. Hazards identification

Hazard statements : Fatal if inhaled.
Harmful if swallowed.
Suspected of damaging the unborn child.
May cause damage to organs through prolonged or repeated exposure.
Very toxic to aquatic life.
Toxic to aquatic life with long lasting effects.

Precautionary statements

General : Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Prevention : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear respiratory protection. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Do not breathe dust. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling.

Response : Collect spillage. Get medical attention if you feel unwell. IF exposed or concerned: Get medical attention. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Call a POISON CENTER or physician if you feel unwell. Rinse mouth.

Storage : Store locked up.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Chemical name : Tebuconazole ([RS]-1-[4-chlorophenyl]-4,4-dimethyl-3-[1H-1,2,4-triazol-1-ylmethyl]-pentan-3-ol)

Other means of identification : Triazole Fungicide

CAS number/other identifiers

CAS number : Not applicable.

Product code : Not available.

Ingredient name	%	CAS number
Tebuconazole ([RS]-1-[4-chlorophenyl]-4,4-dimethyl-3-[1H-1,2,4-triazol-1-ylmethyl]-pentan-3-ol)	30 - 60	107534-96-3
Kaolin	30 - 60	1332-58-7
STEPSPERSE DF-500 (Anionic/Lignosulfonate Blend)	1 - 5	-
Sodium dodecyl sulphate	1 - 5	151-21-3

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact	: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 20 minutes. Get medical attention following exposure or if feeling unwell.
Inhalation	: Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
Skin contact	: Flush contaminated skin with plenty of water. Continue to rinse for at least 20 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Ingestion	: Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact	: No known significant effects or critical hazards.
Inhalation	: Fatal if inhaled. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
Skin contact	: No known significant effects or critical hazards.
Ingestion	: Harmful if swallowed.

Over-exposure signs/symptoms

Eye contact	: No known significant effects or critical hazards.
Inhalation	: Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations
Skin contact	: Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations
Ingestion	: Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician	: In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
Specific treatments	: No specific treatment.

Section 4. First aid measures

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : In case of fire, use foam, dry chemical or carbon dioxide.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : This product, when mixed with air in critical proportions and in the presence of an ignition source, may present an explosion hazard. This material is very toxic to aquatic life. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
sulfur oxides
halogenated compounds
metal oxide/oxides

Special protective actions for fire-fighters : No special measures are required.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

Section 6. Accidental release measures

Small spill : Move containers from spill area. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Place spilled material in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

Large spill : Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not ingest. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Kaolin	**ACGIH TLV (United States, 3/2015).** TWA: 2 mg/m³ 8 hours. Form: Respirable fraction **NIOSH REL (United States, 10/2013).** TWA: 5 mg/m³ 10 hours. Form: Respirable fraction TWA: 10 mg/m³ 10 hours. Form: Total **OSHA PEL (United States, 2/2013).** TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

Individual protection measures

Section 8. Exposure controls/personal protection

Hygiene measures	: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
Eye/face protection	: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.
Skin protection	
Hand protection	: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
Body protection	: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Other skin protection	: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Respiratory protection	: Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance	
Physical state	: Solid. [Granular.]
Color	: Tan.
Odor	: Slight
Odor threshold	: Not available.
pH	: 6 [Conc. (% w/w): 1%]
Melting point	: Not available.
Boiling point	: Not available.
Flash point	: Not available.
Evaporation rate	: Not available.
Flammability (solid, gas)	: Not available.
Lower and upper explosive (flammable) limits	: Not available.
Vapor pressure	: Not available.
Vapor density	: Not available.
Relative density	: 1.34
Solubility	: Soluble in the following materials: cold water and hot water.
Partition coefficient: n-octanol/water	: Not available.

Section 9. Physical and chemical properties

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Tebuconazole ([RS]-1-[4-chlorophenyl]-4,4-dimethyl-3-[1H-1,2,4-triazol-1-ylmethyl]-pentan-3-ol)	LC50 Inhalation Vapor	Rat	0.371 g/m³	4 hours
	LD50 Dermal	Rabbit	>5000 mg/kg	-
	LD50 Dermal	Rat	>5 g/kg	-
	LD50 Oral	Rat	3352 mg/kg	-
Sodium dodecyl sulphate	LD50 Oral	Rat	1288 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Sodium dodecyl sulphate	Eyes - Mild irritant	Rabbit	-	250 µg	-
	Eyes - Moderate irritant	Rabbit	-	24 hours 100 mg	-
	Eyes - Moderate irritant	Rabbit	-	10 mg	-
	Skin - Mild irritant	Dog	-	24 hours 25 mg	-
	Skin - Mild irritant	Guinea pig	-	24 hours 25 mg	-
	Skin - Mild irritant	Human	-	504 hours 0.3%	-
	Skin - Mild irritant	Human	-	24 hours 0.06%	-
	Skin - Mild irritant	Human	-	22 hours 10%	-
	Skin - Mild irritant	Human	-	47 hours 0.5%	-
	Skin - Mild irritant	Human	-	18 hours 2%	-
	Skin - Moderate irritant	Human	-	48 hours 3%	-
	Skin - Moderate irritant	Human	-	24 hours 0.1%	-
	Skin - Moderate irritant	Mouse	-	24 hours 25 mg	-
	Skin - Mild irritant	Pig	-	24 hours 25 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 50 mg	-
	Skin - Moderate irritant	Rabbit	-	24 hours 25 mg	-
	Skin - Mild irritant	Human	-	2 hours 2%	-

Sensitization

There is no data available.

Carcinogenicity

Section 11. Toxicological information

There is no data available.

Specific target organ toxicity (single exposure)

There is no data available.

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Kaolin	Category 2	Inhalation	Not determined

Aspiration hazard

There is no data available.

Information on the likely routes of exposure : Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : Fatal if inhaled. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : No known significant effects or critical hazards.

Ingestion : Harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No known significant effects or critical hazards.

Inhalation : Adverse symptoms may include the following:
reduced fetal weight
increase in fetal deaths
skeletal malformations

Skin contact : Adverse symptoms may include the following:
reduced fetal weight
increase in fetal deaths
skeletal malformations

Ingestion : Adverse symptoms may include the following:
reduced fetal weight
increase in fetal deaths
skeletal malformations

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : No known significant effects or critical hazards.

Potential delayed effects : No known significant effects or critical hazards.

Long term exposure

Potential immediate effects : No known significant effects or critical hazards.

Potential delayed effects : No known significant effects or critical hazards.

Potential chronic health effects

General : May cause damage to organs through prolonged or repeated exposure.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Section 11. Toxicological information

Teratogenicity : Suspected of damaging the unborn child.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	1067.8 mg/kg
Inhalation (vapors)	0.7996 mg/L

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Tebuconazole ([RS]-1-[4-chlorophenyl]-4,4-dimethyl-3-[1H-1,2,4-triazol-1-ylmethyl]-pentan-3-ol)	Acute EC50 1.45 ppm Fresh water	Algae - Scenedesmus subspicatus	4 days
	Acute IC50 3200 µg/L Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute LC50 750 µg/L Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 2.37 mg/L Fresh water	Fish - Cyprinus carpio - Fingerling	96 hours
	Chronic IC10 1200 µg/L Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Chronic NOEC 0.12 ppm Marine water	Daphnia - Daphnia magna	21 days
	Chronic NOEC 0.012 ppm	Fish - Oncorhynchus mykiss	83 days
Sodium dodecyl sulphate	Acute EC50 1200 µg/L Marine water	Algae - Skeletonema costatum	96 hours
	Acute LC50 900 µg/L Marine water	Crustaceans - Artemia salina - Adult	48 hours
	Acute LC50 1400 µg/L Fresh water	Daphnia - Daphnia pulex - Neonate	48 hours
	Acute LC50 590 µg/L Fresh water	Fish - Cirrhinus mrigala - Larvae	96 hours
	Chronic NOEC 1.25 mg/L Marine water	Algae - Ulva fasciata - Zoea	96 hours
	Chronic NOEC 3.2 mg/L Fresh water	Daphnia - Daphnia magna - Neonate	21 days
	Chronic NOEC >1357 µg/L Fresh water	Fish - Pimephales promelas	42 days

Persistence and degradability

There is no data available.

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Tebuconazole ([RS]-1-[4-chlorophenyl]-4,4-dimethyl-3-[1H-1,2,4-triazol-1-ylmethyl]-pentan-3-ol)	3.7	-	low
Sodium dodecyl sulphate	-2.03	-	low

Mobility in soil

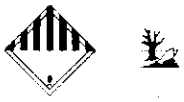
Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling empty containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	IMDG	IATA
UN number	UN3077	UN3077	UN3077
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Tebuconazole ([RS]-1-[4-chlorophenyl] -4,4-dimethyl-3-[1H-1,2,4-triazol-1-ylmethyl]-pentan-3-ol))	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Tebuconazole ([RS]-1-[4-chlorophenyl] -4,4-dimethyl-3-[1H-1,2,4-triazol-1-ylmethyl]-pentan-3-ol))	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Tebuconazole ([RS]-1-[4-chlorophenyl] -4,4-dimethyl-3-[1H-1,2,4-triazol-1-ylmethyl]-pentan-3-ol))
Transport hazard class(es)	9	9	9 
Packing group	III	III	III
Environmental hazards	Yes.	Yes.	Yes.
Additional information	Non-bulk packages of this product are not regulated as hazardous materials unless transported by inland waterway. The marine pollutant mark is not required when transported on inland waterways in sizes of ≤5 L or ≤5 kg.	The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.	The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg.

AERG : 171

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined
United States inventory (TSCA 8b): All components are listed or exempted.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

Name	%	EHS	SARA 302 TPQ		SARA 304 RQ	
			(lbs)	(gallons)	(lbs)	(gallons)
Ethylene oxide	0 - 0.1	Yes.	1000	-	10	-

SARA 304 RQ : 205761.3 lbs / 93415.6 kg

SARA 311/312

Classification : Immediate (acute) health hazard
Delayed (chronic) health hazard

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Tebuconazole ([RS]-1-[4-chlorophenyl]-4, 4-dimethyl-3-[1H-1,2,4-triazol-1-ylmethyl]-pentan-3-ol)	30 - 60	No.	No.	No.	Yes.	Yes.
Kaolin	30 - 60	No.	No.	No.	No.	Yes.
STEPSPERSE DF-500 (Anionic/Lignosulfonate Blend)	1 - 5	No.	No.	No.	Yes.	No.
Sodium dodecyl sulphate	1 - 5	No.	No.	No.	Yes.	No.

SARA 313

No products were found.

State regulations

Massachusetts : The following components are listed: Synthetic amorphous silica, precipitated

New York : None of the components are listed.

New Jersey : The following components are listed: Kaolin; Synthetic amorphous silica, precipitated

Pennsylvania : The following components are listed: Kaolin; Synthetic amorphous silica, precipitated

California Prop. 65

WARNING: This product contains less than 0.1% of a chemical known to the State of California to cause cancer.
WARNING: This product contains less than 1% of a chemical known to the State of California to cause birth defects or other reproductive harm.

Section 15. Regulatory information

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
Ethylene oxide	Yes.	Yes.	Yes.	Yes.

International regulations

International lists : **Australia inventory (AICS)**: Not determined.
China inventory (IECSC): Not determined.
Japan inventory: Not determined.
Korea inventory: Not determined.
Malaysia Inventory (EHS Register): Not determined.
New Zealand Inventory of Chemicals (NZIoC): Not determined.
Philippines inventory (PICCS): Not determined.
Taiwan inventory (CSNN): Not determined.

Chemical Weapons Convention List Schedule I Chemicals : Not listed

Chemical Weapons Convention List Schedule II Chemicals : Not listed

Chemical Weapons Convention List Schedule III Chemicals : Not listed

Section 16. Other information

History

Date of issue mm/dd/yyyy : 12/15/2015

Date of previous issue : 01/30/2015

Version : 1.1

Revised Section(s) : 1, 8, 16.

Prepared by : KMK Regulatory Services Inc.

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Dow AgroSciences

SAFETY DATA SHEET
DOW AGROSCIENCES LLC

Product name: SONALAN™ HFP Herbicide

Issue Date: 05/04/2015
Print Date: 10/13/2015

DOW AGROSCIENCES LLC encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: SONALAN™ HFP Herbicide

Recommended use of the chemical and restrictions on use
Identified uses: End use herbicide product

COMPANY IDENTIFICATION
DOW AGROSCIENCES LLC
9330 ZIONSVILLE RD
INDIANAPOLIS IN 46268-1053
UNITED STATES

Customer Information Number: 800-992-5994
info@dow.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 800-992-5994
Local Emergency Contact: 352-323-3500

2. HAZARDS IDENTIFICATION

Hazard classification
This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.
Flammable liquids - Category 3
Skin irritation - Category 2
Serious eye damage - Category 1
Skin sensitisation - Category 1
Carcinogenicity - Category 2
Specific target organ toxicity - single exposure - Category 3
Aspiration hazard - Category 1

Label elements
Hazard pictograms

Signal word: **DANGER!**

Hazards
Flammable liquid and vapour.
May be fatal if swallowed and enters airways.
Causes skin irritation.
May cause an allergic skin reaction.
Causes serious eye damage.
May cause respiratory irritation.
May cause drowsiness or dizziness.
Suspected of causing cancer.

Precautionary statements

Prevention
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ ventilating/ lighting/ equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves/ eye protection/ face protection.
Use personal protective equipment as required.

Response
IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/ physician.
IF exposed or concerned: Get medical advice/ attention.
Do NOT induce vomiting.
If skin irritation or rash occurs: Get medical advice/ attention.
Take off contaminated clothing and wash before reuse.
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

Storage
Store in a well-ventilated place. Keep container tightly closed.

Store in a well-ventilated place. Keep cool.
Store locked up.

Disposal
Dispose of contents/ container to an approved waste disposal plant.

Other hazards
no data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a mixture.

Component	CASRN	Concentration
Ethalfluralin	55283-68-6	35.4%
Cyclohexanone	108-94-1	14.8%
Trifluralin	1582-09-8	0.1%
Solvent naphtha (petroleum), light aromatic consists of:	64742-95-6	44.9% Not measured
1,2,4-Trimethylbenzene	95-63-6	13.3%
1,3,5-Trimethylbenzene	108-67-8	3.6%
Cumene	98-82-8	1.8%
Xylene	1330-20-7	0.4%

4. FIRST AID MEASURES

Description of first aid measures
General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice. If breathing is difficult, oxygen should be administered by qualified personnel.

Skin contact: Take off contaminated clothing. Wash skin with soap and plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. Wash clothing before reuse. Shoes and other leather items which cannot be decontaminated should be disposed of properly.

Eye contact: Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice. Suitable emergency eye wash facility should be immediately available.

Ingestion: Immediately call a poison control center or doctor. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give any liquid to the person. Do not give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed: Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed
Notes to physician: Skin contact may aggravate preexisting dermatitis. Repeated excessive exposure may aggravate preexisting lung disease. Maintain adequate ventilation and oxygenation of the patient. May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants, antitussives and corticosteroids may be of help. Due to irritant properties, swallowing may result in burns/ulceration of mouth, stomach and lower gastrointestinal tract with subsequent stricture. Aspiration of vomitus may cause lung injury. Suggest endotracheal/esophageal control if lavage is done. Probable mucosal damage may contraindicate the use of gastric lavage. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

Unsuitable extinguishing media: no data available

Special hazards arising from the substance or mixture
Hazardous combustion products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Nitrogen oxides. Hydrogen fluoride. Hydrogen chloride. Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. Dense smoke is produced when product burns.

Advice for firefighters
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Consider feasibility of a controlled burn to minimize environment damage. Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or

discoloration of the container. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Eliminate ignition sources. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to section 7, Handling, for additional precautionary measures. Keep personnel out of low areas. Keep upwind of spill. Ventilate area of leak or spill. No smoking in area. Vapor explosion hazard. Keep out of sewers. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Ground and bond all containers and handling equipment. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. Spills or discharge to natural waterways is likely to kill aquatic organisms.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Pump with explosion-proof equipment. If available, use foam to smother or supress. Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling: Keep away from heat, sparks and flame. Keep out of reach of children. Do not swallow. Avoid breathing vapor or mist. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated contact with skin. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. No smoking, open flames or sources of ignition in handling and storage area. Electrically ground and bond all equipment. Use of non-sparking or explosion-proof equipment may be necessary, depending upon the type of operation. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage: Minimize sources of ignition, such as static build-up, heat, spark or flame. Store in a dry place. Store in original container. Keep container tightly closed when not in use. Do not store near food, foodstuffs, drugs or potable water supplies.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Ethalfluralin	Dow IHG	TWA	3 mg/m3
Cyclohexanone	ACGIH	TWA	20 ppm
	ACGIH	STEL	50 ppm
	OSHA Z-1	TWA	200 mg/m3 50 ppm
	ACGIH	TWA	OEL Notation
	ACGIH	STEL	Absorbed via skin
Solvent naphtha (petroleum), light aromatic consists of:	OSHA Z-1	TWA	2,000 mg/m3 500 ppm
	ACGIH	TWA	200 mg/m3 , as total hydrocarbon vapor
1,2,4-Trimethylbenzene	ACGIH	TWA	25 ppm
1,3,5-Trimethylbenzene	ACGIH	TWA	25 ppm
Cumene	ACGIH	TWA	50 ppm
	OSHA Z-1	TWA	245 mg/m3 50 ppm
	OSHA Z-1	TWA	Absorbed via skin
	OSHA P0	TWA	245 mg/m3 50 ppm
Xylene	ACGIH	TWA	BEI
	ACGIH	STEL	BEI
	OSHA Z-1	TWA	435 mg/m3 100 ppm
	ACGIH	TWA	100 ppm
	ACGIH	STEL	150 ppm

RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.

Exposure controls
Engineering controls: Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use chemical goggles. If exposure causes eye discomfort, use a full-face respirator.

Skin protection

Hand protection: Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Chlorinated polyethylene. Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Viton. Examples of acceptable glove barrier materials include: Butyl rubber. Natural rubber ("latex"). Polyvinyl chloride ("PVC" or "vinyl"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to

glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use an approved respirator. Selection of air-purifying or positive-pressure supplied-air will depend on the specific operation and the potential airborne concentration of the material. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus. In confined or poorly ventilated areas, use an approved self-contained breathing apparatus or positive pressure air line with auxiliary self-contained air supply.

The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	Liquid.
Color	Orange
Odor	Aromatic
Odor Threshold	no data available
pH	5.0 *Literature* (aqueous 50/50)
Melting point/range	No test data available, Not applicable to liquids
Freezing point	No test data available
Boiling point (760 mmHg)	156 °C (313 °F) *Literature* (solvent)
Flash point	**closed cup** 48 °C (118 °F) *Pensky-Martens Closed Cup ASTM D 93*
Evaporation Rate (Butyl Acetate = 1)	no data available
Flammability (solid, gas)	Not Applicable
Lower explosion limit	1.5 % vol *Literature* (in air)
Upper explosion limit	8.5 % vol *Literature* (in air)
Vapor Pressure	10 mmHg *Literature* (solvent)
Relative Vapor Density (air = 1)	1.030 *Literature* (relative to air at 25°C)
Relative Density (water = 1)	1.02 at 20 °C (68 °F) *Literature*
Water solubility	emulsifies in water
Partition coefficient: n-octanol/water	no data available
Auto-ignition temperature	No test data available
Decomposition temperature	No test data available
Kinematic Viscosity	no data available
Explosive properties	no data available
Oxidizing properties	no data available
Liquid Density	1.017 g/cm3*NAPM 2A.00*

Molecular weight no data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: no data available

Chemical stability: Stable under recommended storage conditions. See Storage, Section 7. Thermally stable at typical use temperatures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Avoid temperatures above 70 °C
Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible materials: Avoid contact with oxidizing materials.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Hydrogen chloride. Hydrogen fluoride. Nitrogen oxides. Toxic gases are released during decomposition.

11. TOXICOLOGICAL INFORMATION

Toxicological information on this product or its components appear in this section when such data is available.

Acute toxicity

Acute oral toxicity
Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. Swallowing may result in gastrointestinal irritation or ulceration.

As product: Single dose oral LD50 has not been determined.

Based on information for component(s):
LD50, Rat, > 4,000 mg/kg Estimated.

Acute dermal toxicity
Prolonged skin contact is unlikely to result in absorption of harmful amounts.

As product: The dermal LD50 has not been determined.

Based on information for component(s):
LD50, Rabbit, > 5,000 mg/kg Estimated.

Acute inhalation toxicity

Vapor concentrations are attainable which could be hazardous on single exposure. Prolonged excessive exposure to mist may cause adverse effects. Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs. May cause central nervous system effects. Symptoms may include headache, dizziness and drowsiness, progressing to incoordination and unconsciousness.
As product: The LC50 has not been determined.

Skin corrosion/irritation
Brief contact may cause moderate skin irritation with local redness.
Prolonged contact may cause skin irritation, even a burn.
May cause drying and flaking of the skin.

Serious eye damage/eye irritation
May cause severe eye irritation.
May cause moderate corneal injury.
Vapor may cause eye irritation experienced as mild discomfort and redness.
In humans, eye irritation resulted from brief (minutes) exposure to cyclohexanone vapor concentration of 50 ppm and above.

Sensitization
For the active ingredient(s):
Skin contact may cause an allergic skin reaction.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)
May cause respiratory irritation.

May cause drowsiness or dizziness.

Specific Target Organ Systemic Toxicity (Repeated Exposure)
For the active ingredient(s):
In animals, effects have been reported on the following organs:
Liver.

Based on information for component(s):
In animals, effects have been reported on the following organs:
Kidney.
Liver.
Central nervous system.
Blood.
Eye.
Respiratory tract.
Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed.
Mist may cause irritation of upper respiratory tract (nose and throat) and lungs.
Exposure to high concentrations of mist/aerosol may be associated with delayed lung damage.

Carcinogenicity
For the minor component(s): Has caused cancer in laboratory animals. However, the relevance of this to humans is unknown.

For the active ingredient(s): A low incidence of urinary tract tumors was seen in only 1 of 5 chronic studies in rats with trifluralin. Trifluralin is not anticipated to be a carcinogenic risk to man. An increase in benign mammary fibroadenomas was observed in female rats dosed with Ethalfluralin. Did not cause cancer in laboratory animals.

Teratogenicity
For the active ingredient(s): Has caused birth defects in laboratory animals only at doses toxic to the mother. Based on information for component(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Has caused birth defects in lab animals only at doses producing severe toxicity in the mother.

Reproductive toxicity
In animal studies, active ingredient did not interfere with reproduction.

Based on information for component(s): In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals. Cyclohexanone caused reduced growth and survival of offspring in an animal reproduction study. Dose levels producing this effect also caused central nervous system effects in parental animals. In animal studies, has been shown to interfere with reproduction in males. Effects have been seen only at doses that produced significant toxicity to the parent animals.

Mutagenicity
For the active ingredient(s): In vitro genetic toxicity studies were negative in some cases and positive in other cases. Animal genetic toxicity studies were negative.

Based on information for component(s): In vitro genetic toxicity studies were negative in some cases and positive in other cases. Animal genetic toxicity studies were inconclusive

Aspiration Hazard
May be fatal if swallowed and enters airways.

COMPONENTS INFLUENCING TOXICOLOGY:

Ethalfluralin

Acute inhalation toxicity
Prolonged excessive exposure may cause adverse effects. Observations in animals include: Incoordination.

As product: LC50, Rat, 1 Hour, Dust, > 0.028 mg/l No deaths occurred at this concentration.

As product: LC50, Rat, male and female, 4 Hour, dust/mist, > 0.94 mg/l No deaths occurred at this concentration.

Cyclohexanone

Acute inhalation toxicity
Vapor concentrations are attainable which could be hazardous on single exposure. May cause central nervous system effects. Excessive exposure may cause severe irritation to upper respiratory tract (nose and throat) and lungs.

LC50, Rat, 4 Hour, vapour, > 6.2 mg/l No deaths occurred at this concentration.

Trifluralin

Acute inhalation toxicity

Vapors are unlikely due to physical properties. No adverse effects are anticipated from single exposure to dust. Based on the available data, respiratory irritation was not observed.

LC50, Rat, 4 Hour, dust/mist, > 4.8 mg/l

Solvent naphtha (petroleum), light aromatic consists of:

Acute inhalation toxicity

Vapor concentrations are attainable which could be hazardous on single exposure. May cause respiratory irritation and central nervous system depression. Symptoms may include headache, dizziness and drowsiness, progressing to incoordination and unconsciousness.

LC50, Rat, 4 Hour, > 10.2 mg/l

1,2,4-Trimethylbenzene

Acute inhalation toxicity

Prolonged excessive exposure may cause serious adverse effects, even death. Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs. May cause central nervous system effects. Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed.

LC50, Rat, 4 Hour, vapour, 18 mg/l

1,3,5-Trimethylbenzene

Acute inhalation toxicity

LC50, Rat, male and female, 4 Hour, vapour, > 10.2 mg/l No deaths occurred following exposure to a saturated atmosphere.

Cumene

Acute inhalation toxicity

Brief exposure (minutes) is not likely to cause adverse effects. Excessive exposure may cause severe irritation to the upper respiratory tract (nose and throat). May cause central nervous system effects. Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed. Effects may be delayed. Effects may be slow to heal. Exposure to 200 ppm cumene vapors is irritating to the nose and eyes; at around 400 ppm, vapors are painfully irritating but otherwise not injurious. Higher vapor levels may produce serious adverse effects.

LC50, Rat, 4 Hour, vapour, > 17.6 mg/l No deaths occurred at this concentration.

Xylene

Acute inhalation toxicity

LC50, Rat, 4 Hour, vapour, 27.5 mg/l

Carcinogenicity

Component	List	Classification
Cyclohexanone	ACGIH	A3: Confirmed animal carcinogen with unknown relevance to humans.
Solvent naphtha (petroleum), light aromatic consists of:	ACGIH	A3: Confirmed animal carcinogen with unknown relevance to humans.
Cumene	IARC	Group 2B: Possibly carcinogenic to humans

12. ECOLOGICAL INFORMATION

Ecotoxicological information on this product or its components appear in this section when such data is available.

Toxicity

Ethalfluralin

Acute toxicity to fish
Material is very highly toxic to aquatic organisms on an acute basis (LC50/EC50 <0.1 mg/L in the most sensitive species).
LC50, Lepomis macrochirus (Bluegill sunfish), static test, 96 Hour, 0.054 - 0.102 mg/l, OECD Test Guideline 203 or Equivalent
LC50, Oncorhynchus mykiss (rainbow trout), flow-through test, 96 Hour, 0.136 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates
EC50, eastern oyster (Crassostrea virginica), flow-through test, 96 Hour, 0.100 - 0.172 mg/l, OECD Test Guideline 202 or Equivalent
EC50, Daphnia magna (Water flea), static test, 48 Hour, > 0.365 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
ErC50, Pseudokirchneriella subcapitata (green algae), static test, 7 d, Growth rate inhibition, 0.004 - 0.0091 mg/l, OECD Test Guideline 201 or Equivalent

Chronic toxicity to fish
NOEC, Oncorhynchus mykiss (rainbow trout), 50 d, 0.0004 mg/l

Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), 21 d, 0.0237 mg/l

Toxicity to Above Ground Organisms
Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).
Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).
oral LD50, Colinus virginianus (Bobwhite quail), 14 d, > 2000mg/kg bodyweight.
dietary LC50, Colinus virginianus (Bobwhite quail), > 5000mg/kg diet.
oral LD50, Apis mellifera (bees), > 109.9micrograms/bee
contact LD50, Apis mellifera (bees), 46 - 100micrograms/bee

Toxicity to soil-dwelling organisms
LC50, Eisenia fetida (earthworms), 14 d, > 1,000 mg/kg

Cyclohexanone

Acute toxicity to fish
Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).
LC50, Leuciscus idus (Golden orfe), static test, 48 Hour, 630 mg/l
LC50, Pimephales promelas (fathead minnow), static test, 96 Hour, 527 - 732 mg/l

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), 24 Hour, 820 mg/l

Acute toxicity to algae/aquatic plants
LOEC, Scenedesmus quadricauda (Green algae), 192 Hour, 370 mg/l, Method Not Specified.

Toxicity to bacteria
EC50, activated sludge, > 1,000 mg/l, OECD 209 Test

Trifluralin

Acute toxicity to fish
Material is very highly toxic to aquatic organisms on an acute basis (LC50/EC50 <0.1 mg/L in the most sensitive species).
LC50, Oncorhynchus mykiss (rainbow trout), flow-through test, 96 Hour, 0.088 mg/l
LC50, Lepomis macrochirus (Bluegill sunfish), flow-through test, 96 Hour, 0.089 mg/l

Acute toxicity to aquatic invertebrates
EC50, water flea Daphnia magna, static test, 48 Hour, 0.245 mg/l
EC50, mussel Mytilus edulis, static test, 48 Hour, 0.096 mg/l

Acute toxicity to algae/aquatic plants
ErC50, Pseudokirchneriella subcapitata (green algae), 72 Hour, 0.0532 mg/l
EC50, Lemna gibba, Growth inhibition, 7 d, 0.043 mg/l
EbC50, diatom Navicula sp., 5 d, Biomass, 0.015 mg/l

Toxicity to bacteria
EC50, activated sludge, 3 Hour, > 100 mg/l

Chronic toxicity to fish
NOEC, Oncorhynchus mykiss (rainbow trout), static test, 48 d, growth, 0.00114 mg/l

Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), semi-static test, 21 d, growth, 0.0507 mg/l

Toxicity to Above Ground Organisms
Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).
Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).
oral LD50, Colinus virginianus (Bobwhite quail), > 2250mg/kg bodyweight.
dietary LC50, Colinus virginianus (Bobwhite quail), 5 d, > 5000mg/kg diet.
oral LD50, Apis mellifera (bees), > 100micrograms/bee
contact LD50, Apis mellifera (bees), > 100micrograms/bee

Toxicity to soil-dwelling organisms
LC50, Eisenia fetida (earthworms), 14 d, > 1,000 mg/kg

Solvent naphtha (petroleum), light aromatic consists of:

Acute toxicity to fish
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).
LC50, Oncorhynchus mykiss (rainbow trout), static test, 96 Hour, 9.22 mg/l, OECD Test Guideline 203 or Equivalent

Toxicity to Above Ground Organisms
Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).
Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).
dietary LC50, Colinus virginianus (Bobwhite quail), 8 d, > 6500mg/kg diet.

oral LD50, Colinus virginianus (Bobwhite quail), 21 d, > 2150mg/kg bodyweight.

1,2,4-Trimethylbenzene

Acute toxicity to fish
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).
LC50, Pimephales promelas (fathead minnow), flow-through test, 96 Hour, 7.7 mg/l

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), 48 Hour, 3.6 mg/l

1,3,5-Trimethylbenzene

Acute toxicity to fish
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).
LC50, Carassius auratus (goldfish), flow-through test, 96 Hour, 12.5 mg/l, Method Not Specified.

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), Static, 48 Hour, 6 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
EbC50, Desmodesmus subspicatus (green algae), 48 Hour, Biomass, 25 mg/l, OECD Test Guideline 201 or Equivalent

Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), semi-static test, 21 d, number of offspring, 0.4 mg/l

Cumene

Acute toxicity to fish
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).
LC50, Oncorhynchus mykiss (rainbow trout), semi-static test, 96 Hour, 2.7 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), static test, 48 Hour, 4.0 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
EbC50, Pseudokirchneriella subcapitata (green algae), static test, 72 Hour, Biomass, 2.6 mg/l, OECD Test Guideline 201 or Equivalent

Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), semi-static test, 21 d, number of offspring, 0.35 mg/l

Toxicity to Above Ground Organisms
oral LD50, redwing blackbird (Agelaius phoeniceus), > 98 mg/kg

Xylene

Acute toxicity to fish
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).

LC50, Oncorhynchus mykiss (rainbow trout), semi-static test, 96 Hour, 2.6 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates
IC50, Daphnia magna (Water flea), 24 Hour, 1 - 4.7 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
ErC50, Pseudokirchneriella subcapitata (algae), Static, 73 Hour, Growth rate, 4.36 mg/l, OECD Test Guideline 201 or Equivalent
NOEC, Pseudokirchneriella subcapitata (green algae), 73 Hour, Growth rate, 0.44 mg/l, OECD Test Guideline 201 or Equivalent

Chronic toxicity to fish
NOEC, Oncorhynchus mykiss (rainbow trout), flow-through, 56 d, mortality, > 1.3 mg/l

Persistence and degradability

Ethalfluralin

Biodegradability: Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.
10-day Window: Fail
Biodegradation: 2 - 15 %
Exposure time: 28 d
Method: OECD Test Guideline 301F or Equivalent

Stability in Water (1/2-life)
Hydrolysis, pH 3, Stable
Hydrolysis, pH 6, Stable
Hydrolysis, pH 9, Stable

Photodegradation
Atmospheric half-life: 1.8 Hour
Method: Estimated.

Cyclohexanone

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Not applicable
Biodegradation: 87 %
Exposure time: 14 d
Method: OECD Test Guideline 301C or Equivalent

Theoretical Oxygen Demand: 2.61 mg/mg

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 10.6 Hour
Method: Estimated.

Trifluralin

Biodegradability: Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.
10-day Window: Fail
Biodegradation: 5 %
Exposure time: 28 d
Method: OECD Test Guideline 301B or Equivalent

Chemical Oxygen Demand: 1.37 mg/mg

Stability in Water (1/2-life)
Hydrolysis, half-life, > 1 year, pH 3 - 9, Measured
Photolysis, half-life, 0.19 - 3.08 Hour, Measured

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 5.347 Hour
Method: Estimated.

Solvent naphtha (petroleum), light aromatic consists of:

Biodegradability: For the major component(s): Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%). For some component(s): Biodegradation under aerobic static laboratory conditions is low (BOD20 or BOD28/ThOD between 2.5 and 10%).

1,2,4-Trimethylbenzene

Biodegradability: Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.
10-day Window: Not applicable
Biodegradation: 4 - 18 %
Exposure time: 28 d
Method: OECD Test Guideline 301C or Equivalent

Theoretical Oxygen Demand: 3.19 mg/mg

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 0.641 d
Method: Estimated.

1,3,5-Trimethylbenzene

Biodegradability: Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.
10-day Window: Not applicable
Biodegradation: 0 %
Exposure time: 28 d
Method: OECD Test Guideline 301C or Equivalent
10-day Window: Not applicable
Biodegradation: 50 %
Exposure time: 4.4 d
Method: Calculated.

Theoretical Oxygen Demand: 3.19 mg/mg

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 3.7 Hour
Method: Estimated.

Cumene

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Pass
Biodegradation: 86 %
Exposure time: 28 d
Method: OECD Test Guideline 301D or Equivalent

Theoretical Oxygen Demand: 3.20 mg/mg

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	40.000 %
10 d	62.000 %
20 d	70.000 %

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 1.55 d
Method: Estimated.

Xylene

Biodegradability: Material is expected to be readily biodegradable.
10-day Window: Pass
Biodegradation: > 60 %
Exposure time: 10 d
Method: OECD Test Guideline 301F or Equivalent

Theoretical Oxygen Demand: 3.17 mg/mg

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	37.000 %
10 d	58.000 %
20 d	72.000 %

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 19.7 Hour
Method: Estimated.

Bioaccumulative potential

Ethalfluralin

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water(log Pow): 5.11 Measured
Bioconcentration factor (BCF): 1,330 Fish. Measured

Cyclohexanone

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): 0.81 Measured

Trifluralin

Bioaccumulation: Bioconcentration potential is high (BCF > 3000 or Log Pow between 5 and 7).
Partition coefficient: n-octanol/water(log Pow): 5.27
Bioconcentration factor (BCF): 1,060 - 6,000 Pimephales promelas (fathead minnow) Estimated.

Solvent naphtha (petroleum), light aromatic consists of:

Bioaccumulation: For the major component(s): Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5). For the minor component(s): Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

1,2,4-Trimethylbenzene

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water(log Pow): 3.63 Measured
Bioconcentration factor (BCF): 33 - 275 Cyprinus carpio (Carp) 56 d Measured

1,3,5-Trimethylbenzene

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water(log Pow): 3.42 Measured
Bioconcentration factor (BCF): 161 Pimephales promelas (fathead minnow) Measured

Cumene

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): 3.4 - 3.7 Measured
Bioconcentration factor (BCF): 35.5 Fish. Measured

Xylene

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): 3.12 Measured
Bioconcentration factor (BCF): 25.9 Rainbow trout (Salmo gairdneri) Measured

Mobility in soil

Ethalfluralin

Expected to be relatively immobile in soil (Koc > 5000).
Partition coefficient(Koc): 4100 - 8400 Measured

Cyclohexanone

Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient(Koc): 15 Estimated.

Solvent naphtha (petroleum), light aromatic consists of:
For the major component(s):
Potential for mobility in soil is low (Koc between 500 and 2000).

1,2,4-Trimethylbenzene
Potential for mobility in soil is low (Koc between 500 and 2000).
Partition coefficient(Koc): 720 Estimated.

1,3,5-Trimethylbenzene
Potential for mobility in soil is low (Koc between 500 and 2000).
Partition coefficient(Koc): 741.65 Estimated.

Cumene
Potential for mobility in soil is low (Koc between 500 and 2000).
Partition coefficient(Koc): 800 - 2800 Estimated.

Xylene
Potential for mobility in soil is medium (Koc between 150 and 500).
Partition coefficient(Koc): 443 Estimated.

13. DISPOSAL CONSIDERATIONS

Disposal methods: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

14. TRANSPORT INFORMATION

DOT

Proper shipping name	Flammable liquids, n.o.s.(cyclohexanone, 1,2,4-Trimethylbenzene)
UN number	UN 1993
Class	3
Packing group	III
Reportable Quantity	Xylene, Trifluralin

Classification for SEA transport (IMO-IMDG):

Proper shipping name	FLAMMABLE LIQUID, N.O.S.
UN number	UN 1993
Class	3
Packing group	III

Marine pollutant	, Ethalfluralin
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Proper shipping name	Flammable liquid, n.o.s.(cyclohexanone, 1,2,4-Trimethylbenzene)
UN number	UN 1993
Class	3
Packing group	III

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312
Fire Hazard
Acute Health Hazard
Chronic Health Hazard

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

Components	**CASRN**
Cumene	98-82-8
1,2,4-Trimethylbenzene	95-63-6

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

Pennsylvania (Worker and Community Right-To-KnowAct): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:
The following product components are cited in the Pennsylvania Hazardous Substance List and/or the Pennsylvania Environmental Substance List, and are present at levels which require reporting.

Components	**CASRN**
Cyclohexanone	108-94-1
1,2,4-Trimethylbenzene	95-63-6

1,3,5-Trimethylbenzene	108-67-8
Cumene	98-82-8

Pennsylvania (Worker and Community Right-To-KnowAct): Pennsylvania Special Hazardous Substances List:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

United States TSCA Inventory (TSCA)
This product contains chemical substance(s) exempt from U.S. EPA TSCA Inventory requirements. It is regulated as a pesticide subject to Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requirements.

Federal Insecticide, Fungicide and Rodenticide Act
EPA Registration Number: 62719-188
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

DANGER

Corrosive

16. OTHER INFORMATION

Hazard Rating System
NFPA

Health	Fire	Reactivity
2	2	0

Revision
Identification Number: 101203532 / A211 / Issue Date: 05/04/2015 / Version: 5.0
DAS Code: GF-1742
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

Absorbed via skin	Absorbed via skin
ACGIH	USA. ACGIH Threshold Limit Values (TLV)
BEI	Biological Exposure Indices
Dow IHG	Dow Industrial Hygiene Guideline
OEL Notation	Absorbed via Skin*
OSHA P0	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
OSHA Z-1	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
STEL	Short-term exposure limit
TWA	8-hour, time-weighted average

Information Source and References
This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

DOW AGROSCIENCES LLC urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

Safety Data Sheet

syngenta®

DUAL MAGNUM® HERBICIDE

Date: 8/4/2015
Replaces: 4/9/2015

1. PRODUCT IDENTIFICATION

Product identifier on label: **DUAL MAGNUM® HERBICIDE**
Product No.: A9793D
Use: Herbicide
Manufacturer: Syngenta Crop Protection, LLC
Post Office Box 18300
Greensboro NC 27419

Manufacturer Phone: 1-800-334-9481

Emergency Phone: 1-800-888-8372

2. HAZARDS IDENTIFICATION

Classifications:
Inhalation: Category 4
Skin Sensitizer: Category 1B
Specific Target Organ Toxicity: Repeated Category 2
Specific Target Organ Toxicity: Respiratory Irritation Category 3
Eye Damage/Irritation: Category 2B
Carcinogenicity: Category 1B

Signal Word (OSHA): Danger

Hazard Statements:
May cause an allergic skin reaction
Causes eye irritation
Harmful if inhaled
May cause respiratory irritation
May cause cancer
May cause damage to organs through prolonged or repeated exposure

Hazard Symbols:

Precautionary Statements:
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe mist, vapors, spray.
Wash hands and face thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing must not be allowed out of the workplace.
Wear protective gloves, protective clothing, eye protection.
If on skin: Wash with plenty of soap and water.

If skin irritation or rash occurs: Get medical advice.

If inhaled: Remove person to fresh air and keep comfortable for breathing.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical advice.

If exposed or concerned: Get medical advice/attention.

Call a poison center, doctor or Syngenta if you feel unwell.

See Section 4 First Aid Measures.

Wash contaminated clothing before reuse.

Store locked up.

Dispose of contents and container in accordance with local regulations.

Other Hazard Statements: None

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Common Name	CAS Number	Concentration
Naphthalene	Naphthalene	91-20-3	<1.0%
Petroleum Solvent	Petroleum Solvent	64742-94-5	<10.0%
Other ingredients	Other ingredients	Trade Secret	<5.3%
Acetamide, 2-chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl]-,(S)	S-Metolachlor	87392-12-9	83.7%

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.

4. FIRST AID MEASURES

Have the product container, label or Safety Data Sheet with you when calling Syngenta (800-888-8372), a poison contol center or doctor, or going for treatment.

Ingestion: If swallowed: Call Syngenta (800-888-8372), a poison control center or doctor immediately for treatment advice. Do not give any liquid to the person. Do not induce vomiting unless told to do so after calling 800-888-8372 or by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

Eye Contact: If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.

Skin Contact: If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.

Inhalation: If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call Syngenta (800-888-8372), a poison control center or doctor for further treatment advice.

Most important symptoms/effects:

Eye irritation

Allergic skin reaction

Respiratory irritation

Indication of immediate medical attention and special treatment needed:

There is no specific antidote if this product is ingested.

Treat symptomatically.

Persons suffering a temporary allergic reaction may respond to treatment with antihistamines or steroid creams and/or systemic steroids.

Contains petroleum distillate - vomiting may cause aspiration pneumonia.

5. FIRE FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media:

Use dry chemical, foam or CO2 extinguishing media. If water is used to fight fire, dike and collect runoff.

Specific Hazards:

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

Special protective equipment and precautions for firefighters:

Wear full protective clothing and self-contained breathing apparatus. Evacuate nonessential personnel from the area to prevent human exposure to fire, smoke, fumes or products of combustion.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures:

Follow exposure controls/personal protection outlined in Section 8.

Methods and materials for containment and cleaning up:

Control the spill at its source. Contain the spill to prevent from spreading or contaminating soil or from entering sewage and drainage systems or any body of water. Clean up spills immediately, observing precautions outlined in Section 8. Cover entire spill with absorbing material and place into compatible disposal container. Scrub area with hard water detergent (e.g. commercial products such as Tide, Joy, Spic and Span). Pick up wash liquid with additional absorbent and place into compatible disposal container. Once all material is cleaned up and placed in a disposal container, seal container and arrange for disposition.

7. HANDLING AND STORAGE

Precautions for safe handling:

Store the material in a well-ventilated, secure area out of reach of children and domestic animals. Do not store food, beverages or tobacco products in the storage area. Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

Conditions for safe storage, including any incompatibilities:

Store locked up.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION AND PACKAGING OF THIS PRODUCT.

FOR COMMERCIAL APPLICATIONS AND/OR ON-FARM APPLICATIONS CONSULT THE PRODUCT LABEL.

Occupational Exposure Limits:

Chemical Name	OSHA PEL	ACGIH TLV	Other	Source
Naphthalene	10 ppm TWA	10 ppm TWA (skin)	10 ppm TWA	NIOSH

Petroleum Solvent	Not Established	Not Established	100 mg/m³ (15-17 ppm) TWA	Manufacturer
Other ingredients	Not Applicable	Not Applicable	Not Applicable	Not Applicable
S-Metolachlor	Not Established	Not Established	5 mg/m³ TWA	Syngenta

Appropriate engineering controls:

Use effective engineering controls to comply with occupational exposure limits (if applicable).

Individual protection measures:

Ingestion:

Prevent eating, drinking, tobacco usage and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

Eye Contact:

Where eye contact is likely, use chemical splash goggles. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

Skin Contact:

Where contact is likely, wear chemical-resistant gloves (such as barrier laminate, butyl rubber, nitrile rubber or Viton), coveralls, socks and chemical-resistant footwear.

Inhalation:

A respirator is not normally required when handling this substance. Use effective engineering controls to comply with occupational exposure limits.

In case of emergency spills, use a NIOSH approved respirator with any R, P or HE filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Golden brown liquid

Odor: Sweet

Odor Threshold: Not Available

pH: 5 - 7 (1% solution in H2O @ 77°F (25°C))

Melting point/freezing point: Not Applicable

Initial boiling point and boiling range: Not Available

Flash Point (Test Method): > 200°F (Setaflash)

Flammable Limits (% in Air): Not Available

Flammability: Not Applicable

Vapor Pressure: S-Metolachlor 2.8 x 10(-5) mmHg @ 77°F (25°C)

Vapor Density: Not Available

Relative Density: 1.09 g/cm³ @ 68°F (20°C)

Solubility (ies): S-Metolachlor 0.48 g/l @ 77°F (25°C)

Partition coefficient: n-octanol/water: Not Available

Autoignition Temperature: Not Available

Decomposition Temperature: Not Available

Viscosity: Not Available

Other: None

10. STABILITY AND REACTIVITY

Reactivity: Not reactive.

Chemical stability: Stable under normal use and storage conditions.

Possibility of hazardous reactions: Will not occur.

Conditions to Avoid: None known.

Incompatible materials: None known.

Hazardous Decomposition Products: Not Available

11. TOXICOLOGICAL INFORMATION

Health effects information

Likely routes of exposure: Dermal, Inhalation

Symptoms of exposure: Eye irritation, Respiratory irritation

Delayed, immediate and chronic effects of exposure: Possible carcinogenicity, Eye irritation, Allergic skin reaction, Respiratory irritation

Numerical measures of toxicity (acute toxicity/irritation studies (finished product))

Ingestion:	Oral (LD50 Rat) :	3425 mg/kg body weight
Dermal:	Dermal (LD50 Rabbit) :	> 2000 mg/kg body weight
Inhalation:	Inhalation (LC50 Rat) :	> 2.61 mg/l air - 4 hours
Eye Contact:	Moderately Irritating (Rabbit)	
Skin Contact:	Slightly Irritating (Rabbit)	
Skin Sensitization:	Sensitizing (Guinea Pig)	

Reproductive/Developmental Effects

S-Metolachlor: Did not show reproductive effects in animal experiments.

Chronic/Subchronic Toxicity Studies

S-Metolachlor: No adverse effect has been observed in chronic toxicity tests.

Carcinogenicity

S-Metolachlor: Did not show carcinogenic effects in animal experiments.

Chemical Name	NTP/IARC/OSHA Carcinogen
Naphthalene	See "Toxicity", Sec. 11
Petroleum Solvent	No
Other ingredients	No

Acetamide, 2-chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl]-,(S)	No

Other Toxicity Information

None

Toxicity of Other Components

Naphthalene

Exposure to naphthalene can cause cataracts, liver damage, kidney failure, respiratory failure, hematuria, anemia, damage to red blood cells, leukocytosis, or coma.
Carcinogen Status:
NTP: Anticipated Carcinogen
IARC: Group 2B Possible Human Carcinogen

Other ingredients

Not Applicable

Petroleum Solvent

May cause irritation to the eyes, skin and respiratory system. Excessive inhalation causes headache, dizziness, nausea and loss of motor skills.

Target Organs

Active Ingredients

S-Metolachlor:	Liver

Inert Ingredients

Naphthalene:	Eye, liver, kidney, respiratory tract, blood, CNS
Other ingredients:	Not Applicable
Petroleum Solvent:	Eye, skin, respiratory system, central nervous system

12. ECOLOGICAL INFORMATION

Eco-Acute Toxicity

S-Metolachlor:

Fish (Rainbow Trout) 96-hour LC50 1.23 mg/l

Green Algae 96-hour ErC50 0.077 mg/l

Invertebrate (Water Flea) 48-hour EC50 11.24 mg/l

Environmental Fate

S-Metolachlor:

The information presented here is for the active ingredient, S-Metolachlor.
Low bioaccumulation potential. Not persistent in soil. Stable in water. Sinks in water (after 24 h).

13. DISPOSAL CONSIDERATIONS

Disposal:

Do not reuse product containers. Dispose of product containers, waste containers, and residues according to local, state, and federal health and environmental regulations.

Characteristic Waste: Not Applicable

Listed Waste: Not Applicable

14. TRANSPORT INFORMATION

DOT Classification

Ground Transport - NAFTA
Packages < 1700 gal. - Not regulated

Packages > 1700 gal.
Proper Shipping Name: RQ Other Regulated Substances, Liquid, N.O.S. (Naphthalene)
Hazard Class: Class 9
Identification Number: NA 3082
Packing Group: PG III

Comments

Water Transport - International
Proper Shipping Name:
< 1700 gal.
Environmentally Hazardous Substance, Liquid, N.O.S. (s-Metolachlor), Marine Pollutant
> 1700 gal.
RQ Environmentally Hazardous Substance, Liquid, N.O.S. (s-Metolachlor, Naphthalene), Marine Pollutant
Hazard Class: Class 9
Identification Number: UN 3082
Packing Group: PG III

Air Transport
Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S. (s-Metolachlor)
Hazard Class: Class 9
Identification Number: UN 3082
Packing Group: PG III

15. REGULATORY INFORMATION

Pesticide Registration:

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

Caution: Causes moderate eye irritation. Harmful if swallowed or absorbed through skin. Avoid contact with eyes, skin, or clothing. May cause skin sensitization reactions in certain individuals.

EPA Registration Number(s):

100-816

EPCRA SARA Title III Classification:

Section 311/312 Hazard Classes: Acute Health Hazard

Section 313 Toxic Chemicals: Naphthalene <1.0% (CAS No. 91-20-3)

California Proposition 65:

This product contains a chemical known to the State of California to cause cancer.

CERCLA/SARA 304 Reportable Quantity (RQ):

Report product spills > 1,700 gal. (based on naphthalene [RQ = 100 lbs.] content in the formulation)

RCRA Hazardous Waste Classification (40 CFR 261):

Not Applicable

TSCA Status:
Exempt from TSCA, subject to FIFRA

16. OTHER INFORMATION

NFPA Hazard Ratings		HMIS Hazard Ratings	
Health:	2	Health:	2
Flammability:	1	Flammability:	1
Instability:	0	Reactivity:	0

0	Minimal
1	Slight
2	Moderate
3	Serious
4	Extreme
*	Chronic

Syngenta Hazard Category: D,S

For non-emergency questions about this product call:

1-800-334-9481

Original Issued Date: 9/26/1996
Revision Date: 8/4/2015 Replaces: 4/9/2015
Section(s) Revised: 2, 4, 11

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.

Safety Data Sheet

Material Name: Copper Sulfate Pentahydrate **ID: C1-121A**

* * * Section 1 - Chemical Product and Company Identification * * *

Chemical Name: Copper Sulfate Pentahydrate
Product Use: Specific applications are listed on the label for the product

RESTRICTIONS on USE

SPECIFIC RESTRICTION ARE LISTED ON THE LABEL FOR THE PRODUCT

Supplier Information
Chem One Ltd.
14140 Westfair East Drive
Houston, Texas 77041-1104

Phone: (713) 896-9966
Fax: (713) 896-7540
Emergency # (800) 424-9300 or (703) 527-3887

General Comments

NOTE: Emergency telephone numbers are to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure, or accident involving chemicals. All non-emergency questions should be directed to customer service.

* * * Section 2 - Composition / Information on Ingredients * * *

GHS HAZARD

Hazard Classes	Hazard Categories
Acute toxicity, Oral	Category 4
Acute toxicity, Dermal	Category 5
Skin irritation	Category 2
Eye irritation	Category 2A
Acute aquatic toxicity	Category 1
Chronic aquatic toxicity	Category 1

Signal Word: Danger

Pictograms:

Hazard Statements

PHYSICAL HAZARDS: None

HEALTH HAZARDS:
H302 Harmful if swallowed.
H313 May be harmful in contact with skin.
H315 Causes skin irritation.
H319 Causes serious eye irritation

ENVIRONMENTAL HAZARDS:
H400 Very toxic to aquatic life
H410: Very toxic to aquatic life with long lasting effects

PRECAUTIONARY STATEMENTS: P102: Keep out of reach of children

P202: Do not handle until all safety precautions have been read and understood
P261: Avoid breathing dust
P273 Avoid release to the environment
P280: Wear protective gloves, clothing and eye protection

RESPONSE STATEMENTS:

P301 +310+ P331: IF SWALLOWED: USA Immediately call the National POISON CENTER at 800-222-1222. DO NOT induce vomiting
P303+P361+353: IF ON SKIN Take off immediately all contaminated clothing. Rinse skin with water
P304+340: IF INHALED, Remove to fresh air and keep comfortable for breathing
P305+P351: IF IN EYES rinse cautiously with water for at least 15 minutes
P306+P361: IF ON CLOTHING, Take off contaminated clothing
P370: In case of fire use foam, carbon dioxide, dry chemical to extinguish fire
P376: Stop leaks if safe to do so. See section 6 for proper clean up

STORAGE STATEMENTS:

P403: Keep Cool Store in a well-ventilated place

DISPOSAL STATEMENTS:

P501: Dispose of content and/or container in accordance with local, regional, national or international regulations

* * * Section 3 - Hazards Identification * * *

CAS #	Component	Percent
7758-99-8	Copper (II) Sulfate Pentahydrate	> 99

Synonyms: Copper Sulfate Crystals, Blue Copper, Blue Stone, Blue Vitriol, Copper (II) sulfate, Cupric Sulfate, Copper Sulfate Fine 200, Fine 100, Fine 30, 20, 25, Small, Medium, Large, FCC IV, and Very High Purity

* * * Section 4 - First Aid Measures * * *

Potential Health Effects: Eyes

Exposure to particulates or solution of this product may cause redness and pain. Prolonged contact may cause conjunctivitis, ulceration and corneal abnormalities.

First Aid: Eyes

Immediately flush eyes with large amounts of room temperature water, occasionally lifting the lower and upper lids, for at least 15 minutes. If symptoms persist after 15 minutes of irrigation, seek medical attention.

Potential Health Effects: Skin

This product can cause irritation of the skin with pain, itching and redness. Severe overexposure can cause skin burns. Prolonged exposure may cause dermatitis and eczema.

First Aid: Skin

Remove all contaminated clothing. For skin contact, wash thoroughly with soap and water for at least 20 minutes. Seek immediate medical attention if irritation develops or persists.

Potential Health Effects: Ingestion

Harmful or fatal if swallowed. May cause gastrointestinal irritation with symptoms such as nausea, vomiting, and diarrhea. Ingestion may cause degeneration of liver, kidney, or renal failure. Persons who survive ingestion may develop granulomatous lesions of the kidney. Ingestion of large amounts may lead to convulsions, coma or death.

First Aid: Ingestion

DO NOT INDUCE VOMITING. Have victim rinse mouth thoroughly with water, if conscious. Never give anything by mouth to a victim who is unconscious or having convulsions. Contact a physician or poison control center immediately.

* * * Section 4 - First Aid Measures Continued * * *

Potential Health Effects: Inhalation

May irritate the nose, throat and respiratory tract. Symptoms can include sore throat, coughing and shortness of breath. In severe cases, ulceration and perforation of the nasal septum can occur. If this material is heated, inhalation of fumes may lead to development of metal fume fever. This is a flu-like illness with symptoms of metallic taste, fever and chills, aches, chest tightness and cough. Repeated inhalation exposure can cause shrinking of the lining of the inner nose.

First Aid: Inhalation

Remove source of contamination or move victim to fresh air. Apply artificial respiration if victim is not breathing. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Administer oxygen if breathing is difficult. Get immediate medical attention.

First Aid: Notes to Physician

Provide general supportive measures and treat symptomatically. Basic Treatment: Establish a patent airway. Suction if necessary. Watch for signs of respiratory insufficiency and assist ventilations if necessary. Administer oxygen by non-rebreather mask at 10 to 15 L/minutes. Monitor for shock and treat if necessary. For eye contamination, flush eyes immediately with water. Irrigate each eye continuously with normal saline during transport. Do not use emetics. For ingestion, rinse mouth and administer 5 mL/kg up to 200 mL of water for dilution if the patient can swallow, has a strong gag reflex, and does not drool. Administer activated charcoal. Advanced Treatment: Consider orotracheal or nasotracheal intubation for airway control in the patient who is unconscious. Start an IV with lactated Ringer's SRP: "To keep open", minimal flow rate. Watch for signs of fluid overload. For hypotension with signs of hypovolemia, administer fluid cautiously. Consider vasopressors if hypotensive with a normal fluid volume. Watch for signs of fluid overload. Use proparacaine, hydrochloride to assist eye irrigation.

* * * Section 5 - Fire Fighting Measures * * *

General Fire Hazards

Copper Sulfate Pentahydrate is not combustible, but may decompose in the heat of a fire to produce corrosive and/ or toxic fumes.

Hazardous Combustion Products

Sulfur oxides and copper fumes.

Extinguishing Media

Use methods for surrounding fire.

Fire Fighting Equipment/Instructions

Firefighters should wear full protective clothing including self-contained breathing apparatus. Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

NFPA Ratings: Health: 2 **Fire:** 0 **Reactivity:** 1 **Other:**

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

* * * Section 6 - Accidental Release Measures * * *

Containment Procedures

Stop the flow of material, if this can be done without risk. Contain the discharged material. If sweeping of a contaminated area is necessary use a dust suppressant agent, which does not react with product (see Section 10 for incompatibility information).

Clean-Up Procedures

Wear appropriate protective equipment and clothing during clean-up. Shovel the material into waste container. Thoroughly wash the area after a spill or leak clean-up. Prevent spill rinsate from contamination of storm drains, sewers, soil or groundwater.

* * * Section 6 - Accidental Release Measures Continued * * *

Evacuation Procedures

Evacuate the area promptly and keep upwind of the spilled material. Isolate the spill area to prevent people from entering. Keep materials which can burn away from spilled material. In case of large spills, follow all facility emergency response procedures.

Special Procedures

Remove soiled clothing and launder before reuse. Avoid all skin contact with the spilled material. Have emergency equipment readily available.

* * * Section 7 - Handling and Storage * * *

Handling Procedures

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling, when used as a pesticide. Do not breathe dust. Avoid all contact with skin and eyes. Use this product only with adequate ventilation. Wash thoroughly after handling.

Storage Procedures

Keep in original container in locked storage area. Keep container tightly closed when not in use. Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Material should be stored in secondary containers or in a diked area, as appropriate. Store containers away from incompatible chemicals (see Section 10, Stability and Reactivity). Storage areas should be made of fire-resistant materials. Post warning and "NO SMOKING" signs in storage and use areas, as appropriate. Use corrosion-resistant structural materials, lighting, and ventilation systems in the storage area. Floors should be sealed to prevent absorption of this material. Have appropriate extinguishing equipment in the storage area (i.e., sprinkler system, portable fire extinguishers). Empty containers may contain residual particulates; therefore, empty containers should be handled with care. Do not cut, grind, weld, or drill near this container. Never store food, feed, or drinking water in containers that held this product. Keep this material away from food, drink and animal feed. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged. Do not store this material in open or unlabeled containers. Limit quantity of material stored. Store in suitable containers that are corrosion-resistant.

* * * Section 8 - Exposure Controls / Personal Protection * * *

Exposure Guidelines

A: General Product Information

Follow the applicable exposure limits.

B: Component Exposure Limits

The exposure limits given are for Copper & Inorganic Compounds, as Cu (7440-50-8), Copper fume as Cu or Copper dusts and mists, as Cu.

ACGIH:	1 mg/m^3 TWA (dusts & mists)
	0.2 mg/m^3 TWA (fume)
OSHA:	1 mg/m^3 TWA (dusts & mists)
	0.1 mg/m^3 TWA (fume)
NIOSH:	1 mg/m^3 TWA (dusts & mists)
	0.1 mg/m^3 TWA (fume)
DFG MAKs	1 mg/m^3 TWA Peak, 2•MAK 15 minutes, average value, 1-hr interval (copper and inorganic copper compounds)
	0.1 mg/m^3 TWA Peak, 2•MAK15 minutes, average value, 1-hr interval (fume)

Component Related Regulatory Information

This product may be regulated, have exposure limits or other information identified as the following: Copper (7440-50-8) and inorganic compounds, as Cu, Copper (7440-50-8) dusts and mists, as Cu and Copper fume, Cu.

Engineering Controls

Use mechanical ventilation such as dilution and local exhaust. Use a corrosion-resistant ventilation system and exhaust directly to the outside. Supply ample air replacement. Provide dust collectors with explosion vents.

* * * Section 8 - Exposure Controls / Personal Protection Continued * * *

The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132). Please reference applicable regulations and standards for relevant details

PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment: Eyes/Face

Wear safety glasses with side shields (or goggles) and a face shield, if this material is made into solution. If necessary, refer to U.S. OSHA 29 CFR 1910.133.

Personal Protective Equipment: Skin

Wear chemically-impervious gloves, made of any waterproof material, boots and coveralls to avoid skin contact. If necessary, refer to U.S. OSHA 29 CFR 1910.138.

Personal Protective Equipment: Respiratory

If airborne concentrations are above the applicable exposure limits, use NIOSH-approved respiratory protection. If respiratory protection is needed, use only protection authorized in the U.S. Federal OSHA Standard (29 CFR 1910.134), applicable U.S. State regulations. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (1910.134-1998). The following NIOSH Guidelines for Copper dust and mists (as Cu) are presented for further information.

Up to 5 mg/m^3: Dust and mist respirator.

Up to 10 mg/m^3: Any dust and mist respirator except single-use and quarter mask respirators or any SAR.

Up to 25 mg/m^3: SAR operated in a continuous-flow mode or powered air-purifying respirator with a dust and mist filter(s).

Up to 50 mg/m^3: Air purifying, full-facepiece respirator with high-efficiency particulate filter(s), any powered air-purifying respirator with tight-fitting facepiece and high-efficiency particulate filter(s) or full-facepiece SCBA, or full-facepiece SAR.

Up to 100 mg/m^3: Positive pressure, full-facepiece SAR.

Emergency or Planned Entry into Unknown Concentrations or IDLH Conditions: Positive pressure, full-facepiece SCBA, or positive pressure, full-facepiece SAR with an auxiliary positive pressure SCBA.

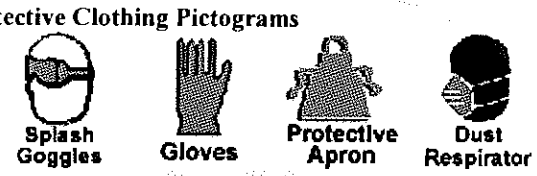
Escape: Full-facepiece respirator with high-efficiency particulate filter(s), or escape-type SCBA.

NOTE: The IDLH concentration for Copper dusts and mists (as Cu) is 100 mg/m^3.

Personal Protective Equipment: General

Wash hands thoroughly after handling material. Do not eat, drink or smoke in work areas. Have a safety shower or eye-wash fountain available. Use good hygiene practices when handling this material including changing and laundering work clothing after use. Discard contaminated shoes and leather goods.

Protective Clothing Pictograms



* * * Section 9 - Physical & Chemical Properties * * *

Physical Properties: Additional Information

The data provided in this section are to be used for product safety handling purposes. Please refer to Product Data Sheets, Certificates of Conformity or Certificates of Analysis for chemical and physical data for determinations of quality and for formulation purposes.

Appearance:	Blue crystals or powder	**Odor:**	Odorless
Physical State:	Solid	**pH:**	3.7-4.2 (10% soln.)
Vapor Pressure:	20 torr at 22.5 deg C	**Vapor Density:**	8.6
Boiling Point:	560 deg C (1040 deg F) [decomposes]	**Freezing/Melting Point:**	150 deg C (302 deg F)
Solubility (H2O):	31.6 g/100 cc (@ 0 deg C)	**Specific Gravity:**	2.28 @ 15.6 deg C (H2O = 1)
Softening Point:	Not available	**Particle Size:**	Various
Molecular Weight:	249.68	**Bulk Density:**	Not available
Flash Point:	Not flammable	**Chemical Formula:**	CuSO4*5H2O

Upper Flammable Limit (UEL): Not applicable
Lower Flammable Limit (LEL): Not applicable
Auto Ignition: Not applicable
Flammability Classification: Not applicable
Rate of Burning: Not applicable

* * * Section 10 - Chemical Stability & Reactivity Information * * *

Chemical Stability

Copper Sulfate Pentahydrate is hygroscopic, but stable when kept dry, under normal temperature and pressures.

Chemical Stability: Conditions to Avoid

Avoid high temperatures, exposure to air and incompatible materials.

Incompatibility

Copper Sulfate causes hydroxylamine to ignite and the hydrated salt is vigorously reduced. Solutions of sodium hypobromite are decomposed by powerful catalytic action of cupric ions, even as impurities. . Copper salts, including Copper Sulfate may react to form explosive acetylides when in contact with acetylene or nitromethane. Contact with reducing agents, can cause a vigorous reaction, especially in solution. This product can corrode aluminum, steel and iron. Copper Sulfate Pentahydrate is incompatible with magnesium, strong bases, alkalines, phosphates, acetylene, hydrazine, and zirconium.

Hazardous Decomposition

Sulfur oxides and Copper oxides.

Hazardous Polymerization Will not occur.

* * * Section 11 - Toxicological Information * * *

Acute and Chronic Toxicity

A: General Product Information

Acute toxicity is largely due to the corrosive (acidic) properties of this material. Harmful or fatal if swallowed. Product is an eye and skin irritant, and may cause burns. Product is a respiratory tract irritant, and inhalation may cause nose irritation, sore throat, coughing, and chest tightness and possibly, ulceration and perforation of the nasal septum.

Chronic: Long term skin overexposure to this product may lead to dermatitis and eczema. Prolonged or repeated eye contact may cause conjunctivitis and possibly corneal abnormalities. Chronic overexposure to this product may cause liver and kidney damage, anemia and other blood cell abnormalities.

B: Component Analysis - LD_{50}/LC_{50}

Copper Sulfate Pentahydrate (7758-99-8)

Oral-rat LD50 = 330 mg/kg (testing done June 2006, Consumer Product Testing Co., Inc.); Intraperitoneal-Rat LD_{50}: 18,700 mg/kg; Intraperitoneal-rat LD_{50}: 20 mg/kg; Subcutaneous-rat LD_{50}: 43 mg/kg; Intravenous-rat LD_{50}: 48900 µg/kg; Unreported-rat LD_{50}: 520 mg/kg; Oral-mouse LD_{50}: 369 mg/kg; Intraperitoneal-Mouse LD_{50}: 33 mg/kg; Intraperitoneal-mouse LD_{50}: 7182 µg/kg; Intravenous-mouse LD_{50}: 23300 µg/kg

* * * Section 11 - Toxicological Information Continued * * *

B: Component Analysis - TDLo/LDLo

Copper Sulfate Pentahydrate (7758-99-8)

Oral-man LDLo: 857 mg/kg; Oral-Human LDLo: 50 mg/kg: Behavioral: somnolence (general depressed activity); Kidney, Urethra, Bladder: changes in tubules (including acute renal failure, acute tubular necrosis); Blood: hemorrhage; Oral-Human TDLo: 11 mg/kg: Gastrointestinal: gastritis; Gastrointestinal: hypermotility, diarrhea, nausea or vomiting; Oral-Human TDLo: 272 mg/kg: liver, kidney, Blood effects; Oral-Human LDLo: 1088 mg/kg; Oral-child : 150 mg/kg: Kidney, Urethra, Bladder: changes in tubules (including acute renal failure, acute tubular ; necrosis); Blood: other hemolysis with or without anemia; unknown-Man LDLo: 221 mg/kg; Oral-Woman TDLo: 2400 mg/kg/day: Gastrointestinal tract effects; DNA Inhibition-Human: lymphocyte 76 mmol/L; Oral-woman LDLo: 100 mg/kg: Vascular: Blood pressure lowering not characterized in autonomic section; Liver: hepatitis (hepatocellular necrosis), diffuse; Kidney, Urethra, Bladder: changes in tubules (including acute renal failure, acute tubular necrosis); Oral-Human LDLo: 143 mg/kg: Pulmonary system effects, Gastrointestinal tract effects ;Oral-rat TDLo: 915 mg/kg/1 year-intermittent: Cardiac: changes in coronary arteries; Blood: changes in serum composition (e.g. TP, bilirubin, cholesterol; Oral-rat TDLo: 157 mg/kg/6 weeks-intermittent: Endocrine: changes in adrenal weight; Nutritional and Gross Metabolic: weight loss or decreased weight gain; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: dehydrogenases; Oral-rat TDLo: 7530 mg/kg/30 days-intermittent: Blood: changes in serum composition (e.g. TP, bilirubin, cholesterol); Blood: changes in erythrocyte (RBC) count; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels:- multiple enzyme effect; Oral-rat TDLo: 2 gm/kg/20 days-intermittent: Liver: other changes; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: phosphatases, Enzyme inhibition, induction, or change in blood or tissue levels; Intraperitoneal-rat TDLo: 791 mg/kg/18 weeks-intermittent: Nutritional and Gross Metabolic: weight loss or decreased weight gain; Intraperitoneal-rat TDLo: 7500 µg/kg: female 3 day(s) after conception: Reproductive: Fertility: other measures of fertility; Subcutaneousrat TDLo: 12768 µg/kg: male 1 day(s) pre-mating: Reproductive: Paternal Effects: testes, epididymis, sperm duct; Intratesticular-rat TDLo:3192 µg/kg: male 1 day(s) pre-mating: Reproductive: Paternal Effects: spermatogenesis (incl. genetic material, sperm morphology, motility, and count), testes, epididymis, sperm duct; Oral-mouse TDLo: 3 gm/kg/8 weeks-continuous: Blood: changes in spleen; Immunological Including Allergic: decrease in cellular immune response, decrease in humoral immune response; Oral-mouse TDLo: 2 gm/kg/3 weekscontinuous:

Blood: changes in spleen; Immunological Including Allergic: decrease in cellular immune response, decrease in humoral mmune response; Subcutaneous-mouse LDLo: 500 µg/kg; Subcutaneous-mouse TDLo: 12768 µg/kg: male 30 day(s) pre-mating: Reproductive: Paternal Effects: testes, epididymis, sperm duct; Intravenous-mouse TDLo: 3200 µg/kg: female 8 day(s) after conception: Reproductive: Effects on Embryo or Fetus: fetotoxicity (except death, e.g., stunted fetus), Specific Developmental Abnormalities: Central Nervous System, cardiovascular (circulatory) system; Intravenous-mouse TDLo: 3200 µg/kg: female 7 day(s) after conception: Reproductive: Fertility: post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants); Oral-Dog, adult LDLo: 60 mg/kg; Intravenous-guinea pig TDLo: 2 mg/kg; Subcutaneous-Guinea Pig, adult LDLo: 62 mg/kg; Oral-Pigeon LDLo: 1000 mg/kg; Oral-Domestic animals (Goat, Sheep) LDLo: 5 mg/kg; Oral-Bird-wild species LDLo: 300 mg/kg; Intravenous-frog LDLo: 25 mg/kg; Parenteral-chicken TDLo: 10 mg/kg: Tumorigenic: equivocal tumorigenic agent by RTECS criteria; Endocrine: tumors; Oral-pig TDLo: 140 mg/kg: female 1-15 week(s) after conception, lactating female 4 week(s) post-birth: Reproductive: Effects on Newborn: biochemical and metabolic; Intravenous-hamster TDLo: 2130 µg/kg: female 8 day(s) after conception: Reproductive: Fertility: postimplantationmortality (e.g. dead and/or resorbed implants per total number of implants), Specific Developmental Abnormalities: Central Nervous System, body wall

Carcinogenicity

A: General Product Information

Copper Sulfate Pentahydrate (7758-99-8)

Cytogenetic Analysis-Rat/ast 300 mg/kg

B: Component Carcinogenicity

Copper dusts and mists, as Cu (7440-50-8)

EPA: EPA-D (Not Classifiable as to Human Carcinogenicity - inadequate human and animal evidence of carcinogenicity or no data available)

Epidemiology

No information available.

Neurotoxicity

Has not been identified.

* * * Section 11 - Toxicological Information Continued * * *

Mutagenicity

Human and animal mutation data are available for Copper Sulfate Pentahydrate; these data were obtained during clinical studies on specific human and animal tissues exposed to high doses of this compound.

Teratogenicity

There are no reports of teratogenicity in humans. Animal studies indicate that a deficiency or excess of copper in the body can cause significant harm to developing embryos. The net absorption of copper is limited and toxic levels are unlikely from industrial exposure.

Other Toxicological Information

Individuals with Wilson's disease are unable to metabolize copper. Thus, persons with pre-existing Wilson's disease may be more susceptible to the effects of overexposure to this product.

* * * Section 12 - Ecological Information * * *

Ecotoxicity

A: General Product Information

Harmful to aquatic life in very low concentrations. Copper Sulfate Pentahydrate is toxic to fish and marine organisms when applied to streams, rivers, ponds or lakes.

B: Ecotoxicity

Copper Sulfate Pentahydrate (7758-99-8)

Environmental Fate

If released to soil, copper sulfate may leach to groundwater, be partly oxidized or bind to humic materials, clay or hydrous oxides of iron and manganese. In water, it will bind to carbonates as well as humic materials, clay and hydrous oxides of iron and manganese. Copper is accumulated by plants and animals, but it does not appear to biomagnify from plants to animals. In air, copper aerosols have a residence time of 2 to 10 days in an unpolluted atmosphere and 0.1 to greater than 4 days in polluted, urban areas.

LC_{50} (*Lepomis machochirus* bluegill) wt 1.5 g = 884 mg/L at 18°C, static bioassay (95% confidence limit 707-1,100 mg/L) (technical material, 100% (about 25% elemental copper); LC_{50} (*Leopmis cyanellus*, Green Sunfish) = 1.1 g, 3,510 µg/L at °C; LC_{50} (*Pimephales promelas*, Fat-head minnow) = 1.2 g, 838 µg/L at 18°C; LC_{50} (*Crassius auratus*, Goldfish) = 0.9 g, 1380 µg/L at 18°C; LC_{50} (*Crassius auratus*, Goldfish) = 0.1-2.5 mg/L; LC_{50} (*EEL*) = 0.1-2.5 mg/L; LC_{50} (*Salmo gairdneri*, Rainbow trout) = 1.6 g, 135 µg/L at 18°C; LC_{50} (*Salmo gairdneri*, Rainbow trout) 48 hours =0.14 ppm; LC_{50} (*Daphnia magna*) no time specified = 0.182 mg/L; LC_{50} (*Salmo gairdneri*, Rainbow trout) no time specified = 0.17 mg/L; LC_{50} (*Lepomis machochirus*, Blue gill) no time specified = 1.5 g, 884 µg/L at 18°C; LC_{50} (Stripped Bass) 96 hours = 1 ppm or lower; LC_{50} (Prawn) 48 hours = 0.14; LC_{50} (Shrimp) 96 hours = 17.0 ppm copper; LC_{50} (Blue Crab) 96 hours = 28 ppm copper; LC_{50} (Oyster) 96 hours = 5.8 ppm copper; LC_{50} (*Viviparus bengalensis* snail) 96 hours = 0.060 ppm copper (at 32.5°C; 0.066 ppm copper static bioassay); LC_{50} (*Viviparus bengalensis* snail) 96 hours = 0.09 ppm copper (at 27.3°C; 0.066 ppm copper static bioassay); LC_{50} (*Viviparus bengalensis* snail) 96 hours = 0.39 ppm copper (at 20.3°C; 0.066 ppm copper static bioassay)

* * * Section 13 - Disposal Considerations * * *

US EPA Waste Number & Descriptions

A: General Product Information

This product is a registered pesticide.

B: Component Waste Numbers

No EPA Waste Numbers are applicable for this product's components.

* * * Section 13 - Disposal Considerations * * *

Disposal Instructions

All wastes must be handled in accordance with local, state and federal regulations or with regulations of Canada and its Provinces. This material can be converted to a less hazardous material by weak reducing agents followed by neutralization. Do not reuse empty containers. Do not rinse unless required for recycling. If partly filled, call local solid waste agency for disposal instructions. Never pour unused product down drains or on the ground.

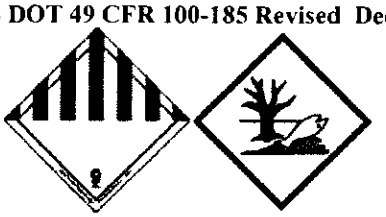
Pesticide Disposal

Pesticide wastes are acutely hazardous. Improper disposal of excess pesticides, spray mixtures, or rinsate is a violation of U.S. Federal and Canadian Law. If these wastes cannot be disposed of by use, according to product label instruction, contact your U.S. State, or Canadian Province Pesticide or Environmental Control Agency, or the hazardous waste representative at the nearest U.S. EPA Regional Office, or the offices of Environment Canada for guidance.

* * * Section 14 – Transportation Information Ground * * *

NOTE: The shipping classification information in this section (Section 14) is meant as a guide to the overall classification of the product. However, transportation classifications may be subject to change with changes in package size. Consult shipper requirements under 49 CFR, IATA and IMDG to assure regulatory compliance.

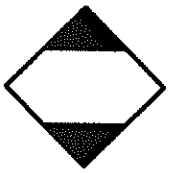
US DOT 49 CFR 100-185 Revised December 31,2014 Information



UN/NA #: UN 3077
Shipping Name: Environmentally Hazardous Substance, solid, n.o.s. (cupric sulfate)
Hazard Class: 9
Packing Group: III
Required Label(s): Class 9
Special Provision: 8, 146, 335, A112, B54, IB8, IP2, N20, T1, TP33
Packaging: 172.155, 172.213
RQ Quantity: For a single package less than the RQ of 10lb (4.54 kg), the RQ designation should be not be used.
Marking: MARINE POLLUTANT Marine Pollutant when shipping ground greater than 882 pounds single container or any quantity by water

* * * Section 14 – Transportation Information Ground Continued * * *

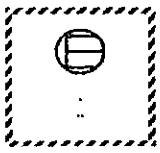
Additional Shipping Information



Limited Quantity Shipments: Shipments, except for air, need not be marked with the Proper Shipping Name and UN # of the contents, but shall be marked with a diamond. The top and bottom portions of the square-on-point must be black and the center white or of a suitable contrasting background. The mark must be at least 2 mm. Each side must have a minimum dimension of 100 mm. Small packages which cannot reasonably accommodate a 100 mm square-on-point mark may be marked with a square-on-point mark with a minimum side dimension of 50 mm. The total weight of each outer packaging cannot exceed 30 kg (66 pounds).

Small Quantities for Highway and Rail: The maximum quantity of this material per inner receptacle is limited to 30 g (1 ounce) per receptacle. The inner receptacles must be securely packed in an inside packaging with cushioning material to prevent movement of the inner receptacles and packed in a strong outer box with a gross mass not to exceed 29kg (64 pounds). The completed package must meet the drop test requirements of 173.4(6) (i). The outside of the package must be marked with the statement
"**This package conforms to 49 CFR 173.4 for domestic highway or rail transport only.**"

Excepted Quantities: The maximum quantity of this material per inner receptacle is limited to 30 g (1 ounce) per receptacle and the aggregate quantity of this material per completed package does not exceed 1000 g (2.2 pounds). The inner receptacles must be securely packed in an inside packaging with cushioning material to prevent movement in the inner receptacles and packed in a strong outer box with a gross mass not to exceed 29kg (64 pounds). The completed package must meet a drop test. The requirements are found in 173.4(6) (i). The package must not be opened or otherwise altered until it is no longer in commerce. For highway or rail transportation no shipping paper is required. The package must be legibly marked with the following marking:



NOTE: The "*" must be replaced by the primary hazard class, or when assigned, the division of each of the hazardous materials contained in the package. The "**" must be replaced by the name of the shipper or consignee if not shown elsewhere on the package. The symbol shall be not less than 100 mm (3.9 inches) x 100 mm (3.9 inches), and must be durable and clearly visible.

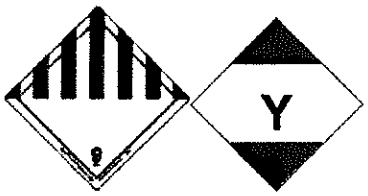
De minimis Exceptions: The maximum quantity of this material per inner receptacle is limited to 1g (0.04 ounce) per receptacle and the aggregate quantity of this material per completed package does not exceed 100 g (0.22 pounds). The inner receptacles must be securely packed in an inside packaging with cushioning material to prevent movement in the inner receptacles and packed in a strong outer box with a gross mass not to exceed 29kg (64 pounds). The completed package must meet the drop test. The requirements are found in 173.4(6) (i). The package must not be opened or otherwise altered until it is no longer in commerce and may be transported by aircraft. If all of the above requirements are met, then this material is not regulated.

* * * Section 14 – Transportation Information Air * * *

55th Edition International Air Transport Association (IATA):

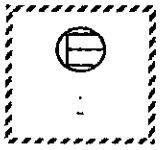
For Shipments by Air transport: This information applies to air shipments both within the U.S. and for shipments originating in the U.S., but being shipped to a different country.

UN/NA #: UN 3077
Proper Shipping Name: Environmentally Hazardous Substance, solid, n.o.s. (cupric sulfate)
Hazard Class: 9 (Miscellaneous Dangerous Goods)
Packing Group: III
Passenger & Cargo Aircraft Packing Instruction: 956
Passenger & Cargo Aircraft Maximum Net Quantity: 400 kg
Limited Quantity Packing Instruction (Passenger & Cargo Aircraft): Y956
Limited Quantity Maximum Net Quantity (Passenger & Cargo Aircraft): 30 kg G
Excepted Quantities: E1
Excepted Quantity Maximum inner package: 30g
Excepted Quantity Maximum outer package: 1kg
Cargo Aircraft Only Packing Instruction: 956
Cargo Aircraft Only Maximum Net Quantity: 400 kg
Special Provisions: A97, A158, A179 A197
ERG: 9L



Limited Quantity Shipments: Shipments for air must be marked with the Proper Shipping Name and UN # shall on the package. The top and bottom portions of the square-on-point must be black and the center white or of a suitable contrasting background and the symbol "Y" must be black and located in the center of the square-on-point. The mark must be at least 2 mm. Each side must have a minimum dimension of 100 mm. Small packages which cannot reasonably accommodate a 100 mm square-on-point mark may be marked with a square-on-point mark with a minimum side dimension of 50 mm.The total weight of each outer packaging cannot exceed 30 kg.

Excepted Quantities: The maximum quantity of this material per inner receptacle is limited to 30 g per receptacle and the aggregate quantity of this material per completed package does not exceed 1kg. The inner receptacles must be securely packed in an intermediate packaging with cushioning material to prevent movement in the inner receptacles and packed in a strong outer box with a gross mass not to exceed 29kg. The completed package must meet a drop test. The requirements are found in 2.7.6.1. The package must not be opened or otherwise altered until it is no longer in commerce. For air transportation no shipping paper is required. The package must be legibly marked with the following marking:

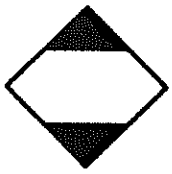


NOTE: The "*" must be replaced by the primary hazard class, or when assigned, the division of each of the hazardous materials contained in the package. The "**" must be replaced by the name of the shipper or consignee if not shown elsewhere on the package. The symbol shall be not less than 100 mm x 100 mm and must be durable and clearly visible.

* * * Section 14 – Transportation Information Vessel * * *

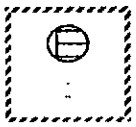
Amendment 37-14 International Maritime Dangerous Goods (IMDG) Code
For shipments via marine vessel transport, the following classification information applies.

UN/NA #: UN 3077
Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Cupric sulfate)
Hazard Class: 9
Packing Group: III
Special Provisions:274,335,966,967
Limited Quantities 5 kg
Excepted Quantities: E1
Packing Instructions: P002/LP02
Provisions: PP12
IBC Instructions IBC08
IBC Provisions: B2
EmS: F-A, S-F
Stowage and: Handling Category A., SW23
Segregation: None
Marine Pollutant: This material is considered a marine pollutant by the IMO and shipments of the material must carry the new marking Refer to IMO Amendment 36-12 Chapter 2.9 and 2.10.



Limited Quantity Shipments: Shipments need not be marked with the Proper Shipping Name of the contents, but shall be marked with a diamond. The top and bottom portions of the square-on-point must be black and the center white or of a suitable contrasting background. The mark must be at least 2 mm. Each side must have a minimum dimension of 100 mm. Small packages which cannot reasonably accommodate a 100 mm square-on-point mark may be marked with a square-on-point mark with a minimum side dimension of 50 mm. The total weight of each outer packaging cannot exceed 30 kg (66 pounds). Alao requires an IMDG Dangerous Cargo Declaration.

Excepted Quantities: The maximum quantity of this material per inner receptacle is limited to 30 g per receptacle and the aggregate quantity of this material per completed package does not exceed 1000g. The inner receptacles must be securely packed in an intermediate packaging with cushioning material to prevent movement in the inner receptacles and packed in a strong outer box with a gross mass not to exceed 29kg. The completed package must meet a drop test. The requirements are found in 3.5.3.1. The package must not be opened or otherwise altered until it is no longer in commerce. For air transportation no shipping paper is required. The package must be legibly marked with the following marking:



NOTE: The "*" must be replaced by the primary hazard class, or when assigned, the division of each of the hazardous materials contained in the package. The "**" must be replaced by the name of the shipper or consignee if not shown elsewhere on the package. The symbol shall be not less than 100 mm x 100 mm and must be durable and clearly visible.

* * * Section 15 - Regulatory Information * * *

US Federal Regulations

A: General Product Information

Copper Sulfate Pentahydrate (CAS # 7758-99-8) is listed as a Priority and Toxic Pollutant under the Clean Water Act.

B: Component Analysis This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4)

:

Copper Compounds (7440-50-8)

SARA 313: final RQ = 5000 pounds (2270 kg) Note: No reporting of releases of this substance is required if the diameter of the pieces of the solid metal released is equal to or greater than 0.004 inches.

Cupric Sulfate (7758-98-7)

CERCLA: final RQ = 10 pounds (4.54 kg)

C: Sara 311/312 Tier II Hazard Ratings:

Component	CAS #	Fire Hazard	Reactivity Hazard	Pressure Hazard	Immediate Health Hazard	Chronic Health Hazard
Copper Sulfate Pentahydrate	7758-99-8	No	No	No	Yes	Yes

State Regulations

A: General Product Information

California Proposition 65

Copper Sulfate Pentahydrate is not on the California Proposition 65 chemical lists.

B: Component Analysis - State

The following components appear on one or more of the following state hazardous substance lists:

Component	CAS #	CA	FL	MA	MN	NJ	PA
Copper	7440-50-8	Yes	No	Yes	No	Yes	Yes
Copper, fume, dust and mists	N/A	No	Yes	No	Yes	No	Yes
Copper Sulfate Pentahydrate	7758-99-8	No	No	No	No	Yes	Yes

Other Regulations

A: General Product Information

When used as a pesticide, the requirements of the U.S. Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), or requirements under the Canadian Pest Control Act, are applicable.

B: Component Analysis - Inventory

Component	CAS #	TSCA	DSL	EINECS
Copper Sulfate Pentahydrate	7758-99-8	Excepted	No	Yes

Although this compound is not on the TSCA Inventory, it is excepted as a hydrate of a listed compound, Copper Sulfate (CAS # 7758-98-7), per 40 CFR 710.4 (d)(3) and 40 CFR 720.30 (h)(3). Under this section of TSCA, any chemical substance which is a hydrate of a listed compound is excepted.

C: Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Minimum Concentration
Copper Sulfate Pentahydrate	7758-99-8	1 percent

* * * Section 16 - Other Information * * *

ANSI Labeling (Z129.1):

WARNING! MAY BE HARMFUL OR FATAL IF SWALLOWED. CAUSES SKIN AND EYE IRRITATION. HARMFUL IF INHALED. Keep from contact with clothing. Do not taste or swallow. Do not get on skin or in eyes. Avoid breathing dusts or particulates. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Wear gloves, goggles, faceshields, suitable body protection, and NIOSH-approved respiratory protection, as appropriate. **FIRST-AID:** In Case of Contamination of Skin or Clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. In Case of Contamination of Eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue to rinse eye. If Inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth to mouth, if possible. If Ingested: Call poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person. Call a poison control center or doctor for treatment advice. Have the product container or label with you when calling a poison control center or doctor, or going for treatment. In the event of a medical emergency, you may also contact The National Pesticide Information Center at 1-800-858-7378. **IN CASE OF FIRE:** Use water fog, dry chemical, CO_2, or "alcohol" foam. **IN CASE OF SPILL:** Absorb spill with inert material. Place residue in suitable container. Consult Material Safety Data Sheet for additional information.

Labeling Information for Pesticide Use of Product:

DANGER! HAZARD TO HUMANS AND DOMESTIC ANIMALS.

DANGER: CORROSIVE: Causes eye damage and irritation to the skin and mucous membrane. Harmful or fatal if swallowed. Do not get in eyes, on skin or on clothing. Do not breathe dust or spray mist. May cause skin sensitization reactions to certain individuals.

PERSONAL PROTECTIVE EQUIPMENT: Applicators and other handlers must wear long-sleeved shirt and long pants, chemical-resistant gloves, made of any water-proof material, shoes, plus socks and protective eyewear. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this solutions of this product. Do not reuse such contaminated items. Follow manufacturer's instructions for cleaning and maintaining PPE. If no such instructions for reusable items exist, wash using detergent and hot water. Keep and wash PPE separately for other laundry.

USER SAFETY RECOMMENDATIONS: Persons using this product should wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if contaminated by the pesticide. Wash contaminated clothing thoroughly and put on clean clothing. Remove PPE immediately after use with this product. Wash outside of gloves and other equipment before removing. After removal of PPE, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS: This product is toxic to fish. Direct application of Copper Sulfate to water may cause a significant reduction in populations of aquatic invertebrates, plants and fish. Do not treat more than one-half of lake or pond at one time in order to avoid depletion of oxygen from decaying vegetation. Allow 2 weeks between treatments for oxygen levels to recover. Trout and other species of fish may be killed at application rates recommended on this label, especially in soft or acid waters. However, fish toxicity generally decreases when the hardness of the water increases. Do not contaminate water by cleaning of equipment of disposal of wastes. Consult local State Fish and Game Agency before applying this product to public waters. Permits may be required before treating such waters.

STORAGE AND DISPOSAL: PROHIBITIONS: Do not contaminate water, food or feed by storage or disposal. Open burning and dumping is prohibited. Do not re-use empty containers. Keep pesticide in original container. Do not put concentrate or dilutions of concentrate in food or drink containers. Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use, according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste Representative at the nearest EPA Regional Office for guidance. Completely empty bag of product into application equipment. Dispose of empty bag in a sanitary landfill or by incineration, or if allowed by State and local authorities, by burning. If burned, avoid smoke.

DIRECTIONS FOR USE: It is a violation of Federal Law to use this product inconsistent with its labeling. Do not apply this product in a way that will contaminate workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For requirements specific to your State, consult the agency responsible for your pesticide regulations.

AGRICULTURAL USE REQUIREMENTS: Use this product only in accordance with its labeling and with the Worker Protection Standard, CFR Part 170. This standard contains requirements for the protection of agricultural workers on farms, forests, nurseries and greenhouses, and handlers of agricultural pesticides. The Standard contains requirements for the training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), and restricted-entry interval. These requirements only apply to uses of this product that are covered under the Worker Protection Standard. Do not apply this product in a way that will contaminate workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. Do not allow worker entry into treated areas during the restricted

interval (REI) of 48 hours. PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil or water, is" Coveralls, waterproof gloves, shoes, plus socks and protective eyewear.

Labeling Information for Pesticide Use of Product (continued):

GENERAL USE INSTRUCTIONS: Water hardness, temperature of the water, the type and amount of vegetation to be controlled and the amount of water flow, are to be considered in using Copper Sulfate to control algae. Begin treatment soon after plant growth has started. If treatment is delayed until a large amount of algae is present, larger quantities of Copper Sulfate will required. Algal growth is difficult to control with Copper Sulfate when water temperatures are low or when water is hard. Larger quantities of Copper Sulfate will be required to kill and control algae in water which is flowing than in a body of stagnant water. If possible, curtail the flow of water before treatment and hold dormant until approximately three days after treatment or until the algae have begun to die. When preparing a Copper Sulfate solution in water, the mixing container should be made of plastic or glass, or a painted, enameled, or copper-lined metal container. It is usually best to treat algae on a sunny day when the heavy mats of filamentous algae are most likely to be floating on the surface, allowing the solution to be sprayed directly on the algae. If there is some doubt about the concentration to apply, it is generally best to start with a lower concentration and to increase this concentration until the algae are killed.

ENDANGERED SPECIES RESTRICTION: It is a violation of Federal Law to use any pesticide in a manner that results in the death of an endangered species or adverse modification to their habitat. The use of this product may pose a hazard to certain Federally Designated species known to occur in specific areas. Contact the EPA for information on these areas. Obtain a copy of the EPA Bulletin specific to your area. This bulletin identifies areas within specific State counties where the use of this pesticide is prohibited, unless specified otherwise. The EPA Bulletin is available from either your County Agricultural Extension Agent, the Endangered Species Specialist in your State Wildlife Agency Headquarters, or the appropriate Regional Office of the U.S. Fish and Wildlife Service. THIS BULLETIN MUST BE REVIEWED PRIOR TO PESTICIDE USE.

EPA REG. NO. 56576- EPA EST. NO. 52117-MX-001

Other Information

Chem One Ltd. ("Chem One") shall not be responsible for the use of any information, product, method, or apparatus herein presented ("Information"), and you must make your own determination as to its suitability and completeness for your own use, for the protection of the environment, and for health and safety purposes. You assume the entire risk of relying on this Information. In no event shall Chem One be responsible for damages of any nature whatsoever resulting from the use of this product or products, or reliance upon this Information. By providing this Information, Chem One neither can nor intends to control the method or manner by which you use, handle, store, or transport Chem One products. If any materials are mentioned that are not Chem One products, appropriate industrial hygiene and other safety precautions recommended by their manufacturers should be observed. Chem One makes no representations or warranties, either express or implied of merchantability, fitness for a particular purpose or of any other nature regarding this information, and nothing herein waives any of Chem One's conditions of sale. This information could include technical inaccuracies or typographical errors. Chem One may make improvements and/or changes in the product (s) and/or the program (s) described in this information at any time. If you have any questions, please contact us at Tel. 713-896-9966 or E-mail us at Safety@chemone.com.

Key/Legend

EPA = Environmental Protection Agency; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration

Contact: Sue Palmer-Koleman, PhD **Contact Phone:** (713) 896-9966

Revision log 07/24/00 4:24 PM SEP Changed company name, Sect 1 and 16, from Corporation to Ltd.

07/27/00 2:49 PM SEP Added "Fine 200, FCC IV, Very High Purity" to synonyms, Section 1

08/23/00 3:15 PM SEP Added "Copper Sulfate Crystals" to synonyms, Section 1

05/31/01 9:31 AM HDF Checked exposure limits; made changes to Sect 9; overall review, add SARA 311/312 Haz Ratings.

06/01/01 7:28 AM HDF Added text to label information from EPA Approved Label

07/24/01 4:31 AM CLJ Add Shipments by Air information to Section 14, Changed contact to Sue, non-800 Chemtrec Num.

09/18/01 11:34 AM SEP Added Domestic Transportation Exception, Sect 14

10/05/01 3:30 PM SEP Deleted Alternate Shipping Name, Sect 14

02/15/02 11:01 AM: HDF Revision of SARA Chronic Hazard Rating to "Yes".

2/21/02 4:21 PM HDF Added more information on Marine Pollutant Markings and Limited Quantity Shipments

9/16/03: 3:45 PM HDF Addition of chronic health hazard information. Addition of inhalation hazard information, Section 3. Section 4. expansion of information on Information for Physicians. Up-graded Section 10 Reactivity Information. Up-dated DFG MAK exposure limits. Up-Dated entire Section 14 Transportation Information to include IATA, IMO and current Canadian transport information.

06/22/05 2:24PM SEP Update IATA Section 14
01/06/2006 10:12 am SEP Corrected Section 14 DOT domestic transport exception to read 49 CFR 172.322 (d) (3).
09/08/06 2:52PM SEP Updated DOT and IMO Section 14 SEP
09/25/06 08:43 HDF Review of new toxicological data and addition of data to Section 11.
10/17/06 12:15 pm SEP Updated Section 11.
10/16/07 9:48am SEP Updated Section 14- IATA
10/10/08 3:48 PM DLY Changed Chem One Physical Address, Section 1
09/18/09 MMK Updated Section 14 limited &excepted quantities and exceptions, updated REI and treatment interval per EPA label RED
04 /07/ 11 SEP Add "F 25" Section 1
01/14/2015 GHS revision all sections
This is the end of MSDS # C1-121A

Revised By:
SJC Compliance Education, Inc.
16516 El Camino Real Suite 417
Houston, TX 77062

CHEM ONE LIMITED

Appendix F (Board Resolution as Requested in Item #3 in the Application Checklist)

UNANIMOUS WRITTEN CONSENT
OF ALL OF THE DIRECTORS OF
CROP PRODUCTION SERVICES, INC.

(the "Corporation")

The undersigned, being all of the members of the Board of Directors of Crop Production Services, Inc., a Delaware corporation, waiving all notice, hereby execute this instrument, or a counterpart thereof, to evidence consent to the taking of the actions set forth herein, and in the adoption of the following resolutions, without holding a meeting:

WHEREAS the Corporation intends to submit an Application for Conditional Use Permit to the Glenn County Planning and Public Works Agency (the "Application") with respect to property located at 555 West 1st Street, Hamilton City, CA 95951;

NOW THEREFORE BE IT RESOLVED THAT:

1. Any Officer or Director of the Corporation or G. Rey Reinhardt, Head of Retail Greenfields, be and is hereby authorized, empowered and directed to prepare and execute, in the name of and on behalf of the Corporation, any and all permit applications as required by the Glenn County Planning and Public Works Agency, and to take all such actions and steps as may be necessary or advisable to give full force and effect to these resolutions and the transactions contemplated hereby.

2. Any and all actions previously taken, and any and all agreements, documents and instruments previously executed and delivered, in the name of and on behalf of the Corporation, in connection with the Application and any and all transactions contemplated by the Application are hereby ratified and approved.

These resolutions may be executed in one or more counterparts and by facsimile or scanned electronic transmission bearing a copy of such counterpart signature, each of which bearing original, facsimile, or scanned electronic facsimile signature shall constitute an original, and all of which counterparts taken together shall constitute the same written resolution, and shall be filed with the minutes of the Corporation.

THIS ACTION BY UNANIMOUS WRITTEN CONSENT of the Board of Directors of Crop Production Services, Inc., a Delaware corporation, is hereby taken by the undersigned Directors, being all of the members of the Board of Directors of Crop Production Services, Inc. effective this 13th day of February, 2017.

Stephen G. Dyer

Kaye Reitzenstein

Thomas E. Warner

D:\CPS - Glenn County Conditional Use Permit.docx

Appendix G (current County Assessor's Map)

TIMIOS TITLE

A CALIFORNIA CORPORATION
250 West Sycamore Street
Willows, CA 95988
530-934-3338 phone/530-934-5206 fax
dfaltesek@timiosinc.com

Support Documents for:

SELLER(S): BAINS PROPERTIES LP

BUYER/BORROWER(S): CROP PRODUCTION SERVICES

YOUR ORDER NUMBER: C2027517

OUR ORDER NUMBER:132606

Attached is the document you (or someone on your behalf) requested. As required by Section 12956(b) of the Government Code, please take note of the following:

If this document contains any restriction based on race, color, religion, sex, sexual orientation, familial status, disability, handicap, national origin, genetic information, gender, gender identity, gender expression, source of income (as defined in California Government Code Section 12955(p)), or ancestry, that restriction violates state and federal fair housing laws and is void, and may be removed pursuant to Section 12956.2 of the California Government Code. Lawful restrictions under state and federal law on the age of occupants in senior housing or housing for older persons shall not be construed as restrictions based on familial status.

If this cover page is a copy which has been sent by facsimile, e-mail or other form of electronic transmission, please note that in the original of this page the above notice is printed in 14-point boldface type.

Restrictions indicating a preference, limitation or discrimination based on race, color, religion, sex, handicap, familial status, or national origin are hereby deleted to the extent such restriction violate 42 USC Section 3604 (c).

Alex Padilla
California Secretary of State

Business Search - Entity Detail

The California Business Search is updated daily and reflects work processed through Thursday, January 12, 2017. Please refer to document **Processing Times** for the received dates of filings currently being processed. The data provided is not a complete or certified record of an entity. Not all images are available online.

201524600020 BAINS PROPERTIES LP

Registration Date:	09/03/2015
Jurisdiction:	CALIFORNIA
Entity Type:	DOMESTIC
Status:	ACTIVE
Agent for Service of Process:	JASWANT S BAINS 1880 LORRAINE WAY YUBA CITY CA 95993
Entity Address:	1880 LORRAINE WAY YUBA CITY CA 95993
Entity Mailing Address:	1880 LORRAINE WAY YUBA CITY CA 95993

* Indicates the information is not contained in the California Secretary of State's database.

Note: If the agent for service of process is a corporation, the address of the agent may be requested by ordering a status report.

- For information on checking or reserving a name, refer to **Name Availability**.
- If the image of a Statement of Information is not available online, for information on ordering a copy of that statement refer to **Information Requests**.
- For information on ordering certificates, status reports, certified copies of documents and copies of documents not currently available in the Business Search, such as a filing that is not a Statement of Information or filings for other types of business entities, or to request a more extensive search for records, refer to **Information Requests**.
- For help with searching an entity name, refer to **Search Tips**.
- For descriptions of the various fields and status types, refer to **Frequently Asked Questions**.

Modify Search | New Search | Back to Search Results

F

State of California
Secretary of State

Statement of Information
(Foreign Corporation)
FEES (Filing and Disclosure): $25.00.
If this is an amendment, see instructions.
IMPORTANT – READ INSTRUCTIONS BEFORE COMPLETING THIS FORM

F725398

FILED

In the office of the Secretary of State of the State of California

JUL-21 2015

This Space for Filing Use Only

1. CORPORATE NAME
CROP PRODUCTION SERVICES, INC.

2. CALIFORNIA CORPORATE NUMBER C2549606

No Change Statement (Not applicable if agent address of record is a P.O. Box address. See instructions.)

3. **If there have been any changes to the information contained in the last Statement of Information filed with the California Secretary of State, or no statement of information has been previously filed, this form must be completed in its entirety.**
☐ If there has been no change in any of the information contained in the last Statement of Information filed with the California Secretary of State, check the box and proceed to Item 13.

Complete Addresses for the Following (Do not abbreviate the name of the city. Items 4 and 5 cannot be P.O. Boxes.)

4. STREET ADDRESS OF PRINCIPAL EXECUTIVE OFFICE | CITY | STATE | ZIP CODE
3005 ROCKY MOUNTAIN AVENUE, LOVELAND, CO 80538

5. STREET ADDRESS OF PRINCIPAL BUSINESS OFFICE IN CALIFORNIA, IF ANY | CITY | STATE | ZIP CODE

6. MAILING ADDRESS OF THE CORPORATION, IF DIFFERENT THAN ITEM 4 | CITY | STATE | ZIP CODE

Names and Complete Addresses of the Following Officers (The corporation must list these three officers. A comparable title for the specific officer may be added; however, the preprinted titles on this form must not be altered.)

7. CHIEF EXECUTIVE OFFICER/ | ADDRESS | CITY | STATE | ZIP CODE
STEPHEN G DYER 3005 ROCKY MOUNTAIN AVENUE, LOVELAND, CO 80538

8. SECRETARY | ADDRESS | CITY | STATE | ZIP CODE
GARY J DANIEL 13131 LAKE FRASER DRIVE S.E., CALGARY, AB T2J 7E8 CANADA

9. CHIEF FINANCIAL OFFICER/ | ADDRESS | CITY | STATE | ZIP CODE
STEVEN J DOUGLAS 13131 LAKE FRASER DRIVE S.E., CALGARY, AB T2J 7E8 CANADA

Agent for Service of Process If the agent is an individual, the agent must reside in California and Item 11 must be completed with a California street address, a P.O. Box address is not acceptable. If the agent is another corporation, the agent must have on file with the California Secretary of State a certificate pursuant to California Corporations Code section 1505 and Item 11 must be left blank.

10. NAME OF AGENT FOR SERVICE OF PROCESS
C T CORPORATION SYSTEM

11. STREET ADDRESS OF AGENT FOR SERVICE OF PROCESS IN CALIFORNIA, IF AN INDIVIDUAL | CITY | STATE | ZIP CODE

Type of Business

12. DESCRIBE THE TYPE OF BUSINESS OF THE CORPORATION
SALE OF FERTILIZER

13. THE INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT.

DATE	TYPE/PRINT NAME OF PERSON COMPLETING FORM	TITLE	SIGNATURE
07/21/2015	KARA L FENTON	ASST. SECRETARY	

GLENN COUNTY 2016 - 2017 PROPERTY TAX BILL
EDWARD LAMB , DIRECTOR OF FINANCE
516 W. SYCAMORE STREET WILLOWS , CA 95988 (530) 934-6410
SECURED TAX ROLL FOR FISCAL YEAR JULY 1, 2016 THROUGH JUNE 30, 2017

PROPERTY INFORMATION			IMPORTANT MESSAGES
ASMT NUMBER:	032-260-006-000	TAX RATE AREA: 086039	SEE REVERSE OF THIS STATEMENT FOR IMPORTANT INFORMATION
FEE NUMBER:	032-260-006-000	ACRES: 51.00	
LOCATION:	555 FIRST ST - HAMILTON CITY CA 95951		
PARCEL DESCRIPTION:			
ASSESSED OWNER:	-		

PROPERTY INFORMATION
Name and Address *Protected per CA Gov't Code Section 6254.21*

2016-2017

COUNTY VALUES, EXEMPTIONS AND TAXES

PHONE #S		VALUE DESCRIPTION	ASSESSED VALUE
ASSESSOR:	(530) 934-6402	LAND	166,389
PAYMENTS:	(530) 934-6410	STRUCTURAL IMPROVEMENTS	399,761
EXEMPTIONS:	(530) 934-6402	PERSONAL VALUE	4,620
		NET TAXABLE VALUE	600,770

VALUES X TAX RATE PER $100 1.000000 6,007.70

VOTER APPROVED TAXES, TAXING AGENCY DIRECT CHARGES AND SPECIAL ASSESSMENTS

PHONE #S	CODE	DESCRIPTION	ASSESED VALUES	X	TAX RATE PER $100	=	AGENCY TAXES
(530) 826-3261	25200	Hamilton High Bond	600,770		-.006067		-36.45
(530) 895-2353	26500	Butte-Glenn Comm College	600,770		.020880		125.44

PHONE #S	DESCRIPTION	DIR CHRG	PHONE #S	DESCRIPTION	DIR CHRG	PHONE #S	DESCRIPTION	DIR CHRG
(530) 826-3355	Hamilton Fire	2,250.20	(800) 273-5167	Glenn Valley-wide Mosquito	128.54			

AGENCY TAXES	88.99
DIRECT CHARGES	130.54
AGENCY TAXES + DIRECT CHARGES + FEES + PENALTY + COST + DELINQUENT PENALTIES	219.53

1ST INSTALLMENT	$4,237.72	DELINQUENT AFTER	12/10/2016
2ND INSTALLMENT	$4,237.72	DELINQUENT AFTER	04/10/2017

TOTAL TAXES $8,475.44

GLENN COUNTY SECURED PROPERTY TAXES - 2ND INSTALLMENT PAYMENT STUB

ASMT NUMBER:	032-260-006-000	2016
ORIG ASMT:	032-260-006-000	
FEE NUMBER:	032-260-006-000	
LOCATION:		
CURRENT OWNER:	-	

MAKE CHECK PAYABLE TO:
Glenn County Tax Collector
516 W. Sycamore Street -
Willows, CA 95988

2016-2017 **2ND**

PAID

PAID ON 01/03/2017 $4,237.72

GLENN COUNTY SECURED PROPERTY TAXES - 1ST INSTALLMENT PAYMENT STUB

ASMT NUMBER:	032-260-006-000	2016
ORIG ASMT:	032-260-006-000	
FEE NUMBER:	032-260-006-000	
LOCATION:		
CURRENT OWNER:		

MAKE CHECK PAYABLE TO:
Glenn County Tax Collector
516 W. Sycamore Street -
Willows, CA 95988

2016-2017 **1ST**

PAID

PAID ON 12/10/2016	$4,237.72

RECORDING REQUESTED BY AND
WHEN RECORDED MAIL TO:

BOUTIN JONES INC.
Attorneys at Law
555 Capitol Mall, Suite 1500
Sacramento, CA 95814
Attention: Kent W. Silvester, Esq.

MAIL TAX STATEMENTS TO:

Bains Properties LP
1880 Lorraine Way
Yuba City, CA 95993

CIOS ENCLOSED

2016-0057

Recorded at the request of:
ATTORNEY

01/05/2016 03:59 PM
Fee: $44.00 Pgs: 11

OFFICIAL RECORDS
Sheryl Thur, Clerk-Recorder
Glenn County, CA

APNs: 032-250-004-0, 032-250-005-0,
032-260-006-0 and 032-260-007-0

SPACE ABOVE THIS LINE FOR RECORDER'S USE

Grant Deed

The undersigned Grantor(s) declare(s): This is a transfer from a trust and limited liability company to a limited partnership, which results solely in a change in the method of holding title, proportional ownership interests remain the same. CA R & T Code 11925(d).
Documentary transfer tax is $ None Due.

☐ Computed on full value of property conveyed, or
☐ Computed on full value less value of liens and encumbrances remaining at time of sale.
☒ Unincorporated area ☐ City of _____

FOR NO CONSIDERATION,

Jaswant Singh Bains and Satwant Kaur Bains, Trustees of the Jaswant Singh Bains and Satwant Kaur Bains 2005 Family Revocable Trust and Bains Property Management LLC, a California limited liability company

hereby GRANT to

Bains Properties LP, a California limited partnership, all of their right title and interest, in and to the following described real property located in the County of Glenn, State of California:

See **Exhibit A** attached hereto and incorporated herein by this reference.

(Commonly known as 180.31 Acres, 198.33 Acres, 46.17 Acres and 66.00 Acres)

Dated: 12/18/15

Jaswant Singh Bains, Trustee of the Jaswant Singh Bains and Satwant Kaur Bains 2005 Family Revocable Trust

Dated: 12/18/15

Satwant Kaur Bains, Trustee of the Jaswant Singh Bains and Satwant Kaur Bains 2005 Family Revocable Trust

BAINS PROPERTY MANAGEMENT LLC, a California limited liability company

Dated: 12/18/15

By: _____
Name: Jaswant Singh Bains
Its: Manager

TAX STATEMENTS AS DIRECTED ABOVE

750525.1

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of Sacramento

On December 18, 2015, before me, Charlotte E. Siligo, Notary Public personally appeared JASWANT SINGH BAINS and SATWANT KAUR BAINS, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s), is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature Charlotte E Siligo (Seal)

CHARLOTTE E. SILIGO
Commission # 2057572
Notary Public - California
Sacramento County
My Comm. Expires Mar 12, 2018

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of Sacramento

On December 18, 2015, before me, Charlotte E. Siligo, Notary Public personally appeared JASWANT SINGH BAINS, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s), is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature Charlotte E Siligo (Seal)

CHARLOTTE E. SILIGO
Commission # 2057572
Notary Public - California
Sacramento County
My Comm. Expires Mar 12, 2018

Acknowledgment

750525.1

EXHIBIT A

LEGAL DESCRIPTION

The land referred to is situated in the Unincorporated Area, County of Glenn, State of California, and is described as follows:

EXHIBIT "A"
RESULTANT PARCEL 1
(DUNNING ISLAND TRACT)

All of Parcel Four as it is shown on the Parcel Map filed in Book 10 of Parcel Maps, Page 46, Glenn County Records.

Together with all that portion of "DUNNING ISLAND" as it is shown on the map entitled 'PLAT OF DUNNING ISLAND" filed in Book 2 of Maps and Surveys, Page 257, Glenn County Records, being described as follows:

Commencing at an 8" x 8" granite monument marking the Southeast corner of the Hamilton Townsite as it is shown on the map filed in Book 1 of Maps and Surveys, Page 163, Glenn County Records;
Thence South 88°50'42" East a distance of 1836.21 feet to the most Westerly corner of that property described in the quitclaim deed to Hamilton City Community Services District recorded in Book 492 of Official Records, Page 696, Glenn County Records, and the point of Beginning; said point also being on the Easterly boundary of Parcel Four as it is shown on the Parcel Map filed in Book 10 of Parcel Maps, Page 46, Glenn County Records;
Thence following along the Southerly boundary of the Hamilton City Community Services District property North 87°14'48" East a distance of 825.00 feet;
Thence continuing along said boundary North 41°08'38" East a distance of 1151.56 feet;
Thence leaving said boundary South 23°51'52" East a distance of 261.22 feet;
Thence along a tangent curve to the right, said curve having a central angle of 53°11'49", a radius of 182.00 feet and a length of 168.98 feet;
Thence South 29°19'57" West a distance of 211.56 feet;
Thence South 49°44'21" West a distance of 26.48 feet;
Thence South 29°27'18" West a distance of 55.17 feet;
Thence South 09°19'57" West a distance of 26.83 feet;
Thence South 27°21'06" West a distance of 197.74 feet;
Thence South 30°05'09" West a distance of 1706.60 feet;
Thence South 60°41'33" West a distance of 161.70 feet;
Thence South 30°14'07" West a distance of 135.32 feet;
Thence South 21°22'44" West a distance of 67.48 feet;
Thence South 10°06'41" West a distance of 86.07 feet;
Thence South 05°16'34" West a distance of 93.42 feet;
Thence South 08°06'15" East a distance of 43.16 feet;
Thence South 16°52'17" East a distance of 56.44 feet;
Thence South 24°43'59" East a distance of 88.70 feet;

Page 1 of 2

2016-8445 2 of 6

2016-0067 3 of 11

750525.1

RESULTANT PARCEL 1
(continued)

Thence South 30°32'30" East a distance of 272.39 feet;
Thence South 27°38'32" East a distance of 423.97 feet;
Thence South 33°42'35" East a distance of 128.87 feet;Thence South 47°18'16" East a distance of 45.52 feet to a point on the Southerly boundary of the DUNNING ISLAND property and also being on the Northerly boundary of Parcel Three as it is shown on the Parcel Map filed in Book 10 of Parcel Maps, Page 46, Glenn County Records;
Thence following along said boundary North 79°43'26" West a distance of 692.20 feet;
Thence continuing along said boundary North 65°09'33" West a distance of 288.81 feet;
Thence continuing along said boundary North 52°24'22" West a distance of 468.00 feet;
Thence following along the boundary between the DUNNING ISLAND property and Parcel Four as it is shown on the Parcel Map filed in Book 10 of Parcel Maps, Page 46, Glenn County Records, North 17°37'22" West a distance of 144.00 feet;
Thence continuing along said boundary South 80°20'22" East a distance of 99.38 feet;
Thence continuing along said boundary North 19°01'22" West a distance of 631.00 feet;
Thence continuing along said boundary North 03°31'22" West a distance of 576.00 feet;
Thence continuing along said boundary North 37°28'38" East a distance of 538.00 feet;
Thence continuing along said boundary North 33°28'41" East a distance of 642.99 feet to the Point of Beginning.

Containing 131.23 acres, more or less.

The basis of bearings for this description is California Zone 2 NAD 83 grid bearings.

Leslie W. Coke
Professional Land Surveyor

LICENSED LAND SURVEYOR
Leslie W. Coke
No. 5712
STATE OF CALIFORNIA

The purpose of this description is to effect Lot Line Adjustment No. 2010-006 as approved by the Glenn County Planning and Public Works Agency Director on September 17, 2010. All boundary lines of record contained within this description are hereby eliminated. No additional parcels are being created.

2010-5446 3 of 6

2016-0057 4 of 11

EXHIBIT "B"
RESULTANT PARCEL 2
(DUNNING ISLAND TRACT)

All that portion of "DUNNING ISLAND" as it is shown on the map entitled 'PLAT OF DUNNING ISLAND" filed in Book 2 of Maps and Surveys, Page 257, Glenn County Records, being described as follows:

Commencing at an 8" x 8" granite monument marking the Southeast corner of the Hamilton Townsite as it is shown on the map filed in Book 1 of Maps and Surveys, Page 163, Glenn County Records;
Thence South 88°50'42" East a distance of 1636.21 feet to the most Westerly corner of that property described in the quitclaim deed to Hamilton City Community Services District recorded in Book 492 of Official Records, Page 696, Glenn County Records, said point also being on the Easterly boundary of Parcel Four as it is shown on the Parcel Map filed in Book 10 of Parcel Maps, Page 46, Glenn County Records;
Thence following along the Southerly boundary of the Hamilton City Community Services District property North 87°14'48" East a distance of 825.00 feet;
Thence continuing along said boundary North 41°08'38" East a distance of 1151.56 feet to the Point of Beginning;
Thence leaving said boundary South 23°51'52" East a distance of 261.22 feet;
Thence along a tangent curve to the right, said curve having a central angle of 53°11'49", a radius of 182.00 feet and a length of 168.98 feet;
Thence South 29°19'57" West a distance of 211.56 feet;
Thence South 49°44'21" West a distance of 26.48 feet;
Thence South 29°27'18" West a distance of 55.17 feet;
Thence South 09°19'57" West a distance of 26.83 feet;
Thence South 27°21'06" West a distance of 197.74 feet;
Thence South 30°05'09" West a distance of 1706.60 feet;
Thence South 60°41'33" West a distance of 161.70 feet;
Thence South 30°14'07" West a distance of 135.32 feet;
Thence South 21°22'44" West a distance of 67.48 feet;
Thence South 10°06'41" West a distance of 86.07 feet;
Thence South 05°16'34" West a distance of 93.42 feet;
Thence South 06°06'15" East a distance of 43.16 feet;
Thence South 16°52'17" East a distance of 56.44 feet;
Thence South 24°43'59" East a distance of 88.70 feet;
Thence South 30°32'30" East a distance of 272.39 feet;
Thence South 27°38'32" East a distance of 423.97 feet;
Thence South 33°42'35" East a distance of 128.87 feet;

2018-5446 4 of 6

2018-0057 5 of 11

RESULTANT PARCEL 2
(continued)

Thence South 47°18'16" East a distance of 45.52 feet to a point on the Southerly boundary of the DUNNING ISLAND property and also being on the Northerly boundary of Parcel Three as it is shown on the Parcel Map filed in Book 10 of Parcel Maps, Page 46, Glenn County Records;
Thence along said boundary South 79°43'26" East a distance of 77.60 feet;
Thence continuing along said boundary South 89°13'10" East a distance of 252.19 feet to the Northwest corner of Parcel Two as it is shown on the Parcel Map filed in Book 10 of Parcel Maps, Page 46, Glenn County Records;
Thence along the boundary of said Parcel Two and the DUNNING ISLAND property South 89°13'10" East a distance of 89.84 feet;
Thence continuing along said boundary North 78°56'49" East a distance of 775.79 feet;
Thence continuing along said boundary North 54°34'58" East a distance of 310.02 feet;
Thence continuing along said boundary North 48°37'49" East a distance of 701.05 feet to the Northwest corner of Parcel One as it is shown on the Parcel Map filed in Book 10 of Parcel Maps, Page 46, Glenn County Records;
Thence along the boundary of said Parcel One and the DUNNING ISLAND property North 48°37'49" East a distance of 29.72 feet;
Thence continuing along said boundary North 54°02'28" East a distance of 311.97 feet;
Thence continuing along said boundary North 44°00'42" East a distance of 220.78 feet;
Thence continuing along said boundary North 36°11'38" East a distance of 797.26 feet to the Westerly bank of the Sacramento River;
Thence up the Westerly bank of the Sacramento River the following 13 courses;

1) North 44°30'30" West a distance of 308.45 feet;
2) North 42°14'53" West a distance of 156.93 feet;
3) North 45°06'11" West a distance of 324.65 feet;
4) North 14°42'48" West a distance of 466.75 feet;
5) North 10°33'13" East a distance of 224.46 feet;
6) North 30°28'21" West a distance of 471.16 feet;
7) North 30°38'09" West a distance of 407.85 feet;
8) North 24°23'57" West a distance of 531.51 feet;
9) North 34°33'22" West a distance of 682.61 feet;
10) North 41°20'38" West a distance of 189.49 feet;
11) North 42°23'16" West a distance of 108.82 feet;
12) North 52°27'25" West a distance of 254.78 feet;
13) North 37°09'55" West a distance of 122.30 feet;

2016-5446 5 of 5

2016-0057 6 of 11

RESULTANT PARCEL 2
(continued)

Thence leaving the Westerly bank of the Sacramento River South 52°50'05" West a distance of 104.24 feet to a point on the Westerly boundary of the DUNNING ISLAND property;
Thence along said Westerly boundary South 06°01'22" East a distance of 205.00 feet;
Thence continuing along said boundary South 09°58'38" West a distance of 397.00 feet;
Thence continuing along said boundary South 05°28'38" West a distance of 395.40 feet thee Northeast corner of the Hamilton City Community Services District property;
Thence leaving the Westerly boundary of the DUNNING ISLAND property and following the Hamilton City Community Services District boundary South 23°28'25" East a distance of 593.10 feet;
Thence South 41°08'38" West a distance of 8.44 feet to the Point of beginning.

Containing 198.33 acres, more or less.

The basis of bearings for this description is California Zone 2 NAD 83 grid bearings.

Leslie W. Coke
Professional Land Surveyor

LICENSED LAND SURVEYOR
Leslie W. Coke
No. 5712
STATE OF CALIFORNIA

The purpose of this description is to effect Lot Line Adjustment No. 2010-006 as approved by the Glenn County Planning and Public Works Agency Director on September 17, 2010. All boundary lines of record contained within this description are hereby eliminated. No additional parcels are being created.

2010-6448 6 of 6

2016-0057 7 of 11

Exhibit A

Parcel A

All that real property in the County of Glenn, State of California, being Parcel Two, together with a portion of Parcel One as said parcels are described in that Quit Claim Deed from Spreckels Sugar Company, Inc. to Wantjas, LLC recorded on May 7, 2008 at Document No. 2008-2253, Glenn County Records, being a portion of the Capay Rancho and lying south of, and adjacent to, the Town of Hamilton, described as follows:

Said Parcel Two, together with all that portion of said Parcel One lying westerly of the existing centerline of the main railroad tracks running northerly and southerly through the entirety of said Parcel One, said railroad centerline being further described as beginning at the intersection of said centerline with the northerly line of said Parcel One, from which the northeast corner of said Parcel One bears North 69°28'00" East 913.41 feet, said northeast corner being marked by an 8" x 8" x 36" granite monument, said northeast corner also being the southeast corner of the Town of Hamilton as shown on the map of "Town of Hamilton" recorded in Book 1 of Maps and Surveys, at Page 163, as filed in the Recorder's Office of said county; thence, from said Point of Beginning, along said existing centerline of tracks, South 29°31'02" East 2529.54 feet to the beginning of a non-tangent curve having a radius of 5,639.81 feet and a central angle of 7°59'49"; thence, continuing along said centerline of tracks, along said curve to the right, an arc distance of 787.16 feet to the intersection of said centerline with the southerly line of said Parcel One.

Excepting therefrom Parcel No. 1 and Parcel No. 2 as said parcels are described in that Indenture recorded on September 14, 1936 in Book 83, Page 447, Official Records of Glenn County.

The purpose of this description is to effect Lot Line Adjustment No. 2012-002 as approved by the Glenn County Planning and Public Works Director on May 23, 2012. All previous boundary line of record contained within the above described parcel are hereby deleted as property boundary lines. No new parcels are being created.

Basis of Bearings: the northerly line of said Parcel One is given the bearing of North 69°28'00" East per said Quit Claim Deed.

Contains approximately (51.00± acres).

See the attached drawing, Exhibit B, which is hereby made a part of this description.

End of Description

PROFESSIONAL LAND SURVEYOR
R. LEE HIXSON
No. 4806
STATE OF CALIFORNIA

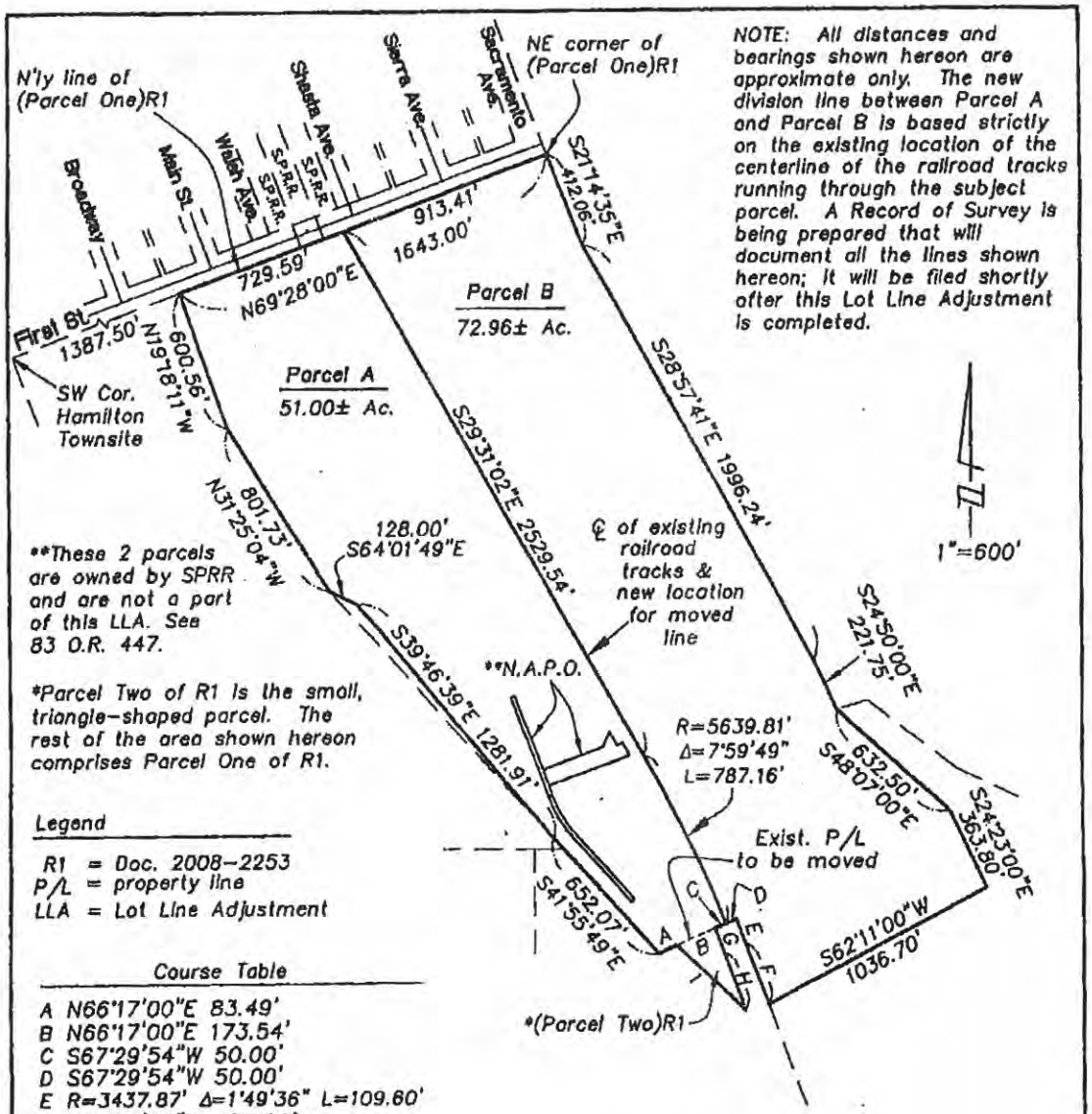
R. Lee Hixson, PLS 4806 — 5/3/12 Date

Page 1 of 1

2012-2810 2 of 6

2016-0057 8 of 11

750525.1



NOTE: All distances and bearings shown hereon are approximate only. The new division line between Parcel A and Parcel B is based strictly on the existing location of the centerline of the railroad tracks running through the subject parcel. A Record of Survey is being prepared that will document all the lines shown hereon; it will be filed shortly after this Lot Line Adjustment is completed.

**These 2 parcels are owned by SPRR and are not a part of this LLA. See 83 O.R. 447.

*Parcel Two of R1 is the small, triangle-shaped parcel. The rest of the area shown hereon comprises Parcel One of R1.

Legend

R1 = Doc. 2008-2253
P/L = property line
LLA = Lot Line Adjustment

Course Table

A N66°17'00"E 83.49'
B N66°17'00"E 173.54'
C S67°29'54"W 50.00'
D S67°29'54"W 50.00'
E R=3437.87' Δ=1°49'36" L=109.60'
F N20°40'30"W 273.00'
G R=3337.87' Δ=1°49'36" L=106.42'
H S20°40'30"E 262.80'
I N46°36'00"W 400.27'

Basis of Bearings

The N'ly line of the subject parcel is given the bearing of N 69°28'00" E per R1.

Exhibit B: Lot Line Adjustment Drawing

APN 032-260-003

County of Glenn — State of California

Date: 6/3/12	1497 Gray Avenue Yuba City, California 530-671-3625	R. Lee Hixson PLS 4806	Consulting Surveyor rlhixson@comcast.net www.wheresmyline.com
Scale: 1" = 600'			
Sheet 1 of 1			

2012-2010 3 of 5

Exhibit A

Parcel B

All that real property in the County of Glenn, State of California, being a portion of Parcel One as said parcel is described in that Quit Claim Deed from Spreckels Sugar Company, Inc. to Wantjas, LLC recorded on May 7, 2008 at Document No. 2008-2253, Glenn County Recordsbeing a portion of the Capay Rancho and lying south of, and adjacent to, the Town of Hamilton, described as follows:

All that portion of said Parcel One lying easterly of the existing centerline of the main railroad tracks running northerly and southerly through the entirety of said Parcel One, said railroad centerline being further described as beginning at the intersection of said centerline with the northerly line of said Parcel One, from which the northeast corner of said Parcel One bears North 69°28'00" East 913.41 feet, said northeast corner being marked by an 8" x 8" x 36" granite monument, said northeast corner also being the southeast corner of the Town of Hamilton as shown on the map of "Town of Hamilton" recorded in Book 1 of Maps and Surveys, at Page 163, as filed in the Recorder's Office of said county; thence, from said Point of Beginning, along said existing centerline of tracks, South 29°31'02" East 2529.54 feet to the beginning of a non-tangent curve having a radius of 5,639.81 feet and a central angle of 7°59'49"; thence, continuing along said centerline of tracks, along said curve to the right, an arc distance of 787.16 feet to the intersection of said centerline with the southerly line of said Parcel One.

The purpose of this description is to effect Lot Line Adjustment No. 2012-002 as approved by the Glenn County Planning and Public Works Director on May 23, 2012. No new parcels are being created.

Basis of Bearings: the northerly line of said Parcel One is given the bearing of North 69°28'00" East per said Quit Claim Deed.

Contains approximately (72.96± acres).

See the attached drawing, Exhibit B, which is hereby made a part of this description.

End of Description

PROFESSIONAL LAND SURVEYOR
R. LEE HIXSON
No. 4806
STATE OF CALIFORNIA

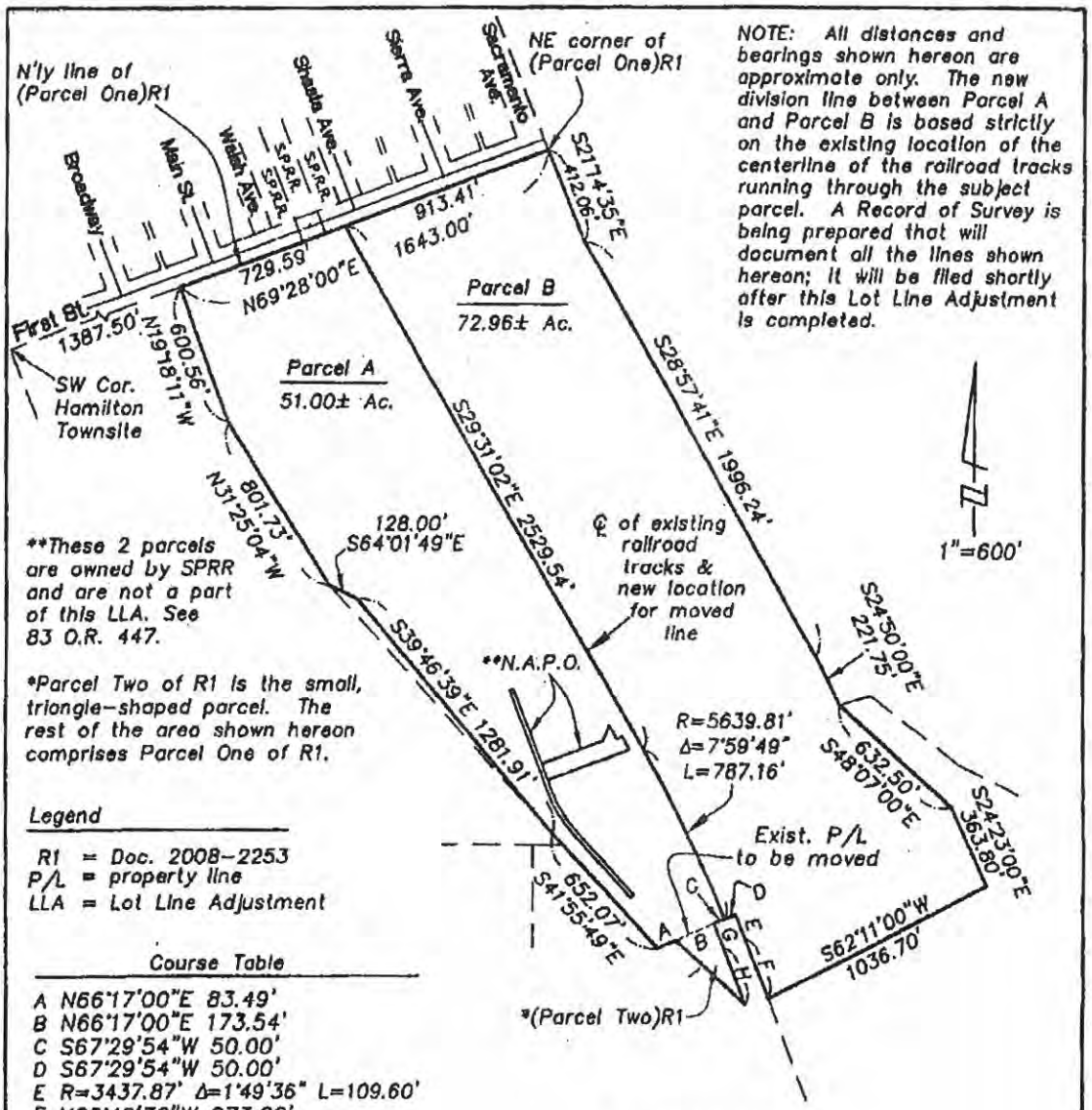
R. Lee Hixson 5/3/12
R. Lee Hixson, PLS 4806 Date

Page 1 of 1

2012-2810 4 of 6

2016-0057 10 of 11

750525.1



NOTE: All distances and bearings shown hereon are approximate only. The new division line between Parcel A and Parcel B is based strictly on the existing location of the centerline of the railroad tracks running through the subject parcel. A Record of Survey is being prepared that will document all the lines shown hereon; it will be filed shortly after this Lot Line Adjustment is completed.

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*Parcel Two of R1 is the small, triangle-shaped parcel. The rest of the area shown hereon comprises Parcel One of R1.

Legend

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P/L = property line
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G R=3337.87' Δ=1°49'36" L=106.42'
H S20°40'30"E 262.80'
I N46°36'00"W 400.27'

Basis of Bearings

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Exhibit B: Lot Line Adjustment Drawing

APN 032-260-003

County of Glenn — State of California

Date: 6/3/12	1497 Gray Avenue Yuba City, California 530-671-3625	R. Lee Hixson PLS 4806
Scale: 1" = 600'		Consulting Surveyor rlhixson@comcast.net www.wheresmyline.com
Sheet 1 of 1		

2012-2810 6 of 6

APNs: 032-250-004-0, 032-250-005-0, 032-260-006-0 and 032-260-007-0

exception legal

Signed, Sealed and Delivered in the presence of

Lova Louise Boquest (SEAL)
Pearl Augusta Kellogg (SEAL)

STATE OF CALIFORNIA
County of Sutter } ss.

On this 1st day of August, 1936, before me, Desmond A. Winship a Notary Public in and for said Sutter County personally appeared LOVA LOUISE BOQUEST and PEARL AUGUSTA KELLOGG known to me to be the persons whose names are subscribed to the within instrument, and they acknowledged to me that they executed the same.

Desmond A. Winship
(SEAL) Notary Public in and for the County of Sutter
State of California.

(endorsed) DEED LOVA LOUISE BOQUEST and PEARL AUGUSTA KELLOGG TO LOBORIO BETTENCOURT Dated AUGUST 1 1936

Recorded at Request of GLENN COUNTY TITLE CO. Sept. 12th, A. D. 1936, at 12 minutes past 11 o'clock A. M. In Book 83 of Official Records, Page 446, Glenn County Records.

Jessie A. King Recorder.
#2630E By Dorothy B. Sanderson Deputy Recorder.

.....

RWG .. 8/17/36 .. VIII.

$.50 Int. Rev. Stamps attached and cancelled.
GLENN COUNTY TITLE CO. 9-14-36

THIS INDENTURE, made this 26 day of August, 1936, between HOLLY SUGAR CORPORATION, a corporation, first party, and SOUTHERN PACIFIC RAILROAD COMPANY, a corporation, second party,

WITNESSETH:

That said first party, for and in consideration of the sum of Ten (10) Dollars, lawful money of the United States of America, to it paid by the said second party, the receipt whereof is hereby acknowledged, does by these presents grant, bargain, sell, convey and confirm unto the said second party and to its successors and assigns forever, all those certain pieces or parcels of land situate, lying and being in the County of Glenn, State of California, described as follows:

PARCEL NO. 1:

A portion of the Capay Rancho more particularly described as follows:

COMMENCING at a point which bears south 3°37'48" west a distance of 2272.99 feet from the center of a stone monument marking the southeast corner of the official townsite of Hamilton as filed in the records of Glenn County; said point being distant 8.5 feet easterly measured at right angles from the center line of stock corral track at Engineer's Station "L" 584+96.3; thence south 20°28' east a distance of 446.70 feet; thence along a curve to the left (the radius of which is 564.64 feet and the long chord of which bears south 30°56'12" east a distance of 205.20 feet) a distance of 206.34 feet; thence south 41°24'24" east a distance of 355.0 feet; thence south 48°35'36" west a distance of 17.0 feet; thence north 41°24'24" west a distance of 355.0 feet; thence along a curve to the right (the radius of which is 581.64 feet and the long chord of which bears north 30°56'12" west a distance of 211.38 feet) a distance of 212.56 feet; thence north 20°28' west a distance of 446.70 feet; thence north 69°32' east a distance of 17.0 feet to the point of commencement, containing an area of 0.395 of an acre, more or less.

PARCEL NO. 2:

A portion of the Capay Rancho more particularly described as follows:

COMMENCING at a point on the westerly right of way line of the Southern Pacific Railroad Company westerly distant 50.0 feet measured at an angle of 90°00' from the center line of the main track of said Railroad Company's Colusa Branch at Engineer Station "R" 4134+04.5. Said point also bears south 7°03'05" east a distance of 2484.70 feet from the center of a stone monument making the southeast corner of the official townsite of Hamilton as recorded in the records of Glenn County; thence south 29°31' east along said right of way line a distance of 60.70 feet; thence south 69°32' west a distance of 361.10 feet; thence north 20°28' west a distance of 72.0 feet; thence north 69°32' east a distance of 266.10 feet; thence north 23°11' east a distance of 69.93 feet; thence south 29°31' east a distance of 63.45 feet; thence north 69°32' east a distance of 25.20 feet to the point of commencement, containing an area of 0.613 of an acre, more or less.

The aforesaid conveyance is made upon the following express condition:

That the land herein conveyed is to be used only for railroad purposes and if second party at any time ceases, for the period of one year, to use it for such purposes, then the title herein conveyed shall revert to the first party, as if the grant had never been made.

TOGETHER with all and singular the tenements, hereditaments and appurtenances thereunto belonging or in anywise appertaining, and the reversion and reversions, remainder and remainders, rents, issues and profits thereof.

TO HAVE AND TO HOLD all and singular the said premises together with the appurtenances, unto the said second party and to its successors and assigns forever.

IN WITNESS WHEREOF, the said first party has caused these presents to be executed by its officers thereunto duly authorized and its corporate seal to be hereunto affixed the day and year first above written.

(Seal of Holly Sugar Corporation New York Incorporated 1916)

HOLLY SUGAR CORPORATION,

By W. L. Lawson
Vice President

Attest: E C Fisk
Asst Secretary

Description Correct:
E E Mayo
Asst. Chief Engineer

Correct as to Corporate Owner:
M. R. Haynes
For Valuation Officer

Approved as to Form
MORRISON, HOHFELD, FOERSTER, SHUMAN & CLARK
By James P Blaisdell _____
Name Date

Form Approved:
A E Stewart
Contract Attorney

STATE OF CALIFORNIA,)
) ss.
County of San Joaquin)

On this 26th day of August in the year one thousand nine hundred and thirty-six, before me, E. L. Dana, a Notary Public in and for the said County of San Joaquin, State of California, residing therein, duly commissioned and sworn, personally appeared W. L. Lawson and E. C. Fisk known to me to be the Vice-President and Assistant Secretary of the corporation described in and that executed the within instrument, and also known to me to be the persons who executed the within instrument on behalf of the corporation therein named, and acknowledged to me that such corporation executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, in the said County of San Joaquin, the day and year in this certificate first above written.

E L Dana

(SEAL)

Notary Public in and for the said County of San Joaquin State of California.

My commission expires December 23, 1938

Recorded at Request of GLENN COUNTY TITLE CO. September 14th, 1936 at 10 o'clock A. M. and Recorded in volume 83 of Official Records page 447 Glenn County records

Jessie A. King Recorder.

2012-2811

Recorded at the request of:
GLENN CO PLANNING

06/28/2012 12:13 PM
Fee: $0.00 Pgs: 3

OFFICIAL RECORDS
Sheryl Thur, Clerk-Recorder
Glenn County, CA

After Recordation, Please Return to:

Glenn County
Planning & Public Works Agency
777 North Colusa Street
Willows, CA 95988

NOTICE OF VOLUNTARY MERGER

I (We) hereby certify that the land described below is voluntarily merged into one parcel of land in accordance with Section 66499.20-3/4 of the California Government Code and Section 15.170.010(B) of the Glenn County Code.

The County of Glenn does not represent that the issuance of any entitlement such as a building permit, zoning clearance, environmental health approval or any other permit is guaranteed by the recording of the Notice of Voluntary Merger.

Property Owner: Wantjas, LLC

Signed: _____ Date: 6/11/2012
Jaswant S. Bains, Member
Wantjas, LLC

County of Glenn: Annette Chavez Date: 6-12-2012
John F. Linhart, Director

Assessor's Parcel Number: Portion of 032-260-003

PARCEL DESCRIPTION

See attached Exhibit "A": Parcel A

Exhibit A

Parcel A

All that real property in the County of Glenn, State of California, being Parcel Two, together with a portion of Parcel One as said parcels are described in that Quit Claim Deed from Spreckels Sugar Company, Inc. to Wantjas, LLC recorded on May 7, 2008 at Document No. 2008-2253, Glenn County Records, being a portion of the Capay Rancho and lying south of, and adjacent to, the Town of Hamilton, described as follows:

Said Parcel Two, together with all that portion of said Parcel One lying westerly of the existing centerline of the main railroad tracks running northerly and southerly through the entirety of said Parcel One, said railroad centerline being further described as beginning at the intersection of said centerline with the northerly line of said Parcel One, from which the northeast corner of said Parcel One bears North 69°28'00" East 913.41 feet, said northeast corner being marked by an 8" x 8" x 36" granite monument, said northeast corner also being the southeast corner of the Town of Hamilton as shown on the map of "Town of Hamilton" recorded in Book 1 of Maps and Surveys, at Page 163, as filed in the Recorder's Office of said county; thence, from said Point of Beginning, along said existing centerline of tracks, South 29°31'02" East 2529.54 feet to the beginning of a non-tangent curve having a radius of 5,639.81 feet and a central angle of 7°59'49"; thence, continuing along said centerline of tracks, along said curve to the right, an arc distance of 787.16 feet to the intersection of said centerline with the southerly line of said Parcel One.

Excepting therefrom Parcel No. 1 and Parcel No. 2 as said parcels are described in that Indenture recorded on September 14, 1936 in Book 83, Page 447, Official Records of Glenn County.

The purpose of this description is to effect Lot Line Adjustment No. 2012-002 as approved by the Glenn County Planning and Public Works Director on May 23, 2012. All previous boundary line of record contained within the above described parcel are hereby deleted as property boundary lines. No new parcels are being created.

Basis of Bearings: the northerly line of said Parcel One is given the bearing of North 69°28'00" East per said Quit Claim Deed.

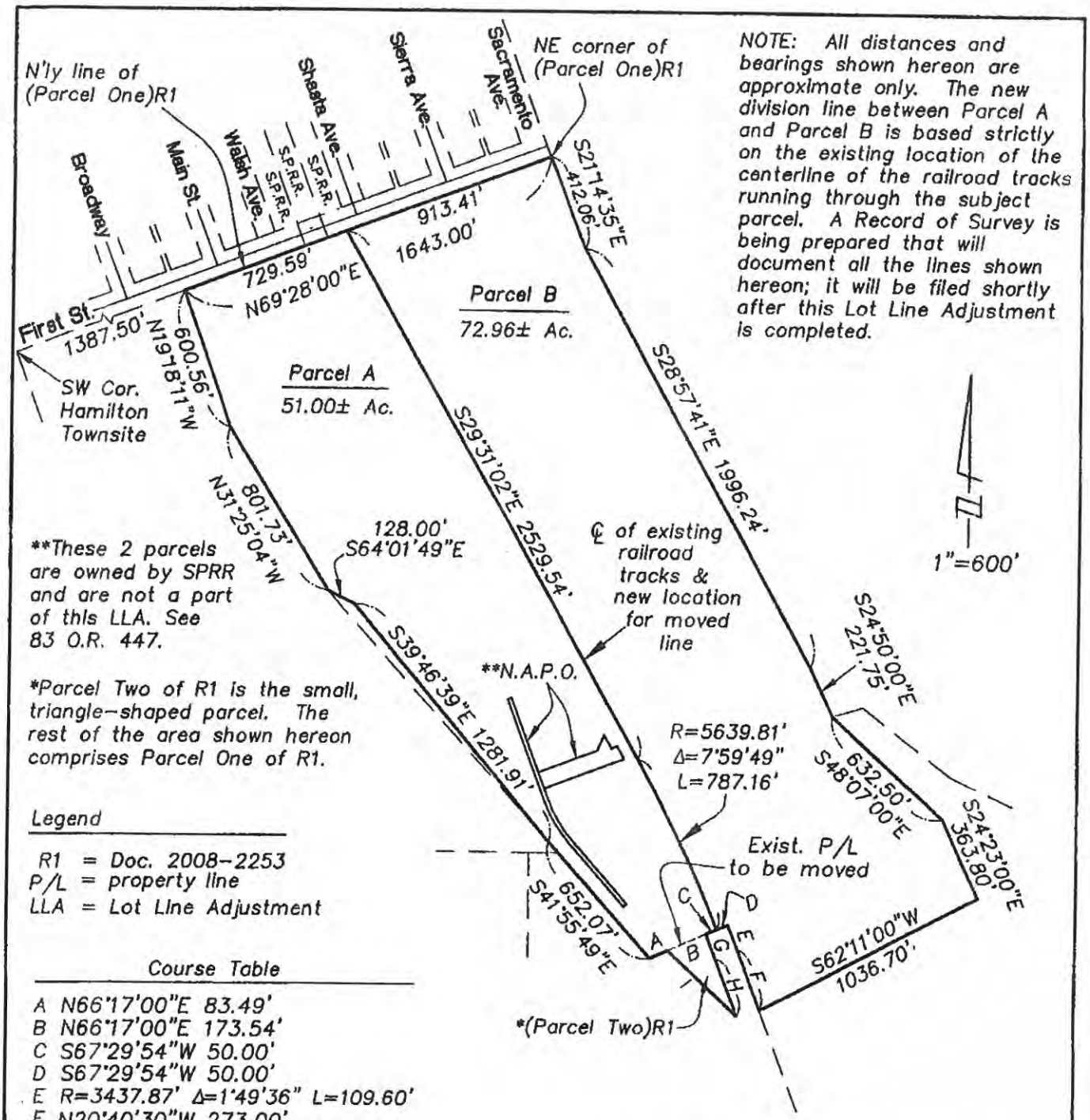
Contains approximately (51.00± acres).

See the attached drawing, Exhibit B, which is hereby made a part of this description.

End of Description

PROFESSIONAL LAND SURVEYOR
R. LEE HIXSON
No. 4806
STATE OF CALIFORNIA

R. Lee Hixson, PLS 4806 — Date 5/3/12



NOTE: All distances and bearings shown hereon are approximate only. The new division line between Parcel A and Parcel B is based strictly on the existing location of the centerline of the railroad tracks running through the subject parcel. A Record of Survey is being prepared that will document all the lines shown hereon; it will be filed shortly after this Lot Line Adjustment is completed.

**These 2 parcels are owned by SPRR and are not a part of this LLA. See 83 O.R. 447.

*Parcel Two of R1 is the small, triangle-shaped parcel. The rest of the area shown hereon comprises Parcel One of R1.

Legend

R1 = Doc. 2008-2253
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Course Table

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H S20°40'30"E 262.80'
I N46°36'00"W 400.27'

Basis of Bearings

The N'ly line of the subject parcel is given the bearing of N 69°28'00" E per R1.

Exhibit B: Lot Line Adjustment Drawing

APN 032-260-003

County of Glenn — State of California

Date: 6/3/12	1497 Gray Avenue Yuba City, California 530-671-3625	R. Lee Hixson PLS 4806	Consulting Surveyor rlhixson@comcast.net www.wheresmyline.com
Scale: 1" = 600'			
Sheet 1 of 1			

2012-2812

Recorded at the request of:
GLENN CO PLANNING

06/28/2012 12:13 PM
Fee: $0.00 Pgs: 3

OFFICIAL RECORDS
Sheryl Thur, Clerk-Recorder
Glenn County, CA

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Jaswant S. Bains, Member
Wantjas, LLC

County of Glenn: Annette Chavez Date: 6-12-2012
John F. Linhart, Director

Assessor's Parcel Number: Portion of 032-260-003

PARCEL DESCRIPTION

See attached Exhibit "A": Parcel B

Exhibit A

Parcel B

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Contains approximately (72.96± acres).

See the attached drawing, Exhibit B, which is hereby made a part of this description.

End of Description

PROFESSIONAL LAND SURVEYOR
R. LEE HIXSON
No. 4806
STATE OF CALIFORNIA

R. Lee Hixson 5/3/12
R. Lee Hixson, PLS 4806 Date

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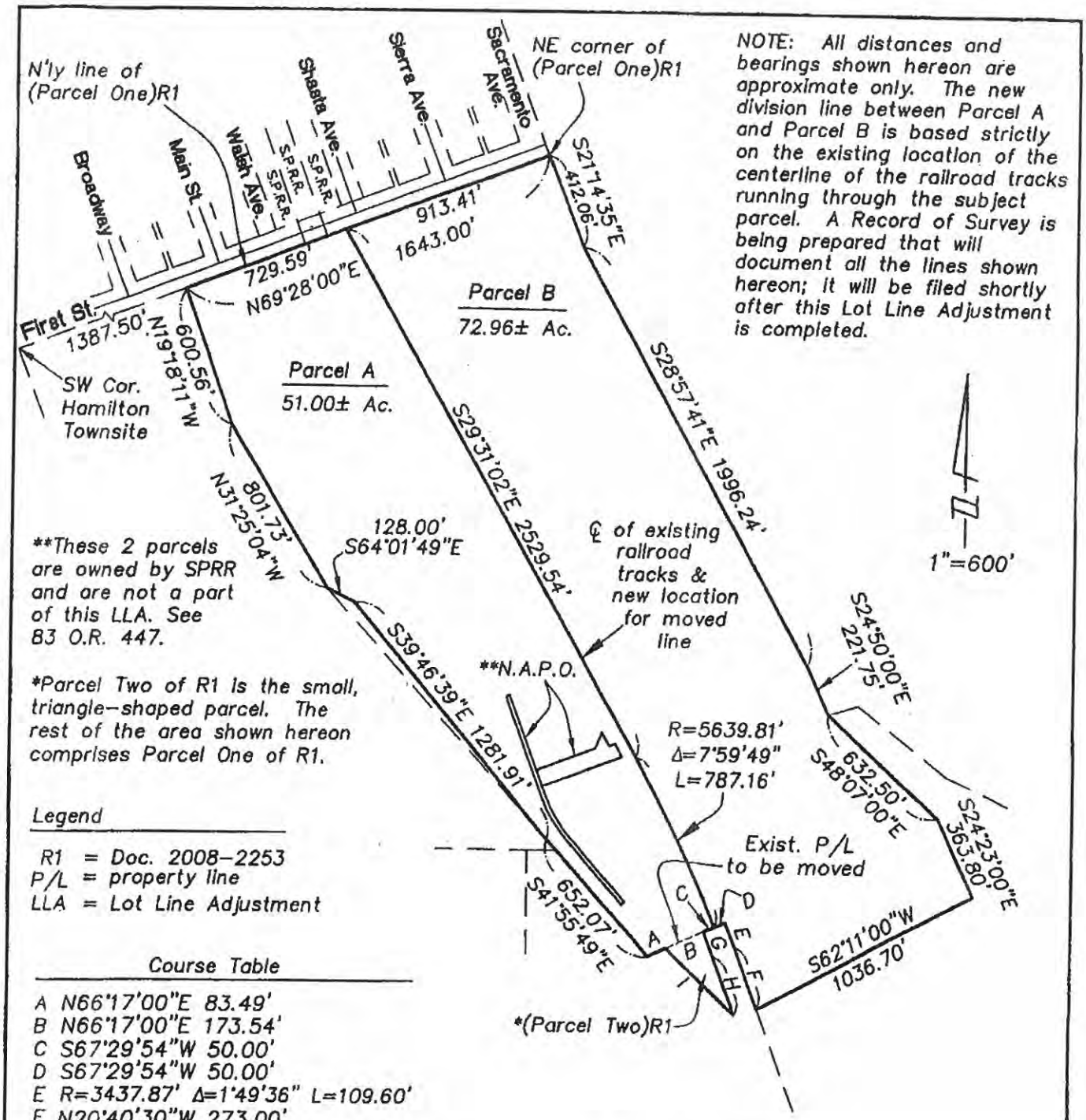

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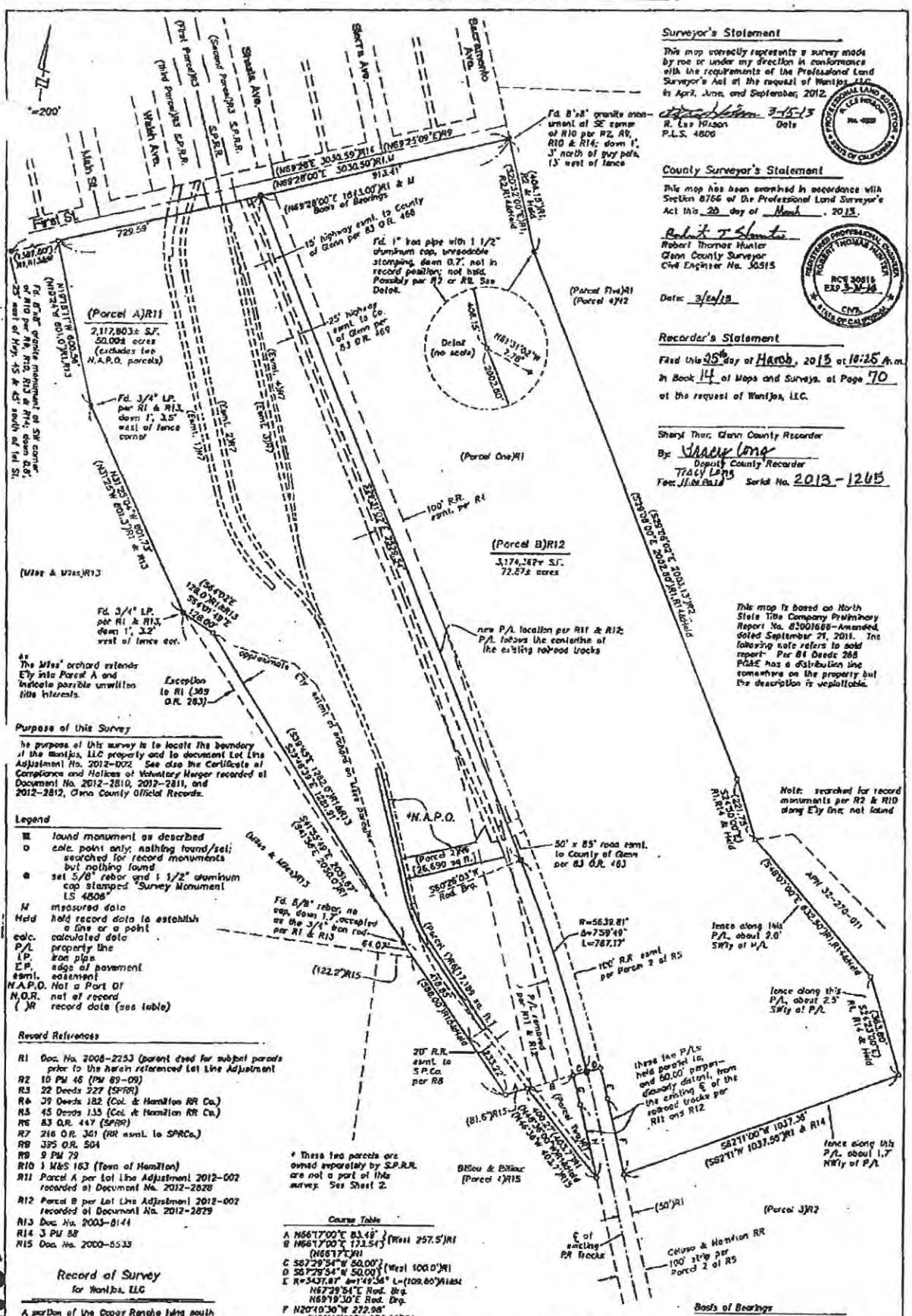
APN 032-260-003

County of Glenn — State of California

Date: 6/3/12	1497 Gray Avenue Yuba City, California 530-671-3625	R. Lee Hixson PLS 4806	Consulting Surveyor rlhixson@comcast.net www.wheresmyline.com
Scale: 1" = 600'			
Sheet 1 of 1			



Purpose of this Survey

The purpose of this survey is to locate the boundary of the Wanijos, LLC property and to document Lot Line Adjustment No. 2012-002. See also the Certificate of Compliance and Notices of Voluntary Merger recorded at Document No. 2012-2810, 2012-2811, and 2012-2812, Glenn County Official Records.

Legend

- ■ found monument as described
- o calc. point only; nothing found/set; searched for record monuments but nothing found
- ● set 5/8" rebar and 1 1/2" aluminum cap stamped "Survey Monument LS 4806"
- M measured data
- Held held record data to establish a line or a point
- calc. calculated data
- P/L property line
- I.P. iron pipe
- E.P. edge of pavement
- esmt. easement
- N.A.P.O. Not a Part Of
- N.O.R. not of record
- ( )R record data (see table)

Record References

- R1 Doc. No. 2008-2253 (parent deed for subject parcels prior to the herein referenced Lot Line Adjustment
- R2 10 PM 46 (PM 89-09)
- R3 22 Deeds 227 (SPRR)
- R4 39 Deeds 182 (Col. & Hamilton RR Co.)
- R5 45 Deeds 133 (Col. & Hamilton RR Co.)
- R6 83 O.R. 447 (SPRR)
- R7 216 O.R. 341 (RR esmt. to SPRCo.)
- R8 395 O.R. 504
- R9 9 PM 79
- R10 1 Mis 163 (Town of Hamilton)
- R11 Parcel A per Lot Line Adjustment 2012-002 recorded at Document No. 2012-2828
- R12 Parcel B per Lot Line Adjustment 2012-002 recorded at Document No. 2012-2829
- R13 Doc. No. 2003-8141
- R14 3 PM 88
- R15 Doc. No. 2000-5533

Record of Survey

for Wanijos, LLC

A portion of the Copay Rancho lying south of the Town of Hamilton, Glenn County, CA

Scale: 1"=200' March 1, 2013

Sheet 1 of 2

Course Table

- A N66°17'00"E 83.49' (West 257.5')R1
- B N66°17'00"E 173.54' (N66°17'E)R1
- C S67°29'54"W 50.00' (West 100.0')R1
- D S67°29'54"W 50.00'
- E R=3437.87' Δ=1°49'56" L=(109.80')R1&R4 N67°29'54"E Rad. Brg. N69°19'30"E Rad. Brg.
- F N20°10'30"W 272.98' (N20°40'30"W 273.00')R1
- G R=3337.87' Δ=1°49'56" L=(106.42')(109.8')R1 N67°29'54"E Rad. Brg. N69°19'30"E Rad. Brg.
- H (S20°10'30"E 282.80')R1&R4

Prepared By:
P. Lee Hixson, PLS
rhixsonl@comcast.net
www.whereismyline.com

Basis of Bearings

The N'ly line of the subject parcel is given the bearing of N 69°28'00" E per R1, based on the found monuments shown hereon.

Surveyor's Statement

This map correctly represents a survey made by me or under my direction in conformance with the requirements of the Professional Land Surveyor's Act at the request of Wanijos, LLC in April, June, and September, 2012.

3-15-13
R. Lee Hixson — Date
P.L.S. 4806

PROFESSIONAL LAND SURVEYOR — P. LEE HIXSON — No. 4806 — STATE OF CALIFORNIA

County Surveyor's Statement

This map has been examined in accordance with Section 8766 of the Professional Land Surveyor's Act this 20 day of March, 2013.

Robert Thomas Hunter
Glenn County Surveyor
Civil Engineer No. 30515

Date: 3/20/13

REGISTERED PROFESSIONAL ENGINEER — ROBERT THOMAS HUNTER — RCE 30515 — EXP. 3-31-14 — CIVIL — STATE OF CALIFORNIA

Recorder's Statement

Filed this 25th day of March, 2013 at 10:25 A.m. in Book 14 of Maps and Surveys, at Page 70 at the request of Wanijos, LLC.

Sheryl Thur, Glenn County Recorder
By: Tracy Long
Deputy County Recorder
TRACY LONG
Fee: $1.00 paid
Serial No. 2013-1265

14M 70

032-260-007

Detail of the Two N.A.P.O. Parcels

=100'

Legend

- ■ found monument as described
- o calc. point only; nothing found/set; searched for record monuments but nothing found
- ■ set 5/8" rebar and 1 1/2" aluminum cap stamped "Survey Monument LS 4806"
- M measured data
- Held held record data to establish a line or a point
- calc. calculated data
- P/L property line
- I.P. iron pipe
- E.P. edge of pavement
- esmt. easement
- N.A.P.O. Not a Part Of
- N.O.R. not of record
- ( )R record data (see table)

Fd. 8"x8" granite monument at SE corner of R10 per R2, R9, R10 & R14; down 1', 3' north of guy pole, 13' west of fence

(N35°14'E 2272.99')R6
N32°42'38"E 2271.66'

(S70°03'E 2484.70')R6
S69°42'42"E 2484.63'

(Parcel A)R11
2,117,803± S.F.
50.00± acres
(excludes two N.A.P.O. parcels)

(N69°32'00"E 17.00')R6

Both N.A.P.O. parcel positions adjusted slightly to match the centerline of the existing tracks

(Parcel B)R12
3,174,362± S.F.
72.87± acres

(S29°31'00"E 63.45')R6
S29°31'00"E 63.44'

(N23°11'00"E 89.93')R6

(S69°32'00"W 268.10')R6

(N69°32'00"E)R6 24.52'
(25.20')R6

Δ=0°36'48" R=5678.81' L=60.81'
(S29°31'E 60.70')R6

(S69°32'00"W)R6 361.08' (361.10')R6

*N.A.P.O. #2
(Parcel 2)R5
[26,690 sq.ft.]

(S20°28'00"E 326.82'
S20°28'00"E 410.70')R6

(S20°28'00"E 410.70')R6

(S59°45'E 1282.01')R6
S59°45'E 1281.97'

(S71°58'E 2058.67')R6
S71°58'E 2058.67'

Both N.A.P.O. parcels were calculated using record distances and bearings per R6. Their positions were adjusted slightly in order to match the as-built location of the railroad tracks as called for in the R6 descriptions.

R6 (72.00')

44.77'

(R=581.66')R6
calc. per R6: Δ=20°58'17"
(L=212.56')R6

(R=584.64')R6
Δ=20°58'17" calc. per R6
(L=208.34')R6

*N.A.P.O. #1
(Parcel 1)R6
[17,189 sq. ft.]

100' R.R. esmt. per Parcel 2 of R5 (centered on the existing track ℄)

R=5638.81'
Δ=7°59'49"
(L=787.17')

(S41°24'E 325.00')R6
(N41°24'24"W 325.00')R6

418.85'

S41°35'49"E 852.07'

(S48°35'35"W 17.00')R6

(S48°04'11"W 58.68')R6

233.22'

(Parcel Two)R1

*According to the title report referred to on Sheet 1, these two parcels are owned separately by S.P.R.R. and are still in existence.

Record References

- R1 Doc. No. 2008-2253 (parent deed for subject parcels prior to the herein referenced Lot Line Adjustment
- R2 10 PM 46 (PM' 89-09)
- R3 22 Deeds 227 (SPRR)
- R4 39 Deeds 182 (Col. & Hamilton RR Co.)
- R5 43 Deeds 135 (Col. & Hamilton RR Co.)
- R6 83 O.R. 447 (SPRR)
- R7 216 O.R. 361 (RR esmt. to SPRCo.)
- R8 385 O.R. 504
- R9 9 PM 79
- R10 7 M&S 163 (Town of Hamilton)
- R11 Parcel A per Lot Line Adjustment 2012-002 recorded at Document No. 2012-2826
- R12 Parcel B per Lot Line Adjustment 2012-002 recorded at Document No. 2012-2829
- R13 Doc. No. 2003-8144
- R14 3 PM 88
- R15 Doc. No. 2000-5533

Course Table

A	N86°17'00"E 83.49' (N64°17'E)R1	(West 257.5')R1
B	N86°17'00"E 173.54'	
C	S87°29'54"W 50.00'	(West 100.0')R1
D	S87°29'54"W 50.00'	
E	R=3437.87' Δ=1°49'36" L=(109.60')R1&M N87°28'54"E Rad. Brg. N69°19'30"E Rad. Brg.	
F	N20°40'30"W 272.98' (N20°40'30"W 273.00')R1	
G	R=3337.87' Δ=1°49'36" L=(106.42')(109.6')R1 N87°29'54"E Rad. Brg N69°19'30"E Rad. Brg.	
H	(S20°40'30"E 262.60')R1&M	

Record of Survey
for Hanlon, LLC

A portion of the Copay Rancho lying south of the Town of Hamilton, Glenn County, CA

Scale: 1"=100' March 1, 2013

Sheet 2 of 2

Prepared By:
R. Lee Hixson, PLS
rhixson@comcast.net
www.whereismyline.com

14MS70

39-Deeds-182

WITNESS my hand and official seal, affixed this 9th day of December A. D., 1911.

Endorsed: Filed Dec. 9, 1911. W. H. Sale, Clerk. W. H. Sale, Clerk. L. M. Nagel, Deputy Clerk. W. H. Sale, Clerk. (SEAL) By L. M. Nagel, Deputy Clerk.

Recorded at request of A. J. Zumwalt, Dec. 9, A. D., 1911, at 15 minutes past 11 o'clock A. M., in Book 39 of Deeds, page 181. Records of Glenn County.

M. Golden, County Recorder.

A. W. Sehorn, Deputy Recorder.

#4

THIS INDENTURE, Made this 16th day of November, in the year of our Lord one thousand nine hundred and eleven, between Sacramento Valley Sugar Company, a Corporation, of Hamilton City, County of Glenn, State of California, the party of the first part; and the Colusa & Hamilton Railroad Company, a Corporation, existing under the Law of the State of California, the party of the second part:

WITNESSETH: That the said party of the first part, for and in consideration of the sum of Ten (10.00) Dollars, of the United States of America, to it in hand paid by the said party of the second part, the receipt thereof is hereby acknowledged, has granted, bargained and sold, conveyed and confirmed and by these presents does grant, bargain and sell, convey and confirm, unto the said party of the second part, and to its successors and assigns forever, all that certain lot, piece or parcel of land, situate, lying and being in the County of Glenn, State of California, and bounded and particularly described as follows, to-wit:-

In Capay Rancho, a strip of land One hundred (100) feet wide, lying Fifty (50) feet on each side of the surveyed center line of the proposed railroad from Colusa to Hamilton, as surveyed and marked by stakes driven in the ground at distances of fifty (50) feet and less by the Southern Pacific Company in the year 1910, and extending from a point on said center line known as Engineer Survey Station "H" 4056+78.0, a point in the center line of the County Road leading to Chico; thence North, three degrees; nine and one-half minutes East (N. 3° 9½' E.) a distance of Nine Hundred and Fifty-nine and eight-tenths (959.8) feet to a point on said center line known as Engineer Survey Station "H" 4066+37.8; thence on a curve to the left with a radius of five thousand seven hundred and twenty-nine and six-tenths (5729.6) feet, a distance of Twenty-three hundred and eighty-three and three tenths (2383.3) feet, to a point on said center line known as Engineer Survey Station "H" 4090+21.1; thence North, twenty degrees and forty and one-half minutes West (N. 20° 40½' W.) a distance of Forty-three hundred and eighty and four-tenths (4380.4) feet to a point on said center line known as Engineer Survey Station "H" 4134+01.5; thence on a curve to the left with a radius of five thousand seven hundred and twenty-nine and six tenths (5729.6) feet, a distance of Eight Hundred and Ninety-four and Two-tenths (894.2) feet to a point on said center line known as Engineer Survey Station "H" 4142+95.7; thence North, Twenty nine degrees and Thirty-seven minutes West (N. 29° 37' W.) a distance of Fifteen hundred and eight tenths (1500.8) feet to a point on said center line known as "H" 4157+96.5, a point on the South line of First Street in the Town of Hamilton; save and excepting therefrom all that portion of the right of way, of the Northern Electric Railway Company, that lies within the boundaries of the above described tract of land.

The tract of land herein conveyed contains an area of Twenty-one and thirty-nine one-hundredths (21.39) acres, more or less.

Also, in Capay Rancho, a strip of land One Hundred (100) feet wide, lying Fifty (50) feet on each side of the surveyed center line of the proposed railroad from Colusa to Hamilton as surveyed and marked by stakes driven in the ground at distances of fifty (50) feet and less, by the Southern Pacific Company in the year 1910, and extending from, at or near, a point on said center line known as Engineer Survey Station "A" 3975+68.6, a point on the property line between the lands of the party of the first part and those of the Sacramento Valley Irrigation

Company; thence North three degrees and nine and one-half minutes East (N. 3- 9-½' E.) a distance of six thousand six hundred and sixty-two and seven tenths (6662.7) feet, more or less, to a point on said center line known as Engineer Survey Station "A" 4042+31.3, a point on the property line between the lands of the party of the first part and those of Samuel Jones, and containing an area of Fifteen and Thirty one hundredths (15.30) acres, more or less.

The aforesaid conveyance is made upon the following express conditions:

1. That the land herein conveyed is to be used only as a right of way for a railroad, and if second party at any time ceases, for the period of one year, to use it for such purpose, then the title herein conveyed shall revert to first party, as if the grant had never been made.

2. Any irrigation ditches, culverts or water ways which may be necessary, either under or along-side of the right of way herein conveyed, because of said right of way cutting or dividing the fields or present irrigation ditches of the first party, are to be made and constructed as the expense of the second party. Such new irrigation ditches and culverts are to be situated in reference to the Survey Station numbers of the Colusa and Hamilton Railroad as follows: At or near Survey Station "A" 3988, and Eight (8) foot culvert for present ditch.

At or near Survey Station "A" 4011, a culvert for drainage and irrigation water.

At or near Survey Station "A" 4030, a culvert for present ditch.

At or near Survey Station "A" 4125, a culvert for present ditch.

At or near Survey Station "A" 4126, a culvert for present ditch.

On the Westerly side of said railroad, between about Survey Station "A" 3975 and "A" 4041, a new irrigation ditch.

3. The second party is not to borrow at the present time any more dirt from the one-hundred foot right-of way herein conveyed that is absolutely necessary to grade for onetrack, leaving as much as possible of the present fields through which the right of way herein conveyed goes undisturbed and fit for cultivation.

The second party is to put a hog-tight fence on both sides of this one-track grade, as near as reasonably practicable to their tracks, and the first part is to have the use of the right of way outside of the fences, under a Cultivation Lease at the rental of one (1.00) Dollar per year, until such time as the second party wishes to install a second track, when the fences shall be moved out to the regular one hundred foot right of way lines of the right of way herein conveyed, and said Cultivation Lease shall contain the following conditions:

In consideration of such lease, the Lessee hereby agrees, as follows:

Not to plow or cultivate said land within a distance of ten feet from the end of ties, and, in cultivation, not to distrub and ditches which may have been placed on said land for drainage.

Not to let or underlet the whole or any part of said premises nor assign this lease without written consent of the Railroad Company.

To see that all farm crossing or other gates opening on said land are at all times kept closed.

The Lessee to waive all claims which may accrue for loss or from damage to crop on said land above leased by reason of fire from any engine of the Railroad Company; and the Lessee also to waive all claims for injury to Lessee or to stock or animals while working on or upon said land, whether from taking fright or otherwise.

4. The second party shall put in road crossings; said road crossings shall be provided with standard gates, which, when open, will leave a clear opening of fifteen (15) feet, and the fences and fence posts on one side of these gates shall be so constructed for a distance of forty (40) feet that fence can be readily remove, so as to leave an additional clear opening of forty (40) feet, to allow the crossing of right of way with a combined harvester.

Said crossings to be situated in reference to the Survey Stations of the Colusa and Hamilton Railroad, as follows:

At or near Survey Station "A" 3988.

At or near Survey Station "A" 4032.

At or near Survey Station "H" 4084.

At or near Survey Station "H" 4109.

At or near Survey Station "H" 4135.

5. The second party shall install a siding or spur track not shorter that four hundred (400) feet at some convenient point to second party, between Stony Creek and Monroeville.

6. This right of way is conveyed to the second party with the understanding that the Northern California Power Company, with its principal place of business in San Francisco, California, has the right to set its pole line on the East side of the right of way herein conveyed where said right of way joins the right of way of the Northern Electric Railway Company.

7. This right of way is conveyed to the second party with the understanding that where right of way passes through cattle feeding years South of first party's sugar factory, any fences, piping, water troughs, feeding tracks and troughs, road-ways, gates and cattle guards necessary to be changed on account of the right of way cutting such leased cattle yards, will be changed at the expense of the second party, and under the direction of the first party.

TOGETHER with all and singular the tenements, hereditaments and appurtenances thereunto belonging or in anywise appertaining, and the reversion and reversions, remainder and remainders, rents, issues and profits thereof.

TO HAVE AND TO HOLD, all and singular, the said premises, together with the appurtenances unto the said party of the second part, and to its successors and assigns forever;

IN WITNESS WHEREOF, the said party of the first part has hereunto set its hand and seal, the day and year first above written.

Sacramento Valley Sugar Company,

William C. Baker, President.

(Corporate Seal) E. A. Pardee, Secretary.

Signed, Sealed and Delivered in the Presence of

Lois M. Adland for William C. Baker and E. A. Pardee.

State of California,)
County of LosAngeles.) ss.

On this 16th day of November in the year of our Lord one thousand nine hundred and eleven before me, Estella M. LeSage, a Notary Public in and for said County of Los Angeles, State of California, residing therein, duly commissioned and sworn, personally appeared William C. Baker and E. A. Pardee, known to me to be respectively the President and Secretary of Sacramento Valley Sugar Company, the corporation that executed the within instrument, and known to me to be the persons who executed the within instrument on behalf of said corporation therein named, and acknowledged to me that such corporation executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal in said County, the day and year in this Certificate first above written.

(SEAL)

Estella M. LeSage, Notary Public in and for Los Angeles County, State of California.

(My commissioned Expires February 6, 1913)

Recorded at request of Wells, Fargo & Co., Dec. 11 A. D., 1911, at 27 minutes past 2 o'clock P. M., in Book 39 of Deeds, 182. Records of Glenn County.

M. Golden, County Recorder.

#5

THIS INDENTURE, made this 10th day of November in the year of our Lord One thousand nine hundred and thirteen, Between Sacramento Valley Sugar Company, a Corporation, of Hamilton City, County of Glenn, State of California, the party of the first part, and the Colusa & Hamilton Railroad Company, a corporation, existing under the law of the State of California the party of the second part.

WITNESSETH: That the said party of the first part, for and in consideration of the sum of Ten Dollars ($10.00), of the United States of America, to it in hand paid by the said party of the second part, the receipt whereof is hereby acknowledged, has granted, bargained and sold, conveyed and confirmed and by these presents does grant, bargain and sell, convey and confirm, unto the said party of the second part, and to its successors and assigns forever, all that certain lot, piece or parcel of land, situate, lying and being in the County of Glenn, State of California, and bounded and particularly described as follows, to-wit:-

A strip of land in Capay Rancho lying on both sides of the located center line of the Colusa & Hamilton Railroad as surveyed and marked by stakes driven in the ground at distances of fifty (50) feet and less by the Southern Pacific Company in the year 1912, and more particularly bounded and described as follows:

Beginning at a point fifty (50) feet easterly from a point on said center line of railroad known as Engineer Survey Station "H" 4066+37.8- "R" 4066+37.0, measured at right angles thereto; thence north three degrees, nine and one-half minutes east (N. 3° 00-½' E.) parallel to and at a uniform distance of fifty (50) feet Easterly from said center line of railroad, for a distance of three hundred ninety-six (396.0) feet to a point distant fifty (50) feet easterly from a point on said center line of railroad known as Engineer Survey Station "H" 4070+33.8, measured at right angles thereto; thence northerly on a curve to the left with a radius of Five Thousand Seven Hundred Seventy-nine and Sixty-one One-hundredths (5779.61) feet, parallel to and at a uniform distance of fifty (50) feet easterly from said center line of railroad, for a distance of One Thousand Forty and Nine-tenths (1040.9) feet to a point on the Westerly boundary line of Northern Electric Company's right of way, which point is distant Fifty (50) feet Easterly from said center line of Colusa & Hamilton Railroad, measured radially thereto; thence North Twenty Degrees, Forty and One-half Minutes West (N. 20° 40-½' W.) along and on said boundary line for a distance of two Hundred Thirty-four and Seven-tenths (234.7) feet to an intersection with said center line of railroad at Engineer Survey Station "R" 4082+94.0; thence North Twenty degrees, forty and one-half minutes West (N. 20° 40-½' W.), containing along and on said boundary line for a distance of Two hundred Ninety-four and Six-tenths (294.6) feet to a point that is distant Fifty (50) feet Westerly from said center line of railroad, measured radially thereto; thence southerly on a curve to the right with a radius of Five thousand six hundred seventy-nine and sixty-one one-hundredths (5679.61) feet, parallel to and at a uniform distance of fifty (50) feet Westerly from said center line of railroad, for a distance of Two hundred seventy-eight and seven-tenths (278.7) feet to a point distant Fifty (50) feet westerly from said center line of railroad, measured radially thereto; thence Southerly on a curve to the right with a radius of Five Thousand Seven Hundred Seventy-nine and Sixty-one One-hundredths (5779.61) feet for a distant of One Thousand Six Hundred Sixty-seven and nine-tenths (1667.9) feet to the point of beginning and containing an area of one and seventy-four one hundredths (1.74) acres, more or less.

ALSO

A strip of land in Capay Rancho, lying on both sides of said center line of railroad, and more particularly bounded and described as follows:

Beginning at a point on the Easterly boundary line of the Northern Electric Company's right of way, which point is also on said center line of the Colusa & Hamilton Railroad and is known as Engineer Survey Station "R" 4088+01.0; thence South Twenty Degrees, forty and one-half minutes East (S.20° 40-½' E.) along and on said boundary line for a distance of three hundred fifteen and six-tenths (315.6) feet to a point that is distant Fifty (50) feet Easterly from said center line of railroad, measured radially thereto; thence Northerly on a curve to the left with a radius of Five thousand seven hundred seventy-nine and sixty-one one-hundredths (5779.61) feet, parallel to and at a uniform distance of fifty (50) feet Easterly from said center line of railroad, for a distance of One thousand seventy-five and seven-tenths (1075.7) feet to a point distant fifty (50) feet Easterly from Engineer Survey Station "R" 4094+17.1, a point on said center line of railroad, measured at right angles thereto; thence North Twenty degrees forty and one-half minutes West (N. 20° 40-½' W.) parallel to and at a uniform distance of fifty (50) feet from said center line of railroad for a distance of three thousand one and three-tenths (3001.3) feet to a point that is distant fifty (50) feet easterly from Engineer survey Station "R" 4124+18.4, a point on said center line of railroad, measured at right angles there to; thence Northerly, on a curve to the left with a radius of five thousand seven hundred seventy-nine and sixty-one one-hundredths (5779.61) feet, parallel to and at a uniform distant of fifty (50) feet easterly from said center line of railroad, for a distance of nine hundred two (902.0) feet to a point that is distant fifty (50) feet Easterly from Engineer Survey Station "R" 4133+12.6, a point on said center line of railroad, measured at right angles thereto; thence North Twenty-nine Degrees, thirty-seven minutes West (N. 29° 37' W.) parallel to and at a uniform distance of fifty (50) feet Easterly from said center line of railroad, for a distance of one thousand twenty-nine and four-tenths (1029.4) feet to a point that is distant fifty (50) feet easterly from Engineer Survey Station "R" 4143+42.0- "H" 4142+05.7, a point on said center line of railroad, measured at right angles thereto; thence Southerly on a curve to the right with a radius of Five thousand seven hundred seventy-nine and sixty-one one-hundredths (5779.61) feet for a distance of nine hundred two (902.0) feet to a point on the Westerly side of said center line of railroad; thence south Twenty degrees, Forty and one-half minutes East (S. 20° 40-½' E.) for a distance of One hundred ninety-three and six-tenths (193.6) feet to a point that is distant fifty (50) feet westerly from said center line of railroad, measured radially thereto; thence Southerly on a curve to the right with a radius of Five Thousand Six Hundred Seventy-nine and Sixty-one One-hundredths (5679.61) feet, parallel to and at uniform distance to fifty (50) feet Westerly from said center line of railroad, for a distance of eight hundred twenty-six and two-tenths (826.2) feet to a point that is distant fifty (50) feet Westerly from Engineer Survey Station "R" 41 24+18.4 a point on said center line of railroad, measured at right angles thereto; thence south Twenty degrees, forty and one-half minutes East (S. 20° 40-½' E.) parallel to and at a uniform distance of fifty (50) feet westerly from said center line of railroad for a distance of three thousand seven hundred fifty-five and two-tenths (3755.2) feet to the point of beginning at Engineer Survey Station "R" 4088+01.0 and containing an area of Eleven and forty-nine one-hundredths (11.49) acres, more or less.

The aforesaid conveyance is made upon the following express conditions:

1. That the land herein conveyed is to be used only as a right of way for a railroad, and if second party at any time ceases, for the period of one year, to use it for such purpose then the title herein conveyed shall revert to the first party, as if the grant had never been made.

2. The second party is not to borrow at the present time any more dirt from the one-hundred foot right of way herein conveyed than is absolutely necessary to grade for one track, leaving as much as possible of the present fields through which the right of way herein conveyed goes undisturbed and fit for cultivation.

The second party is to put a hog-tight fence on both sides of this one-track grade, as near as reasonably practicable to their tract, and the first party is to have the use of the right of way outside of the fences, under a cultivation lease at the rental of One Dollar ($1.00) per year, until such time as the second party wishes to install a second track, when the fences shall be moved out to the regular one-hundred-foot right of way lines of the right of way herein conveyed, and said cultivation lease shall thereupon cease and determine. The said Cultivation lease shall contain the following conditions: In Consideration of such lease, the Lessee hereby agrees, as follows:

Not to plow or cultivate said land within a distance of ten feet from the end of ties, and, in cultivation, not to disturb any ditches which may have been placed on said land for drainage.

Not to let or underlet the whole or any part of said premises or assign this lease without written consent of the Railroad Company.

To see that all farm crossing or other gates opening on said land are at all times kept closed.

The Lessee to waive all claims which may accrue for loss or damage to crop on said land above leased by reason of fire from any engine of the Railroad Company; and the Lessee Also to waive all claims for injury to Lessee or to stock or animals while working on or upon said land, whether from taking fright or otherwise.

3. The second party shall put in road crossings; said road crossings shall be provided with standard gates, which, when open, will leave a clear opening of fifteen (15) feet, and the fences and fence posts on one side of these gates shall be so constructed for a distance of forty (40) feet that fence can be readily removed so as to leave an additional clear opening of forty (40) feet, to allow the crossing of right of way with a combined harvester. said crossing to be situated in reference to the survey Stations of the Colusa & Hamilton Railroad, as follows:

At or near Survey Station "R" 4084.

At or near Survey Station "R" 4100.

At or near Survey Station "R" 4135.

4. This right of way is conveyed to the second party with the understanding that where right of way passes through cattle-feeding yards South of first party's sugar factory, any fences, piping, water troughs, feeding tracks and troughs, road-ways, gates and cattle guards necessary to be charged on account of the right of way cutting such leased cattle yards, will be changed at the expense of the second party, and under the direction of the first party.

TOGETHER with all and singular the tenements, hereditaments and appurtenances thereunto belonging or in anywise appertaining, and the reversion and reversions, remainder and remainders, rents, issues and profits thereof.

TO HAVE AND TO HOLD, all and singular the said premises, together with the appurtenances unto the said party of the second part, and to its successors and assigns forever.

IN WITNESS WHEREOF, the said party of the first part has hereunto set its hand and seal, the day and year first above written.

Sacramento Valley Sugar Company,

By William C. Baker, President.

(Corporate seal) R. L. Newlin, Secretary.

Signed, sealed and Delivered
in the Presence of
Lois M. Adland, as to
W. O. B. and R. L. N.

State of California, }
County of Los Angeles. } ss

On this 19th day of November in the year nineteen hundred and thirteen A. D., before me, Miranda W. Olds, a Notary Public in and for the said County of Los Angeles, State of California, residing therein, duly commissioned and sworn, personally appeared William C. Baker known to me to be the President and R. L. Newlin known to me to be the Secretary of Sacramento Valley Sugar Company the corporation which executed the within and annexed instrument, and acknowledged to me that such corporation executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal in said County the day and year in this certificate first above written.

Miranda W. Olds, Notary Public in and for Los Angeles County, State of California.

(SEAL)

(My Commission expires Oct. 21, 1915.)

Recorded at request of Wells Fargo & Co., Feb. 19 A. D., 1914 At 35 minutes past 3 o'clock P. M., in Book 45 of Deeds page 135. Records of Glenn County.

M. Golden, County Recorder.
A. W. Sehorn, Deputy Recorder.

THIS INDENTURE, made this 10th day of February, in the year of our Lord one thousand nine hundred and fourteen, Between Josephine S. Gardner of the County of Glenn, State of California the party of the first part, and Helen T. Gardner and Beldon S. Gardner, of the County of Glenn, State of California, the parties of the second part,

WITNESSETH, That the said party of the first part, for and in consideration of the sum of Ten ($10.00) Dollars, Gold Coin of the United States of America, to her in hand paid by the said parties of the second part, the receipt whereof is hereby acknowledged, does by these presents grant, bargain and sell, convey and confirm, unto the said parties of the second part, and to their heirs and assigns forever an undivided one-half each in and to all those certain lots, pieces or parcels of land, situate, lying and being in the Counties of Glenn and Alameda, State of California, and bounded and particularly described as follows, to-wit:-

Lot Six (6) in Block thirty-five (35) of the Pittsburg Addition to the Town of Willows, according to the map thereof, and the re-subdivision of Blocks 23 to 34 of the said town, which said map was filed for record in the office of the County Recorder of Glenn County, California, on the 21st day of April 1910, in the records of said County.

Lot seven (7) in Block Thirty-five (35) of the Pittsburg Addition to said Town of Willows, according to the map thereof, and the re-subdivision of Blocks 23 to 34 of said town, which said map was filed for record in the office of the County Recorder of Glenn County, California on the 21st day of April 1910, in the records of said County.

Lots numbered Fifteen (15) and Sixteen (16) both in Block lettered "B" as said lots and block are delineated and so designated upon that certain map entitled, "Regents Park Map No. 3., Berkeley, Cal., filed October 11th 1908, in Liber 21 of Maps, Page 68, in the office of the

84-Deeds-268

#4

SCHEDULE ABOVE REFERRED TO

All that certain real property, situate, lying and being in the County of Glenn, State of California, described as follows, to wit:

The Northeast quarter and the East half of the Northwest quarter and the East half of the West half of the Northwest quarter of Section Seventeen (17) in Township Twenty-two (22) North, Range Six (6) West, M. D. B. & M.

Also that portion of the South half of Section Seventeen (17) in Township Twenty-two (22) North, Range Six (6) West, M. D. B. & M., as follows, to wit:

Beginning at a point on the line between the west half and the east half of the Northwest quarter of the Southwest quarter of said Section Seventeen (17) and distance Twenty-five chains North of the Southeast corner of the West half of the West half of the Southwest quarter of said Section Seventeen (17); thence East and parallel with the South line of said Section Seventeen (17) and distance Seventy chains; more or less, to the line between Sections Sixteen and Seventeen; thence North along the line between said Sections Sixteen and Seventeen distance fifteen chains, more or less, to the Northeast corner of the Southeast quarter of said Section Seventeen, thence West along the line between the North half and the South half of Section Seventeen distance Seventy chains, more or less, to the Northeast corner of the West half of the West half of the Southwest quarter of said Section Seventeen; thence South along the line between the West half and the East half of the West half of the Southwest quarter of said Section Seventeen and distance fifteen chains, more or less, to the place of beginning, containing three hundred and eighty-five acres of land, more or less.

M. O. Harling (SEAL)
J D Harling (SEAL)

STATE OF CALIFORNIA,)
COUNTY OF YOLO,) SS.

On this 11th day of May, 1923, before me, ARTHUR C. HUSTON, JR., a Notary Public in and for the County of Yolo, personally appeared M. O. Harling and J. D. Harling, known to me to be the same persons whose names are subscribed to the within instrument, and the trustees under the Trust Deed therein mentioned, and they duly acknowledged to me that they executed the same as such trustee.

Arthur C Huston Jr
Notary Public in and for the County of Yolo, State of California.

(SEAL)

Recorded at request of Bank of Italy, May 14, A. D., 1923, at 14 minutes past 9 o'clock, A. M., in Book 84 of Deeds, page 266, Records of Glenn County.

Mrs. Mary Moore,
County Recorder.

1544 S.

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said party of the second part, its successors and assigns forever, free and clear of all liens and incumbrances, those certain three phase, sixty-six hundred volt, pole and wire electric distribution lines, including transformers, together with the rights of way for the maintenance and operation of said lines, situate in the Counties of Glenn and Butte, State of California, belonging to the party of the first part and extending from Hamilton City substation to the pumping plant formerly owned by the party of the first part in Section 33, Township 23 north, Range 1 west, M. D. B. & M., together with the contracts for furnishing, and the business of supplying, electricity to the consumers of the party of the first part who were heretofore furnished with electricity by means thereof.

The location of said lines is more particularly shown and delineated upon the blue-print map which is hereunto annexed, marked Exhibit "A", and made a part hereof, and the materials constituting such lines are set forth in the inventory which is hereunto annexed, marked Exhibit "B", and made a part hereof.

This conveyance is executed by the party of the first part pursuant to the authority granted to it by the Railroad Commission of the State of California in and by its orders known, respectively, as Decision No 11182 and 11524.

IN WITNESS WHEREOF, on this 19th day of March, 1923, the party of the first part has executed these presents.

(CORPORATE SEAL)

SACRAMENTO VALLEY SUGAR COMPANY,
By Edgar Baruch
Its President.
and by E. M. Jackson
Its Secretary.

Approved as to form:
N. H. Susman

State of California,)
County of Los Angeles) ss.

On this 19th day of March, in the year nineteen hundred and 23, A. D., before me Miranda W. Olds, a Notary Public in and for the said County of Los Angeles, State of California, residing therein, duly commissioned and sworn, personally appeared Edgar Baruch known to me to be the President and E. M. Jackson known to me to be the Secretary of Sacramento Valley Sugar Company the Corporation which executed the within and annexed instrument, and acknowledged to me that such Corporation executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal in said county the day and year in this certificate first above written.

(SEAL)
My Commission Expires Sep. 24,1923

Miranda W. Olds
Notary Public in and for Los Angeles County, State of California.

EXHIBIT "B".
Inventory of Materials.

4	40' R. C. Poles
71	35' R. C. Poles
49	30' R. C. Poles
54	2 Pin x arms (3¼"x 4¼" x 30")
170	3 Pin x arms (3¼"x 4¼" x 26")
20	4 Pin x arms (3¼"x 4¼" x 5')
7	6 Pin x arms (3¼"x 4¼" x 7')
165	Hemingrey Triple Petticoat #1 Glass Insulators
80	Porcelain Insulators
320	Porcelain Insulators
75	#540 Starin Insulators
250	Ft. 1/4" x 1 1/4" x 26" Galv. Braces
155	3/8" x 5" Galv. Lags
65	5/8" x 12" Galv. M. Bolts
232	3/8" x 4½" Galv. M. Bolts
26	5/8" x 16" Galv. M. Bolts
52	5/8" x 16" Galv. Space Bolts
286	1/2" x 8" Galv. Lags
565	1 1/2" x 9" Locust Pins
27	5/8" x 8' Galv. Anchor Rods
1000	Ft. 1/4" Guy Cable
50	3 bolt clamps
200	Lbs. #10 B. C. Wire
1650	Lbs. # 8 B. C. Wire
7650	Lbs. # 6 B. C. Wire
2	1 1/2 K. W. 6600/110-220 V.G.E.Type H. Transformers
3	1 1/2 K. W. 6600/110-220 V. West. Transformers.

Recorded at request of Am. Railway Express Co., May 14, A. D. 1923, at 50 minutes past 10 o'clock, A. M., in Book 84 of Deeds, page 268, Records of Glenn County.

Mrs. Mary Moore,
County Recorder.

1551 S.

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83-OR-463

#7

WITNESS my hand the 11th day of August, 1936.

D. J. Hannah

Helen Hannah

STATE OF CALIFORNIA }
____ County of ALAMEDA } ss.

On 11th August 1936 before me, P. Q. Rothrock, a Notary Public, in and for said ____ County and State, personally appeared D. J. Hannah and Helen Hannah, his wife, known to me to be the persons whose name is subscribed to the within instrument, and acknowledged to me that they executed the same.

P. Q. Rothrock

(SEAL)

Notary Public in and for the ____ County of Alameda State of California.

My commission expires
Sept 10, 1938
1936

(endorsed) (Individual Grantor) Grant Deed D. J. Hannah and Helen Hannah, his wife, To Edith McDaniel

Recorded at the Request of Edith McDaniel September 15, 1936 at 45 min. past 9 o'clock A. M., in Volume 83 of Official Records, page 462 Glenn County Records.

#2646Z Jessie A. King Recorder.

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3-35--500 L-7362

SOUTHERN PACIFIC COMPANY
(Pacific Lines)
(Approved as to Form by General Solicitor)
March 11, 1935.

ROAD OR HIGHWAY CROSSING TRACKS AT GRADE

THIS INDENTURE, made this 26th day of August, 1936, between SOUTHERN PACIFIC COMPANY, a corporation of the State of Kentucky, and its Lessor, SOUTHERN PACIFIC RAILROAD COMPANY, a corporation herein collectively termed first party, and COUNTY OF GLENN, a political subdivision of the State of California, second party, and HOLLY SUGAR CORPORATION, a corporation, third party;

Witnesseth: First and third party hereby grants to second party (subject to the conditions hereinafter contained) the right to construct and maintain a highway upon and across that certain parcel of land situated in the County of Glenn, State of California and lying within the railroad right of way of first party, and described as follows, to-wit:

A portion of the Southern Pacific Railroad Company's right of way lying in the Capay Rancho, County of Glenn, State of California, and more particularly described as follows:

COMMENCING at a point which bears south 7°22'18" east a distance of 2479.01 feet from the center of a stone monument marking the southeast corner of the official townsite of Hamilton, as filed in the records of Glenn County; said point being distant 35 feet westerly measured at right angles from the center line of Southern Pacific Railroad Company's Colusa Branch main track at Engineer Station "R" 4134+04.5; thence north 29°31' west a distance of 50.0 feet; thence north 60°29' east a distance of 85.0 feet to a point on the easterly line of said right of way; thence south 29°31' east along said easterly line a distance of 50.0 feet; thence south 60°29' west a distance of 85.0 feet to the point of commencement, containing an area of 0.098 of an acre, more or less, as shown in tinted yellow coloring on white print, Sacramento Division Drawing U-1287-a, dated August 5, 1936, hereto attached and made a part hereof.

The crossing of said highway over the tracks of first party shall be constructed and maintained at the grade of said tracks now or hereafter existing.

This grant is subject and subordinate to the prior and continuing right and obligation of first party and its successors to use and maintain its entire railroad right of way and property in performance of its public duty as a common carrier, and is also subject to the right and power of first party and its successors in interest or ownership of the said railroad right of way and property to use the said lands hereinabove described, or any and all parts thereof, for all purposes which are consistent with the enjoyment of the easement for highway purposes herein granted to second party.

And should second party, its successors or assigns, at any time abandon the use of the said land or any part thereof, or fail at any time to use the same for said purpose for a continuous period of one year, the right hereby given shall cease to the extent of the use so abandoned or discontinued, and first party shall at once have the right, in addition to but not in qualification of the rights hereinabove reserved, to resume exclusive possession of the said land, or the part thereof the use of which is so discontinued or abandoned.

Second party in consideration of this grant shall construct said highway and keep the same in good condition and repair on the premises hereinabove described as long as the same shall be maintained thereon, including any and all paving thereof and other highway improvements at its sole cost and expense; provided, however, that first party shall furnish the materials and perform the work of constructing and maintaining said crossing between the rails of said tracks and for a distance of not more than two (2) feet from the outside of said rails, and second party expressly agrees to reimburse first party for the cost and expense incurred by first party in furnishing the materials and performing said construction and maintenance work promptly upon receipt of bills therefor. Second party further agrees to indemnify and save harmless first party against any and all cost and expense incurred by second party as here in this paragraph provided.

As a further consideration for this grant second party agrees to reimburse first party for any and all assessments which may be levied by order of any authorized, lawful body against the property of first party (and which may have been paid by first party) to defray any part of the cost or expense incurred by second party in connection with the construction, reconstruction, widening, rewidening and/or maintenance of said highway.

This instrument is subject to all valid and existing contracts, leases, liens or encumbrances or claims of title which may affect the said property, and the word GRANT as used herein shall not be construed as a covenant against the existence of any thereof.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be executed by their respective officers thereunto duly authorized, the day and year first above written.

(In quadruplicate)

HOLLY SUGAR CORPORATION,

By W. L. Lawson
Vice President

Attest E C Fisk
Asst Secretary

(Seal of Holly Sugar Corporation)
New York Incorporated 1916)

SOUTHERN PACIFIC COMPANY,

By W A Worthington
Vice President

Attest Roy G Hillebrand
Assistant Secretary

(Seal of Southern Pacific Company Kentucky)

Approved as to Form

MORRISON, HOMFELD, FOERSTER, SHUMAN & CLARK

By James P Blaisdell
Name Date

SOUTHERN PACIFIC RAILROAD COMPANY,

By Roy G Hillebrand
Second Vice President

Attest D P Ewing
Assistant Secretary

(Seal of Southern Pacific Railroad Company)

Description Correct:
E. E. Mayo
Asst. Chief Engineer.

Correct as to Corporate Owner: (Notarial Seal) (Frank Harvey)
M. N. Haynes
For Valuation Officer

Form Approved:
A. E. Stewart
Contract Attorney

COUNTY OF GLENN, a political subdivision of the State of California,

By Henry McMahon
Chairman, Board of Supervisors

Attest W B Sale
Clerk, Board of Supervisors

(Seal of Board of Supervisors Glenn Co

12-35-530

Approved as to form
by General Solicitor
November 12, 1935.

L-3527

NOTARIAL ACKNOWLEDGMENT

SOUTHERN PACIFIC COMPANY

SOUTHERN PACIFIC RAILROAD COMPANY

STATE OF CALIFORNIA, }
CITY AND COUNTY OF SAN FRANCISCO. } ss.

On this 2d day of September, 1936, before me FRANK HARVEY, a Notary Public in and for said City and County of San Francisco, State of California, personally appeared W. A. WORTHINGTON and ROY G. HILLEBRAND, known to me to be the VICE PRESIDENT and ASSISTANT SECRETARY, respectively, of SOUTHERN PACIFIC COMPANY, one of the corporations that executed the within instrument, and known to me to be the persons who executed the within instrument on behalf of Southern Pacific Company; and each of them acknowledged to me that such corporation executed the same; and personally appeared ROY G. HILLEBRAND and D. P. EWING, known to me to be the SECOND VICE PRESIDENT and ASSISTANT SECRETARY, respectively, of SOUTHERN PACIFIC RAILROAD COMPANY, one of the corporations that executed the within instrument, and known to me to be the persons who executed the within instrument on behalf of Southern Pacific Railroad Company; and each of them acknowledged to me that such corporation executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, at my office, in the said City and County of San Francisco, State of California, on the day and year in this certificate first above written.

Frank Harvey

(SEAL)

Notary Public in and for the City and County of San Francisco, State of California.

STATE OF CALIFORNIA,)
: SS.
COUNTY OF GLENN.)

On this 31st day of August, 1936, before me J. Leo Feeney, a Notary Public in and for said County of Glenn, State of California, personally appeared Henry McMahon, known to me to be the Chairman of the Board of Supervisors, and W. B. Sale, known to me to be the Clerk of the Board of Supervisors of the County of Glenn, the political subdivision that executed the within instrument, and known to me to be the persons who executed the within instrument on behalf of said County of Glenn, and each of them acknowledged to me that such political subdivision executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal at my office, in the said County of Glenn, State of California, on the day and year in this certificate first above written.

J Leo Feeney

(SEAL)

Notary Public in and for the County of Glenn, State of California.

Road:

BE IT RESOLVED by the board of supervisors of the County of Glenn that the grant of right of way from the Southern Pacific Railroad Company, a corporation and Holly Sugar Corporation, a corporation, to the County of Glenn, be and the same is hereby accepted by said Board of Supervisors for and on behalf of the County of Glenn, State of California. Following is a description of said right of way, to-wit:

A portion of the Southern Pacific Railroad Company's right of way lying in the Capay Rancho, County of Glenn, State of California, and more particularly described as follows:

COMMENCING at a point which bears south 7° 22' 18" east a distance of 2479.01 feet from the center of a stone monument marking the southeast corner of the official townsite of Hamilton, as filed in the records of Glenn County; said point being distant 35 feet westerly measured at right angles from the center line of Southern Pacific Railroad Company's Colusa Branch main track at Engineer Station "R" 4134+04.5; thence north 29° 31' west a distance of 50.0 feet; thence north 60°29' east a distance of 85.0 feet to a point on the easterly line of said right of way; thence south 29° 31' east along said easterly line a distance of 50.0 feet; thence south 60° 29' west a distance of 85.0 feet to the point of commencement, containing an area 0.098 of an acre, more or less, as shown in tinted yellow coloring on white print, Sacramento Division Drawing U-1287-a, dated August 5, 1936, hereto attached and made a part hereof.

State of California, }
County of Glenn } ss.

I, W. B. SALE, County Clerk, and ex-officio Clerk of the Board of Supervisors, in and for the County of Glenn, State of California, do hereby certify that the above and foregoing is a full, true and correct copy of the original resolution of acceptance as passed and recorded in the minutes of said board on August 27, 1936 as the same remains of record, and on file in my office.

WITNESS my hand and official seal, affixed this 15 day of Sept, A. D. 1936.

(Seal of Board of Supervisors)
(Glenn County Cal.)

W B Sale Clerk.

By _____ Deputy Clerk.

Recorded at Request of W. B. SALE, County Clerk September 15, 1936 at 25 min. past 10 o'clock A. M. and Recorded in volume 83 of Official Records page 463 Glenn County records

#2647R

Jessie A. King Recorder.

EJB - 8/24/36 - X

7-34-500

L-7561

#8

SOUTHERN PACIFIC COMPANY--Pacific Lines
(Approved as to Form by General Solicitor)
June 13, 1934

ROAD OR HIGHWAY

WHERE NO CROSSING OF TRACKS IS INVOLVED

THIS INDENTURE, made the 26th day of August, 1936, between SOUTHERN PACIFIC COMPANY, a corporation of the State of Kentucky, and its Lessor, SOUTHERN PACIFIC RAILROAD COMPANY, a corporation herein collectively termed first party, and COUNTY OF GLENN, a political subdivision of the State of California, second party, and HOLLY SUGAR CORPORATION, a corporation, third party;

Witnesseth; First and third party hereby grants to second party (subject to the conditions hereinafter contained) the right to construct and maintain a highway upon and across that certain parcel of land situated in the County of Glenn, State of California and lying within the railroad right of way and property of first party, and described as follows, to-wit

A portion of the Capay Rancho lying in the County of Glenn, State of California, and more particularly described as follows:

BEGINNING at a point which is the intersection of the westerly right of way line of the Southern Pacific Railroad Company with the south line of First Street in the town of Hamilton, which point bears south 69°28' west a distance of 50.62 feet from the center line of main track of Southern Pacific Railroad Company's Colusa Branch at Engineer Station "H" 4157+96.5, said point also bears south 69°28'

west a distance of 961.24 feet from the center of a stone monument marking the southeast corner of the official townsite of Hamilton as filed in the records of Glenn County; thence north 69°23' east a distance of 15.19 feet; thence south 29°31' east a distance of 2443.83 feet; thence south 60°29' west a distance of 15.0 feet to a point on said westerly right of way line; thence north 29°31' west along said westerly right of way line a distance of 2446.20 feet to the point of beginning, containing an area of 0.842 of an acre, more or less, as shown tinted in yellow coloring on white print, Sacramento Division Drawing U-1287-a, dated August 5, 1936, hereto attached and made a part hereof.

This grant is subject and subordinate to the prior and continuing right and obligation of first party and its successors to use and maintain its entire railroad right of way and property in performance of its public duty as a common carrier, and is also subject to the right and power of first party and its successors in interest or ownership of the said railroad right of way and property to use the said lands hereinabove described, or any and all parts thereof, for all purposes which are consistent with the enjoyment of the easement for highway purposes herein granted to second party.

And should second party, its successors or assigns, at any time abandon the use of the said land or any part thereof, or fail at any time to use the same for said purpose for a continuous period of one year, the right hereby given shall cease to the extent of the use so abandoned or discontinued, and first party shall at once have the right, in addition to but not in qualification of the rights hereinabove reserved, to resume exclusive possession of the said land, or the part thereof the use of which is so discontinued or abandoned.

The second party shall keep the said highway in good condition and repair on the premises hereinabove described as long as the same shall be maintained thereon.

In consideration of this grant second party further agrees to reimburse first party for any and all assessments which may be levied by order of any authorized, lawful body against the property of first party (and which may have been paid by first party) to defray any part of the cost or expense incurred by second party in connection with the construction and/or maintenance of said highway.

This instrument is subject to all valid and existing contracts, leases, liens or encumbrances or claims of title which may affect the said property, and the word GRANT as used herein shall not be construed as a covenant against the existence of any thereof.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be executed by their respective officers thereunto duly authorized, the day and year first above written.

(In quadruplicate)

SOUTHERN PACIFIC COMPANY,

(Seal of Southern Pacific Company Kentucky)

By W A Worthington
Vice President

Attest Roy G Hillebrand
Assistant Secretary

Description Correct:
E. E. Mayo
Asst. Chief Engineer

SOUTHERN PACIFIC RAILROAD COMPANY,

Correct as to Corporate Owner:
M. R. Haynes
For Valuation Officer

(Seal of Southern Pacific Railroad Company)

By Roy G Hillebrand
Second Vice President

Attest D P Ewing
Assistant Secretary

Form Approved:
A. E. Stewart
Contract Attorney

COUNTY OF GLENN, a political subdivision of the State of California,

(Seal of Board of Supervisors Glenn County Cal.)

Approved as to Form
MORRISON, HOHFELD, FOERSTER, SHUMAN & CLARK

By Henry McMahon
Chairman, Board of Supervisors

By James P Blaisdell
Name Date

Attest W B Sale
Clerk, Board of Supervisors

(Notarial Seal - Frank Harvey)

HOLLY SUGAR CORPORATION,

By W. L. Lawson Vice President

(Seal of Holly Sugar Corporation New York.

Attest E C Fisk Asst Secretary

12-35--500 L-3527

Approved as to form
by General Solicitor
November 12, 1935.

NOTARIAL ACKNOWLEDGMENT

SOUTHERN PACIFIC COMPANY

SOUTHERN PACIFIC RAILROAD COMPANY

STATE OF CALIFORNIA,
CITY AND COUNTY OF SAN FRANCISCO. } ss.

On this 2d day of September, 1936, before me FRANK HARVEY, a Notary Public in and for said City and County of San Francisco, State of California, personally appeared W. A. WORTHINGTON and ROY G. HILLEBRAND, known to me to be the VICE PRESIDENT and ASSISTANT SECRETARY, respectively, of SOUTHERN PACIFIC COMPANY, one of the corporations that executed the within instrument, and known to me to be the persons who executed the within instrument on behalf of Southern Pacific Company; and each of them acknowledged to me that such corporation executed the same; and personally appeared ROY G. HILLEBRAND and D. P. EWING, known to me to be the SECOND VICE PRESIDENT and ASSISTANT SECRETARY, respectively, of SOUTHERN PACIFIC RAILROAD COMPANY, one of the corporations that executed the within instrument, and known to me to be the persons who executed the within instrument on behalf of Southern Pacific Railroad Company; and each of them acknowledged to me that such corporation executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, at my office, in the said City and County of San Francisco, State of California, on the day and year in this certificate first above written.

Frank Harvey

(SEAL) Notary Public in and for the City and County of San Francisco, State of California.

STATE OF CALIFORNIA, }
COUNTY OF GLENN. } SS.

On this 31st day of August, 1936, before me J. Leo Feeney, a Notary Public in and for said County of Glenn, State of California, personally appeared Henry McMahon, known to me to be the Chairman of the Board of Supervisors, and W. B. Sale, known to me to be the Clerk of the Board of Supervisors of the County of Glenn, the political subdivision that executed the within instrument, and known to me to be the persons who executed the within instrument on behalf of said County of Glenn, and each of them acknowledged to me that such political subdivision executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal at my office, in the said County of Glenn, State of California, on the day and year in this certificate first above written.

J Leo Feeney

(SEAL) Notary Public in and for the County of Glenn, State of California.

Road:

BE IT RESOLVED by the board of supervisors of the County of Glenn that the grant of right of way from the Southern Pacific Railroad Company, a corporation, and Holly Sugar Corporation, a corporation, , to the County of Glenn, be and the same is hereby accepted by said Board of Supervisors for and on behalf of the County of Glenn, State of California. Following is a description of said right of way, to-wit:

A portion of the Capay Rancho lying in the County of Glenn, State of California, and more articularly described as follows:

BEGINNING at a point which is the intersection of the westerly right of way line of the Southern Pacific Railroad Company with the south line of First Street in the

town of Hamilton, which point bears 69° 28' west a distance of 50.62 feet from the center line of main track of Southern Pacific Railroad Company's Colusa Branch at Engineer Station "H" 4157+96.5, said point also bears south 69° 23' west a distance of 961.24 feet from the center of a stone monument marking the southeast corner of the official townsite of Hamilton as filed in the records of Glenn County; thence north 69°28' east a distance of 15.19 feet; thence south 29°31' east a distance of 2443.83 feet; thence south 60°29' west a distance of 15.0 feet to a point on said westerly right of way line; thence north 29°31' west along said westerly right of way line a distance of 2446.20 feet to the point of beginning, containing an area of 0.342 of an acre, more or less, as shown tinted in yellow coloring on white print, Sacramento Division Drawing U-1287-a, dated August 5, 1936, hereto attached and made a part hereof.

State of California, }
County of Glenn } ss.

I, W. B. SALE, County Clerk, and ex-officio Clerk of the Board of Supervisors in and for the County of Glenn, State of California, do hereby certify that the above and foregoing is a full, true and correct copy of the original resolution of acceptance as passed and recorded in the minutes of said board on August 27, 1936 as the same remains of record, and on file in my office.

WITNESS my hand and official seal, affixed this 15 day of Sept, A. D. 1936

(Seal of Board of Supervisors Glenn County Cal.)

W B Sale Clerk.

By _____ Deputy Clerk.

Recorded at Request of W. B. SALE, County Clerk September 15, 1936 at 30 min. past 10 o'clock A. M. and Recorded in volume 83 of Official Records page 466 Glenn County records #2648E

Jessie A. King Recorder.

83 OR-469
#9

GRANT DEED

FOR AND IN CONSIDERATION of the sum of Ten and no/100--Dollars to them in hand paid, HOLLY SUGAR CORPORATION, a New York corporation, with its principal place of business at Colorado Springs, Colorado, Does hereby grant unto The County of Glenn, State of California, all that real property situated in the County of Glenn, State of California, bounded and described as follows:

A strip of land twenty-five (25) feet wide lying west of and adjoining the west right of way line of the Colusa & Hamilton Railroad more particularly described as follows:

Beginning at a point where the west right of way line of the Colusa & Hamilton Railroad intersects the south line of First Street of the Town of Hamilton as per the official map of the said Town of Hamilton on file and of record in the office of the County Recorder of the County of Glenn, State of California, in Book One of Maps and Surveys, as page 163, said point being westerly of Engineer Survey Station "H" 4157+96.5; thence along the west line of said railroad right of way south 29 degrees 37' east 2296.5 feet more or less to a point that is westerly at right angles fifty (50) feet from Engineer Survey Station "H" 4135+00; thence continuing at right angles westerly twenty-five (25) feet; thence running along and twenty-five (25) feet parallel to said westerly right of way line of said railroad; north 29 degrees 37' west 2296.5 feet more or less to the South line of said First Street of said Town of Hamilton; thence easterly along said line of said First Street twenty-five (25) feet more or less to the place of beginning and containing 1.317 acres more or less;

Excepting from the above described property that portion on which a shed is located.
"The aforesaid conveyance is made upon the following express conditions:
1. That the land herein conveyed is to be used only as a right of way for road, and if second party at any time ceases, for the period of one year, to use it for such purpose, then the title herein conveyed shall revert to the party of the first part as if this grant had never been made.
2. Any irrigation ditches, culverts or water ways and fences which may be necessary,--either under or along-side of the right of way conveyed, because of said right of way cutting or dividing the fields or present irrigation ditches of the first party, are to be made and constructed at the expense of the first party.

WITNESS our hands this 4th day of August, 1936.

HOLLY SUGAR CORPORATION

(Seal of Holly Sugar Corporation New York Incorporated 1916)

G. W. Repetti
Vice President

W M Trant
Secretary

STATE OF COLORADO }
COUNTY OF EL PASO } ss.

On this 4th day of August, in the year of our Lord one thousand nine hundred and thirty-six, before me, OTHO S. NEWSOM, a Notary Public in and for said County and State, residing therein, duly commissioned and sworn, personally appeared G. W. REPETTI known to me to be the Vice President, and W. M. TRANT, known to me to be the Secretary of the corporation described in and that executed the within instrument, and known to me to be the persons who executed the within instrument on behalf of the corporation therein named, and acknowledged to me that such corporation executed the same.
IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, the day and year in this certificate first above written.

Otho S Newsom
(SEAL) Notary Public in and for said County and State.
My Commission expires September 17, 1936

Road:

BE IT RESOLVED by the board of supervisors of the County of Glenn that the grant of right of way from the Holly Sugar Corpration, a corporation, to the County of Glenn, be and the same is hereby accepted by said Board of Supervisors for and on behalf of the County of Glenn, State of California. Following is a description of said right of way, to-wit:

A strip of land twenty-five (25) feet wide lying west of and adjoining the west right of way line of the Colusa & Hamilton Railroad more particularly described as follows:

Beginning at a point where the west right of way line of the Colusa &BHamilton Railroad intersects the south line of First Street of the Town of Hamilton as per the official map of the said Town of Hamilton on file and of record in the office of the County Recorder of the County of Glenn, State of California, in Book One of Maps and Surveys, as page 163, said point being westerly of Engineer Survey Station "H" 4157+96.5; thence along the west line of said railroad right of way south 29 degrees 37' east 2296.5 feet more or less to a point that is westerly at right angles fifty (50) feet from Engineer Survey Station "H" 4135+00; thence continuing at right angles westerly twenty-five (25) feet; thence running along and twenty-five (25) feet parallel to said westerly right of way line of said railroad; north 29 degrees 37' west 2296.5 feet more or less to the South line of said First Street of said Town of Hamilton; thence easterly along said line of said First Street twenty-five (25) feet more or less to the place of beginning and containing 1.317 acres more or less; Excepting from the above described property that portion on which a shed is located.

The aforesaid conveyance is made upon the following express conditions:

1. That the land herein conveyed is to be used only as a right of way for road, and if second party at any time ceases, for the period of one year, to use it for such purpose, then the title herein conveyed shall revert to the party of the first part as if this grant had never been made

2. Any irrigation ditches, culverts or water ways and fences which may be necessary, -- either under or along-side of the right of way conveyed, because of said right of way cutting or dividing the fields or present irrigation ditches of the first party, are to be made and constructed at the expense of the first party.

State of California,)
) ss.
County of Glenn)

I, W. H. SALE, County Clerk, and ex-officio Clerk of the Board of Supervisors, in and for the County of Glenn, State of California, do hereby certify that the above and foregoing is a full, true and correct copy of the original Resolution of acceptance as passed and recorded in the minutes of said board on August 27, 1936 as the same remains of record, and on file in my office.

WITNESS my hand and official seal, affixed this 15 day of Sept, A. D. 1936

(Seal of Board of Supervisors
Glenn County Cal.)

W H Sale Clerk.

By _____
Deputy Clerk.

RECEIVED
COLORADO SPRINGS
JUL 20 1936
Office
HOLLY SUGAR CORPORATION

Recorded at Request of W. H. SALE, County Clerk September 15, 1936 at 32 min. past 10 o'clock A. M. and Recorded in volume 23 of Official Records page 449 Glenn County records #26492

Jessie A. King Recorder.

***

in this certificate first above written.

(SEAL)

Ruth W. George
Notary Public in and for the
City and County of San Francisco,
State of California.

My Commission Expires September 19, 1950.

RECORDED AT REQUEST OF GLENN COUNTY TITLE CO. June 3, 1948, at 52 min. past 9 o'clock A. M. and Recorded in volume 216 of Official Records, page 358 Glenn County Records.

Fees $2.80 Jessie A. King Recorder.

#1594 S By Marian Pederson Deputy Recorder.

$1.10 Int. Rev. Stamps Attached & Cancelled
GLENN COUNTY TITLE CO. LG

THIS INDENTURE, made this 1st day of December, 1947, between HOLLY SUGAR CORPORATION, a corporation, first party, and SOUTHERN PACIFIC RAILROAD COMPANY, a corporation of the States of California, Arizona and New Mexico, second party;

WITNESSETH:

That said first party, for and in consideration of the sum of Ten (10) Dollars, lawful money of The United States of America, to it paid by the said second party, the receipt whereof is hereby acknowledged, does by these presents grant unto the said second party and to its successors and assigns forever, the right to construct, reconstruct, use and maintain railroad tracks upon and along the hereinafter described land, and to use said land for railroad purposes.

The land upon and along which this easement is granted is situate, lying and being in the Capay Rancho, County of Glenn, State of California, more particularly described as follows:

PARCEL NO. 1:

BEGINNING at a point in the north line of First Street of said Town of Hamilton, distant South 74°19'27" West, 1180.91 feet from the southeast corner of Hamilton Townsite, according to the Official map thereof recorded March 6, 1906 in Volume I of Maps, page 163, Records of Glenn County, said point also bears North 69°28' East, 9.35 feet, measured along said north line of First Street from the center line of Track "W" at Engineer Station "W"- 0+92.70; thence South 4°02'55" West, parallel with and 8.5 feet easterly, at right angles, from said Track "W", 37.00 feet; thence Southerly, on a curve to the left having a radius of 707.84 feet (the tangent of said curve is last described course and the chord thereof bears South 1°09'11" West, 71.51 feet), an arc distance of 71.51 feet to a point in the south line of said First Street; thence North 69°28' East, along last said south line, 4.59 feet to a point distant westerly, 8.5 feet from the center line of Track No. 2; thence Southerly, concentric with and distant 8.5 feet westerly, measured radially from said center line of track No. 2, along a curve to the left having a radius of 467.09

feet (the chord of said curve bears South 1°12'08" East, 147.37 feet), an arc distance of 148.00 feet; thence South 79°56'57" West, 12.51 feet to a point that is 8.5 feet easterly, measured radially from the center line of Track No. 1; thence SOUTHERLY, concentric and parallel with and distant 8.5 feet easterly, measured radially and at right angles from said center line of said Track No. 1 the following courses and distances: (1) along a curve to the left, having a radius of 539.97 feet, (chord of which bears South 15°55'47" East, 86.68 feet) an arc distance of 86.77 feet to a point, (2) South 20°32' East, tangent to last described curve at last mentioned point, 772.35 feet to a point that is 8.5 feet easterly at right angles from said center line of Track No. 1 at Engineer Station "D"-14+64.12, (3) along a curve to the left, having a radius of 628.28 feet (chord of which bears South 37°19'30" East, 363.02 feet) an arc distance of 368.26 feet to a point, and (4) South 54°07' East, tangent to last described curve at last mentioned point, 30.04 feet to a point that is 8.5 feet northeasterly at right angles from said center line of Track No. 1 at Engineer Station "D"-18+67.3; thence South 35°53' West, 17.0 feet; thence NORTHERLY, concentric and parallel with and distant 8.5 feet westerly, measured radially and at right angles from said center line of said Track No. 1 the following courses and distances: (1) North 54°07' West, 30.04 feet, (2) along a curve to the right having a radius of 645.28 feet, (the tangent of said curve is last described course and the chord thereof bears North 37°19'30" West, 372.84 feet) an arc distance of 378.22 feet to a point, (3) North 20°32' West, tangent to last described curve at last mentioned point, 772.35 feet to a point that is 8.5 feet westerly at right angles from said center line of Track No. 1 at Engineer Station "D"- 6+91.77, (4) along a curve to the right having a radius of 556.97 feet, (the tangent of said curve is last described course and the chord thereof bears North 9°26'30" West, 214.30 feet) an arc distance of 215.64 feet to a point, (5) North 1°39' East, tangent to last described curve at last mentioned point, 17.44 feet, (6) along a curve to the right having a radius of 724.84 feet (the tangent of said curve is last described course and the chord thereof bears North 5°42'57" East, 102.80 feet) an arc distance of 102.88 feet to a point, and (7) North 9°46'55" East, tangent to last described curve at last mentioned point, 5.26 feet to a point in said north line of First Street; thence North 69°28' East, along last said north line, 26.31 feet to the point of beginning, containing an area of 0.7 of an acre, more or less.

PARCEL NO. 2:

BEGINNING at a point that is distant South 2°54'40" West, 2309.68 feet from the Southeast corner of Hamilton Townsite, according to the official map thereof recorded March 6, 1906 in Volume I of Maps, page 163, Records of Glenn County, said point also being distant 8.5 feet easterly, measured radially from the center line of Track No. 3 at Engineer Station "L1" - 584 + 96.3, said point also being the point of beginning of the strip of land firstly described in deed dated August 26, 1936 from Holly Sugar Corporation to Southern Pacific Railroad Company; thence Northerly, along a curve to the left having a radius of 572.25 feet (chord of which bears North 25°45' West, 105.39 feet) an arc distance of 105.54 feet to a point; thence North 31°02' West, tangent to last described curve at last mentioned point, 446.81 feet to a point that is 8.5 feet easterly at right angles from center line of Track No. 3 at Engineer Station "L1" - 579 + 45.56 (Engineer Station "L1" - 579 + 45.56 Track No. 3 equals Engineer Station "T" - 20 + 59.92, Track No. 2); thence NORTHERLY, parallel and concentric with and distant 8.5 feet easterly, at right angles, from the center line of Track No. 2 the following courses and distances: (1) North 37°24' West, 65.21 feet, (2) along a curve to the left having a radius of 486.18 feet (the tangent of said curve is the last described course and the chord thereof bears North 46°34' West, 154.90 feet), an arc distance of 155.57 feet to a point, (3) North 55°44' West, tangent to last described curve at last mentioned point 8.77 feet, (4) along a curve to the right having a radius of 469.18 feet, (the tangent of said curve is last described course and the chord thereof bears North 52°31'30" West, 52.52 feet), an arc distance of 52.54 feet to a point, (5) North 49°19' West, tangent to last described curve at last mentioned point, 40.22 feet, (6) along a curve to the right having a radius of 628.28 feet (the tangent of said curve is last described course and the chord thereof bears North 34°55'30" West, 312.32 feet), an arc distance of 315.63 feet to a point; (7) North 20°32' West, tangent to last described curve at last mentioned point, 761.40 feet, (8) along a curve to the right having a radius of 450.09 feet, (the tangent of said curve is last described course and the chord thereof bears North 4°40' West, 246.10 feet), an arc distance of 249.28 feet to a point; (9) North 11°12' East, tangent to last described curve at last mentioned point, 75.52 feet, and (10) along a curve to the left having a radius of 467.09 feet (the tangent of said curve is last described course and the chord thereof bears North 9°41'25" East, 24.61 feet), an arc distance

of 24.61 feet to a point in the northerly line of First Street of the Town of Hamilton; thence South 69°28' West, along last said northerly line, 19.50 feet; thence SOUTHERLY, parallel and concentric with and 8.5 feet westerly from the center line of said Track No. 2 the following courses and distances: (1) along a curve to the right having a radius of 450.09 feet (chord bears South 10°17'11" West, 14.35 feet), an arc distance of 14.35 feet to a point, (2) South 11°12' West, tangent to last described curve at last mentioned point, 75.52 feet, (3) along a curve to the left having a radius of 467.09 feet (the tangent of said curve is last described course and the chord thereof bears South 4°40' East, 255.40 feet), an arc distance of 258.70 feet to a point that is 8.5 feet westerly at right angles from Engineer Station "T" - 6+58.76, (4) South 20°32' East, tangent to last described curve at last mentioned point, 761.40 feet, (5) along a curve, to the left having a radius of 645.28 feet, (the tangent of said curve is last described course and the chord thereof bears South 34°55'30" East, 320.77 feet) an arc distance of 324.16 feet to a point, (6) South 49°19' East, tangent to last described curve at last mentioned point, 40.22 feet, (7) along a curve to the left having a radius of 486.18 feet, (the tangent of said curve is last described course and the chord thereof bears South 52°31'30" East, 54.42 feet), an arc distance of 54.45 feet to a point, (8) South 55°44' East, tangent to last described curve at last mentioned point, 8.77 feet, (9) along a curve to the right having a radius of 469.18 feet, (the tangent of said curve is last described course and the chord thereof bears South 46°34' East, 149.49 feet), an arc distance of 150.13 feet to a point, (10) South 37°24' East, tangent to last described curve at last mentioned point, 21.49 feet, and (11) South 34°38'20" East, 75.38 feet to a point that is 8.5 feet westerly at right angles from the center line of said Track No. 3 at Engineer Station "L1" - 579+77.10 (Engineer Station "L1" - 579 + 77.10 of Track No. 3 equals Engineer Station "T" - 20 + 91.02 of Track No. 2); thence South 31°02' East, parallel with and 8.5 feet westerly at right angles from center line of Track No. 3, a distance of 413.13 feet; thence Southeasterly, along a curve to the right having a radius of 555.25 feet, (the tangent of said curve is last described course and the chord thereof bears South 25°45' East, 102.26 feet), an arc distance of 102.40 feet to the most westerly corner of the strip of land described firstly in said deed dated August 26, 1931; thence North 69°32' East, along the northwesterly line of said strip of

land, 17.0 feet to the point of beginning, containing an area of 0.91 of an acre, more or less.

PARCEL NO. 3:

BEGINNING at a point that is distant South 12°08'26" West, 1870.77 feet from the Southeast corner of Hamilton Townsite, according to the official map thereof recorded March 6, 1906 in Volume I of Maps, page 163, Records of Glenn County, said point also being distant 8.5 feet northeasterly at right angles from the center line of Track No. 3 at Engineer Station "L1" - 579 + 45.56 (Engineer Station "L1" - 579 + 45.56 of Track No. 3 equals Engineer Station "T" - 20+59.92 of Track No. 2); thence North 31°02' West, 95.56 feet to a point; thence Northwesterly, on a curve to the right having a radius of 946.54 feet, (the tangent of said curve is the last described course and the chord thereof bears North 25°47' West, 173.22 feet), an arc distance of 173.46 feet to a point; thence North 20°32' West, tangent to last described curve at last mentioned point and being also parallel with and 8.5 feet northeasterly, at right angles, from the center line of Track No. 3, a distance of 1307.80 feet to a point in the southerly line of First Street in the Town of Hamilton (said point being distant 8.5 feet northeasterly, at right angles, from the center line of said Track No. 3); thence South 69°28' West, along last said southerly line 17.0 feet; thence South 20°32' East, parallel with and 8.5 feet southwesterly, at right angles from the center line of said Track No. 3, a distance of 1307.80 feet; thence Southeasterly, on a curve to the left having a radius of 963.54 feet (the tangent of said curve is the last described course and the chord thereof bears South 25°03' East, 151.74 feet), an arc distance of 151.91 feet to a point; thence Southeasterly on a curve to the right having a radius of 486.18 feet (the tangent to said curve at last mentioned point bears South 44°01'50" East and the chord thereof bears South 40°42'55" East, 56.22 feet), an arc distance of 56.26 feet to a point; thence South 37°24' East, tangent to last described curve at last mentioned point, 65.21 feet to the point of beginning, containing an area of 0.59 of an acre, more or less.

PARCEL NO. 4:

BEGINNING at a point that is distant South 18°02'07" West, 1673.28 feet from the southeast corner of Hamilton Townsite, according to the official map thereof recorded March 6, 1906 in Volume I of Maps, page 163, Records of Glenn County, said point also being 8.5 feet northeasterly, measured radially, from the center line of Track No. 3 at Engineer Station "L1" - 576 + 75.0 (Engineer Station "L1" -

576+75.0 Track No. 3 equals Engineer Station "L" 576 + 75.0 Track No. 4); thence North 20°32' West, parallel with and distant 8.5 feet northeasterly, at right angles, from said center line of Track No. 3, a distance of 186.97 feet; thence NORTHWESTERLY, parallel and concentric with and distant southwesterly 8.5 feet at right angles and radially from the center line of Track No. 4 the following courses and distances: (1) North 14°10' West, 107.25 feet, (2) along a curve to the left, having a radius of 946.54 feet (the tangent of said curve is last described course and the chord thereof bears North 17°21' West, 105.12 feet), an arc distance of 105.18 feet to a point, (3) North 20°32' West, tangent to last described curve at last mentioned point, 507.54 feet to a point, (4) along a curve to the left having a radius of 1137.51 feet (the tangent of said curve is the last described course and the chord thereof bears North 23°43' West, 126.34 feet) an arc distance of 126.40 feet to a point, (5) North 26°54' West, tangent to last described curve, 96.63 feet to a point distant 8.5 feet northeasterly at right angles from said center line of Track No. 3, and (6) North 20°32' West, parallel with and distant 8.5 feet northeasterly, at right angles, from said center line of Track No. 3 a distance of 180.04 feet to a point in the Southerly line of First Street of the Town of Hamilton; thence North 69°28' East, along last said southerly line 0.38 feet; thence SOUTHEASTERLY, parallel and concentric with and distant 8.5 feet northeasterly, measured at right angles and radially from the center line of said Track No. 4 the following courses and distances: (1) South 24°08'20" East, 69.36 feet, (2) South 26°54' East, 206.23 feet, (3) along a curve to the right having a radius of 1154.51 feet (the tangent of said curve is the last described course and the chord thereof bears South 23°43' East, 128.22 feet) an arc distance of 128.29 feet to a point; (4) South 20°32' East, tangent to last described curve at last mentioned point, 507.54 feet to a point, (5) along a curve to the right having a radius of 963.54 feet (the tangent of said curve is last described course and the chord thereof bears South 17°21' East, 107.02 feet) an arc distance of 107.07 feet to a point, (6) South 14°10' East, tangent to last described curve at last mentioned point, 216.85 feet, and (7) South 16°58'18" East, 76.30 feet to the point of beginning, containing an area of 0.43 of an acre, more or less.

This deed supersedes in part that certain deed dated March 24, 1930 from Southern Pacific Company to the Southern Pacific Railroad Company, recorded in Book 70 of Deeds, page 121, Records of Glenn County and also that certain deed dated January

5, 1910 from Sacramento Valley Sugar Company to the Southern Pacific Company, recorded in Book 32 of Deeds, page 42, Records of Glenn County.

Notwithstanding the foregoing provisions hereof, this deed is made upon all the conditions expressed in paragraphs numbered 2, 3, 4, and 5 of that certain deed dated January 5, 1910 from Sacramento Valley Sugar Company to the Southern Pacific Company, recorded in Book 32 of Deeds, page 42, Records of Glenn County, and such conditions shall apply to and govern this deed to the same extent as if expressly set forth herein, and upon the further express condition that if at any time in the future, in the judgment of the first party, it should desire to extend the present buildings occupied by it as a Sugar Factory or erect other buildings or structures to cover in whole or in part the ground on which the tracks of second party are now situated that the second party will move said tracks as and when requested by the first party and re-convey to first party its rights in the land covered by the removed tracks, upon first party conveying to it a like right of way over the ground occupied by the new tracks.

IN WITNESS WHEREOF, the said first party has caused these presents to be executed by its officers thereunto duly authorized and its corporate seal to be hereunto affixed the day and year first above written.

{ CORPORATE SEAL
HOLLY SUGAR CORPORATION
NEW YORK
INCORPORATED 1916 }

HOLLY SUGAR CORPORATION,

By V. H. Mann
Vice-President

Attest: W M Trent
Secretary

STATE OF COLORADO)
COUNTY OF EL PASO) SS.

On this first day of December, 1947, before me, the undersigned, a Notary Public in and for said County and State, residing therein, duly commissioned and sworn, personally appeared V. H. MANN, known to me to be the Vice President, and W. M. TRANT, known to me to be the Secretary of the corporation described in and that executed the within instrument, and known to me to be the persons who executed the within instrument on behalf of the corporation therein named, and acknowledged to me that such corporation executed the same.

In Witness Whereof, I have hereunto set my hand and affixed my official seal, the day and year in this certificate first above written.

(SEAL)

Otho S. Newsom
Notary Public in and for the said
County and State

My Commission Expires Aug. 11, 1948

Description Correct;
G J Astrue
D For Chief Engineer
HAJ
Correct as to Corporate Owner:
J B Baker
Valuation Officer
Form Approved:
A E Stewart
RKC Contract Attorney

RRJ 3/20/47

RECORDED AT REQUEST OF GLENN COUNTY TITLE CO. June 3, 1948, at 54 min. past 9 o'clock A. M. and Recorded in volumn 216 of Official Records, page 361 Glenn County Records.

Fees $6.60 Jessie A. King Recorder.

#1595 S BY Marion Pederson Deputy Recorder.

AFD:BF 4-8-47 2-1

THIS LEASE, made and entered into this 10th day of April, 1947, by and between CARROLL COX, of the County of Glenn, State of California, the party of the first part, hereinafter called the "Lessor", and ROBERT H. SMALLWOOD, of the same County and State, the party of the second part, hereinafter called the "Lessee".

W I T N E S S E T H :

That for and in consideration of the rents, covenants and agreements hereinafter agreed to be paid, kept and performed by the lessee, the lessor hereby demises and lets to him for the term of three (3) years commencing October 1, 1947, and ending September 30, 1950, the following described real property situate in the County of Glenn, State of California, to-wit:

> All that part of the West one-half of Section 15, Township 19 North, Range 1 West, M. D. B. & M., formerly owned by Mrs. H. S. Johnston, save and except 40 acres, more or less, more particularly described as follows, to-wit:
>
> 40 acres of land of equal width throughout across the North side of the W½ of the NW¼ and the W½ of of the E½ of the NW¼ of Sec. 15, T. 19 N., R. 1 W., and lying E. of the County road.

THE LESSOR AGREES:

1. That the lessee obeying the covenants and agreements hereof may and shall have peaceable and quiet possession for the full term.

THE LESSEE AGREES:

1. That at the proper season each year he will plant a portion of said land to wheat and to barley, using his own judgment as to the amount of each crop so to be planted, and his own judgment as to what portions of the property will be so planted; that he will use good clean seed therefor, and will tend and care for said crop during the growing season and will thereafter harvest the same and deliver the same into the warehouse at Butte City. All of said grain so harvested therefrom shall be delivered in one lot and the warehouse receipt shall be issued in the proportion of one-third to the lessor and two-thirds to the lessee. That part so delivered to the lessor shall be in new, ten ounce sacks. Final settlement shall be based upon ingoing warehouse weights and title to said one-third part deliverable to the lessor is hereby transferred to him and lessee shall have no right, title or interest in and to said one-third part.

2. That the stubble remaining after the harvesting of the crop shall belong to the parties in the same proportions, namely, two-thirds and one-third, and if said pasturage

11

THIS INDENTURE, made this 2nd day of December, 1959, by and between HOLLY SUGAR CORPORATION, a corporation, Grantor, and SOUTHERN PACIFIC COMPANY, a corporation of the State of Delaware, Grantee;

WITNESSETH:

Grantor, for a valuable consideration, hereby grants to Grantee an easement for transportation and railroad purposes upon, over and across that certain parcel of land situate in Capay Rancho, County of Glenn, State of California, described as follows:

COMMENCING at the most northerly corner of that certain 0.395 acre parcel of land described as Parcel No. 1 in deed dated August 26, 1936 from Holly Sugar Corporation to Southern Pacific Railroad Company, recorded September 14, 1936 in Book 83 of Official Records, Page 447, records of Glenn County, that is distant South 2° 54' 40" West, 2309.68 feet (shown in said deed as South 3° 37' 48" West, 2272.99 feet) from a granite monument marking the southeast corner of Hamilton Townsite as shown on the official map thereof, filed March 6, 1906 in Volume I of Maps, Page 163, records of Glenn County; thence along the northeasterly line of said Parcel No. 1, South 20° 28' 00" East, 446.70 feet to the actual point of beginning of the parcel of land to be described; thence North 69° 32' 00" East, 1.50 feet; thence South 20° 28' 00" East, 51.11 feet; thence Southeasterly along a tangent curve to the left having a radius of 563.14 feet, through a central angle of 26° 08' 00" (chord of said curve bears South 33° 32' 00" East, 254.63 feet) an arc distance of 256.86 feet; thence South 46° 36' 00" East, tangent to said curve, 828.09 feet to a point in the westerly line of the land (100 feet wide) of the Southern Pacific Company as described second in deed dated November 19, 1913 from Sacramento Valley Sugar Company to Colusa and Hamilton Railroad Company (now Southern Pacific Company), recorded February 19, 1914 in Book 45 of Deeds, Page 135, Records of said County; thence South 20° 40' 30" East, along said westerly line, 45.74 feet to a 3/4" iron rod marking the most southerly corner of that certain triangular parcel of land described in that certain deed dated April 21, 1958 from Joseph M. Billiou, et ux, to Holly Sugar Corporation that is distant 50.00 feet westerly, measured at right angles from the center line of the Southern Pacific Company's main track (Colusa-Hamilton Branch) at Engineer Station "R" 4121+55.60; thence North 46° 36' 00" West, along the southwesterly line of said triangular parcel of land, 403.70 feet to a 3/4" iron rod set in the most westerly corner thereof; thence continuing North 46° 36' 00" West, along the northwesterly prolongation of said southwesterly line, 465.53 feet; thence Northwesterly along

280
1-25-60

19-2.63

a tangent curve to the right having a radius of 583.14 feet, through a central angle of 26° 08' 00" (chord of said curve bears North 33° 32' 00" West, 263.68 feet) an arc distance of 265.98 feet; thence North 20° 28' 00" West, tangent to last described curve 51.11 feet; thence North 69° 32' 00" East, 18.50 feet to the actual point of beginning, containing an area of 0.533 of an acre, more or less.

IN WITNESS WHEREOF, Grantor has caused these presents to be executed by its officers thereunto duly authorized and its corporate seal to be hereunto affixed the day and year first herein written.

HOLLY SUGAR CORPORATION,

By _____ President

Attest: _____ Secretary

STATE OF COLORADO }
COUNTY OF EL PASO } ss:

On this 2nd day of December in the year one thousand nine hundred Fifty-nine, before me, Nola F. Winters, a Notary Public in and for said County and State, personally appeared Merrill E. Shoup, known to me to be the President, and Gilbert L. Catlett, known to me to be the Secretary of the corporation that executed the within instrument, and known to me to be the persons who executed the within instrument on behalf of the corporation therein named, and acknowledged to me that such corporation executed the same, and acknowledged to me that such corporation executed the within instrument pursuant to its by-laws or a resolution of its board of directors.

Witness my hand and official seal the day and year in this certificate first above-written.

_____ Notary Public in and for said County and State.

My Commission Expires My Commission expires May 3, 1962

288
1-25-60

Form Approved:

Contract Attorney

Description Correct:

For Chief Engineer

Correct as to Corporate Owner:

Valuation Officer

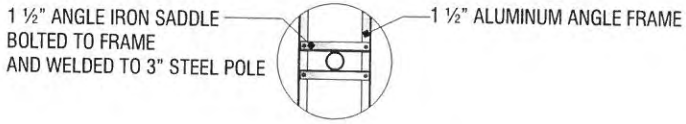
288
1-25-60

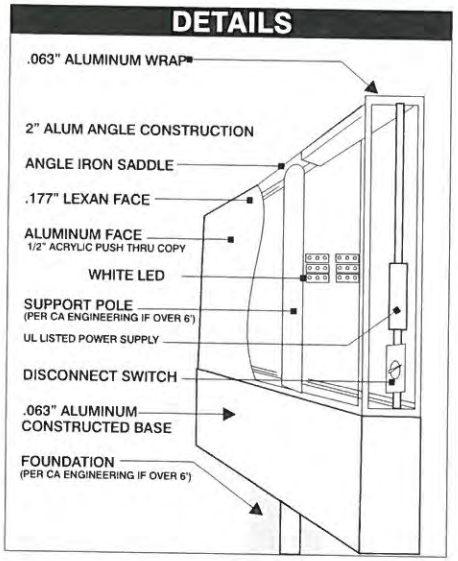
Appendix H

(Separate drawing showing the size, height what will be on the face of the sign per site plan requirements)

D/F LED ILLUMINATED MONUMENT SIGN

ROUTED OUT 1/2" ACRYLIC PUSH THRU COPY/LOGO





HUPP SIGNS & LIGHTING, INC.
530-345-7078
70 Loren Ave. Chico, CA 95928
License #969949,
www.huppsigns.com
SIGN DESIGN
MANUFACTURING
INSTALLATION & SERVICE

THIS DESIGN IS THE EXCLUSIVE PROPERTY OF HUPP SIGNS AND CANNOT BE REPRODUCED, IN WHOLE OR IN PART, WITHOUT HUPP SIGNS'S PRIOR WRITTEN APPROVAL

SALES ASSOCIATE	Kathy Cunningham
JOB NUMBER	
CUSTOMER NAME	CROP PRODUCTION
CUSTOMER ADDRESS	HAMILTON CITY
CUSTOMER PHONE#	
DESIGN PHASE	1design

REVISED BY	DATE
Kathy C	2-10-17

APPROVALS INCLUDE DESIGN, COLOR, SPELLING

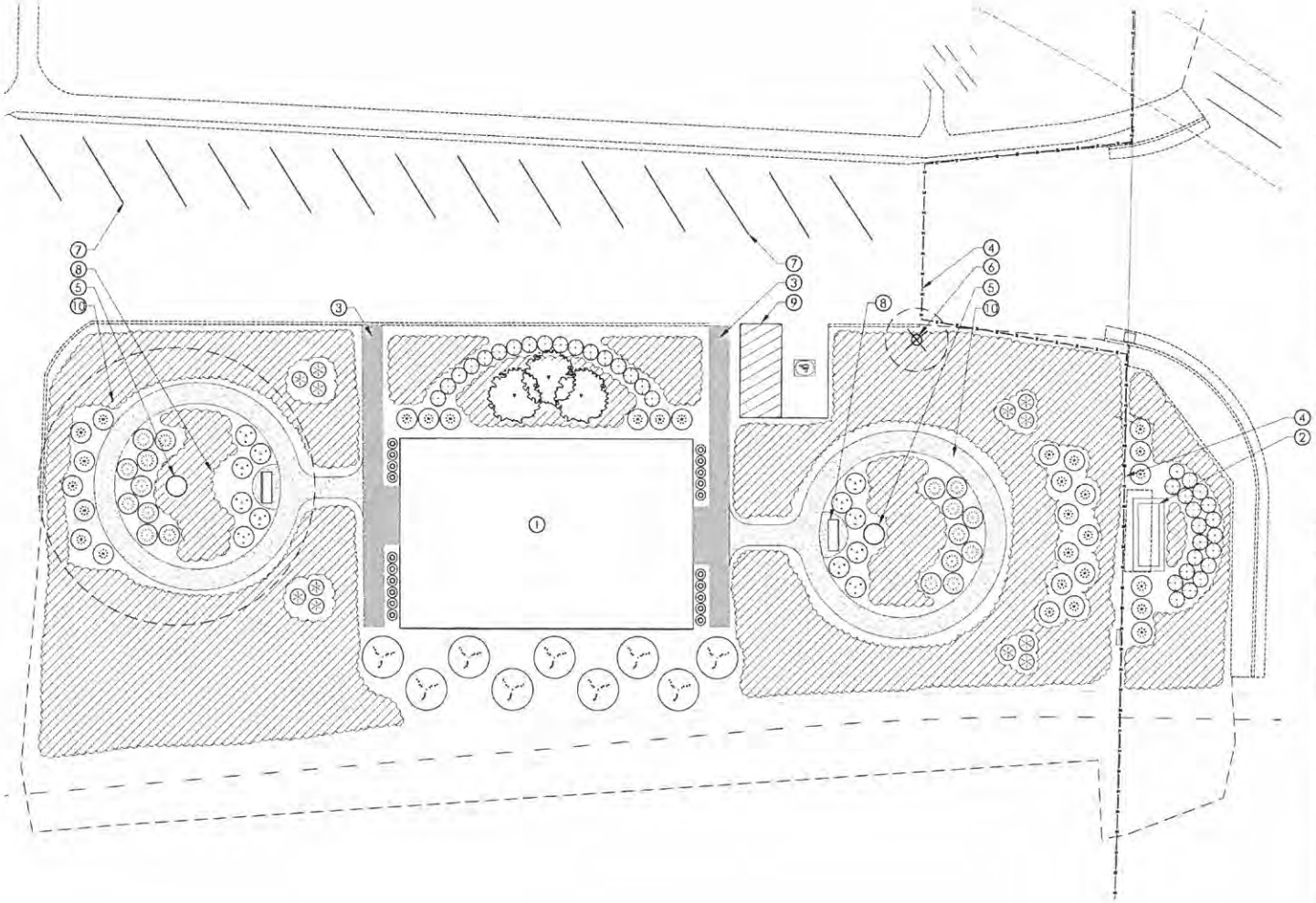
CUSTOMER APPROVAL
PRINT NAME
SIGN NAME
DATE

HUPP STAFF APPROVAL
PRINT NAME
SIGN NAME
DATE

This sign is intended to be installed in accordance with the requirements of article 600 of the national electric code and/or other applicable local codes. This includes proper grounding and bonding of the sign.

Appendix I

(Existing and Proposed Landscaping Per Site Plan Requirements)



PLAN LEGEND

SYMBOL	DESCRIPTION	REMARKS
1	EXISTING OFFICE BUILDING	TO REMAIN. RETAIN AND PROTECT.
2	EXISTING SIGNAGE	TO BE RENOVATED AND OR REPLACED.
3	EXISTING CONCRETE WALKWAY	TO REMAIN. RETAIN AND PROTECT.
4	EXISTING FENCE	TO REMAIN. RETAIN AND PROTECT.
5	EXISTING TREE	TO REMAIN. RETAIN AND PROTECT.
6	EXISTING TREE TO BE REMOVED	TO BE REMOVED
7	EXISTING PARKING	TO REMAIN. RETAIN AND PROTECT.
8	BENCH	6 FOOT BENCH
9	HANDICAP PARKING	SEE PLANS BY OTHERS
10	PATH	4' WIDE DECOMPOSED GRANITE PATH

PLANT LIST

SYMBOL		LATIN NAME/ COMMON NAME	CONTAINER SIZE	QUANTITY	
TREES					
	T-1	EXISTING TREE RETAIN AND PROTECT			(ON SITE)
	T-2	LAGERSTROEMIA INDICA 'WATERMELON RED' WATERMELON RED CRAPE MYRTLE	15 GAL	3	(MULTI- TRUNKED)
SHRUBS					
	S-1	RHAPHIOLEPIS INDICA 'ENCHANTRESS' PINK INDIAN HAWTHORN	1 GAL	17	STANDARD
	S-2	AZALEA 'PRIDE OF DORKING' RED AZALEA	1 GAL	18	STANDARD
	S-3	LOROPETALUM CHINENSE 'BURGUNDY' CHINESE FRINGE FLOWER	1 GAL	20	STANDARD
	S-4	XYLOSMA CONGESTUM SHINY XYLOSMA	1 GAL	9	STANDARD
	S-5	ARCTOSTAPHYLOS DENSIFLORA 'HOWARD MCMINN' MCMINN'S MANZANITA	1 GAL	12	STANDARD
	S-6	ROSA X 'NOARE' PLANT PATENT #11,308 RED GROUND COVER ROSE	1 GAL	36	STANDARD
	S-7	AGAPANTHUS AFRICANUS 'QUEEN ANNE' LILY OF THE NILE	1 GAL	112	PLANT EVERY 48" O.C. SEE DETAIL THIS SHEET
	S-8	ARCTOSTAPHYLOS UVA-URSI 'WOODS COMPACT' WOODS COMPACT KINNIKINNICK	1 GAL	112	PLANT EVERY 48" O.C. SEE DETAIL THIS SHEET

HOLLY SUGAR PLANT SITE

OFFICE BUILDING 555 WEST 1st STREET HAMILTON CITY, CA

PREPARED FOR:
CROP PRODUCTION SERVICES &
GINNO CONSTRUCTION, INC.

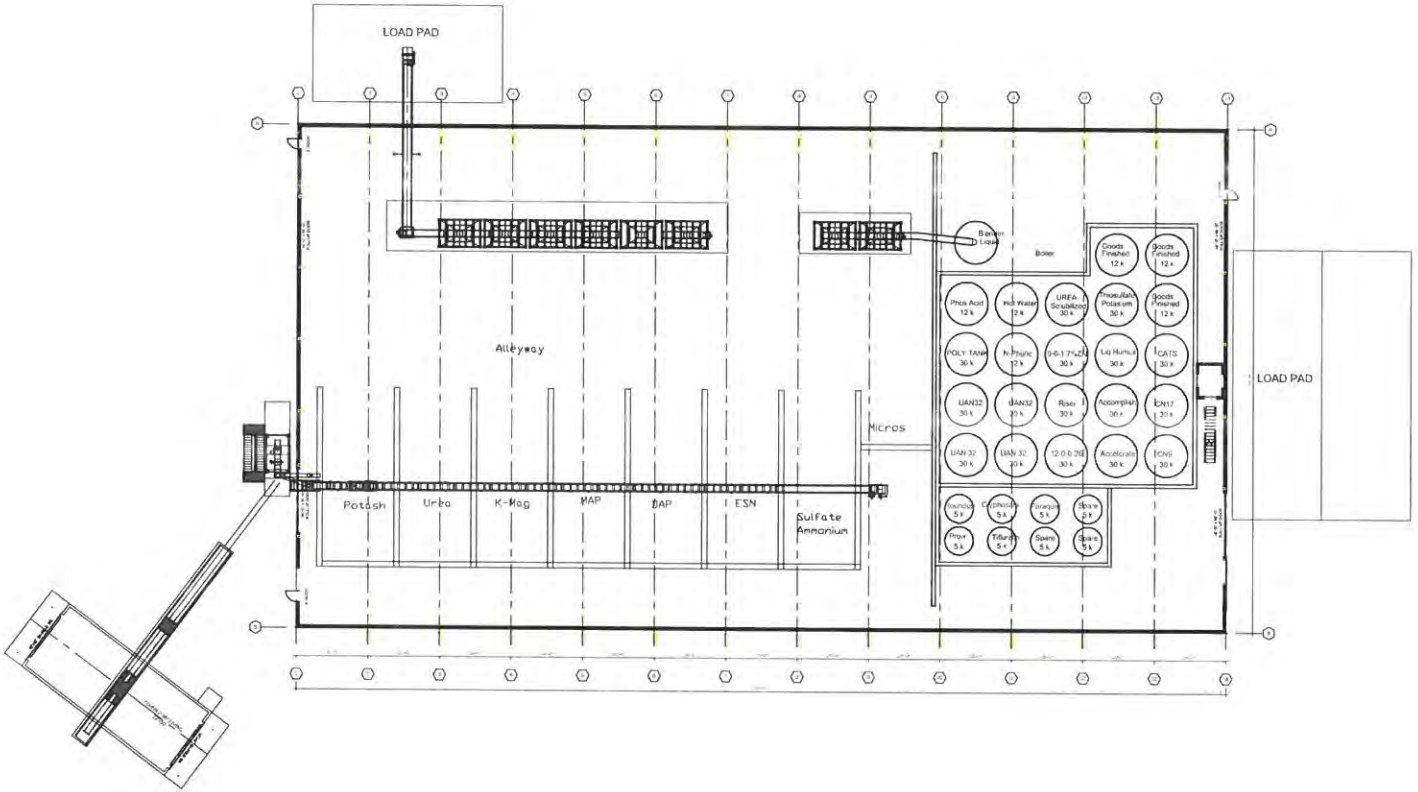
SOLAR INFLUENCE

NORTH

0' 10' 20'
SCALE: 1" = 10'-0"
DATE: FEBRUARY 10, 2017
PROJECT NUMBER: 1972

PREPARED BY:
BRIAN FIRTH LANDSCAPE ARCHITECT, INC.
627 BROADWAY, SUITE 220, CHICO, CALIFORNIA 95928
PHONE: (530) 899-1130/ FAX: (530) 899-1920
www.BFLAdesign.com www.facebook.com/BFLAdesign

Appendix J (Identification and Size of Tanks in Proposed Mixing Building)



r · g · a
rchitecture + engineering

CROP PRODUCTION SERVICES A-FRAME

0 8' 16' 32'
SCALE: 1/16' = 1'-0"

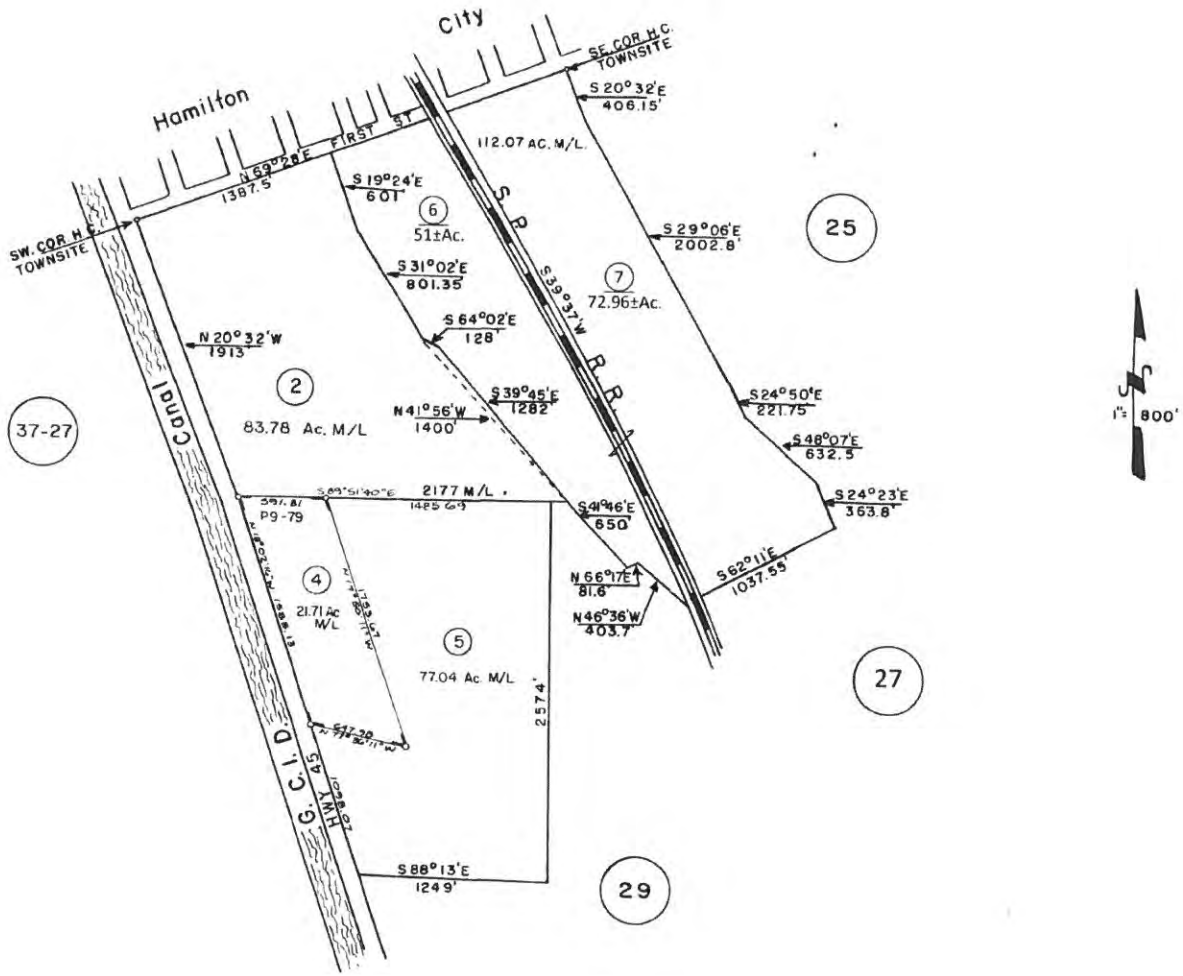
02.07.2017

Appendix K (County Assessor's Map)

CAPAY RANCHO

T. C. A
682

32-26



PARCEL MAP - Bk.9, Pg.79

BOOK 13 MS PAGE 14
M & S Bk. 14, Pg. 70

Appendix L (Site Plan Drawings)

SITE DATA

1. ASSESSOR'S PARCEL NUMBER: 032-260-006
2. SITE ADDRESS: 555 FIRST AVENUE; HAMILTON CITY, CA 95951
3. PARCEL AREA = 51.0 ACRES ±
4. AN EXISTING 6-FOOT TALL CHAIN LINK FENCE WITH BARBED WIRE ON TOP IS LOCATED AROUND THE ENTIRE SITE. DAMAGED FENCING IS PROPOSED TO BE REPLACED.
5. BASED ON INFORMATION FROM THE HAMILTON CITY COMMUNITY SERVICES DISTRICT, SANITARY SEWER IS PROVIDED TO THE SITE VIA A 6-INCH DIAMETER PIPE FROM WALSH AVENUE. AN ONSITE WASTEWATER DISPOSAL SYSTEM IS PROPOSED TO SERVE THE PROPOSED MIXING BUILDING. THE LOCATION OF ONSITE SANITARY SEWER PIPING IS UNKNOWN.
6. DOMESTIC WATER IS PROVIDED TO THE SITE FROM CALIFORNIA WATER SERVICE COMPANY. FIRE PROTECTION FOR THE SITE WAS PROVIDED BY AN ONSITE SYSTEM OF WELLS AND FIRE HYDRANTS. THE EXISTING ONSITE DOMESTIC WATER PIPING IS PROPOSED TO BE REPLACED. THE EXISTING FIRE WATER SYSTEM IS PROPOSED TO BE REPLACED WITH NEW WATER MAINS AND FIRE HYDRANTS CONNECTED TO THE CALIFORNIA WATER SERVICE COMPANY SYSTEM. ALL EXISTING WELLS ON THE SITE ARE PROPOSED TO BE REMOVED AND ABANDONED PER COUNTY REQUIREMENTS.
7. BASED ON INFORMATION FROM THE COUNTY, THERE ARE NO KNOW SEPTIC TANKS OR LEACH LINES LOCATED AT THE SITE.
8. EXISTING STORM DRAIN CATCH BASINS WERE LOCATED ONSITE BETWEEN THE PROPOSED PACKAGE WAREHOUSE AND OFFICE BUILDING. NO OTHER STORM DRAIN INFRASTRUCTURE WAS LOCATED AT THE SITE. NO STORM DRAIN IMPROVEMENTS ARE PROPOSED IN AREAS WHERE THE PROPOSED SITE WORK DOES NOT INCREASE THE EXISTING QUANTITY OF IMPERVIOUS AREA. ANY SITE WORK THAT DOES INCREASE THE EXISTING QUANTITY OF IMPERVIOUS AREAS WILL UTILIZE LEACH TRENCHES SIZED FOR THE 10-YEAR STORM EVENT.
9. THIRTEEN EXISTING PARKING STALLS ARE LOCATED ADJACENT TO THE OFFICE BUILDING ON ASPHALT CONCRETE. TEN 22-FOOT LONG PARKING SPACES ARE LOCATED ALONG 1ST STREET WEST OF THE WESTERN DRIVEWAY. THE PARKING IS PROPOSED TO REMAIN WITH THE ADDITION OF AN ONSITE ACCESSIBLE PARKING STALL.
10. NO MODIFICATIONS TO THE ONSITE LIGHTING IS PROPOSED.
11. LAND USES ADJACENT TO THE SITE CONSIST OF AGRICUTURE TO THE WEST, SOUTH AND EAST, INDUSTRIAL TO THE NORTH AND RESIDENTIAL TO THE NORTHWEST AND NORTHEAST.
12. SEVENTEEN RESIDENTIAL LOTS ARE LOCATED WITHIN 500 FEET OF THE SITE.
13. THERE ARE NO KNOWN HAZARDOUS MATERIALS OR CHEMICAL STORAGE FACILITIES LOCATED AT THE SITE.
14. BASED ON FEMA FIRM PANEL 06021C0425D, THE SITE IS LOCATED WITHIN ZONE X – AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE OF FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD.
15. ALL PROPOSED CHEMICAL STORAGE WOULD OCCUR WITHIN EXISTING STRUCTURES OR IN THE PROPOSED ABOVE GROUND STEEL BULK TANK.
16. THREE MATURE TREES ARE LOCATED AROUND THE OFFICE BUILDING THAT ARE NOT PROPOSED TO BE REMOVED. MATURE TREES LOCATED ALONG THE SITE BOUNDARY ARE NOT PROPOSED TO BE REMOVED.
17. THERE ARE NO RESERVOIRS, RIVERS, CREEKS, PONDS OR IRRIGATION CANALS LOCATED AT THE SITE.
18. THERE ARE NO ROCK OUTCROPPINGS LOCATED AT THE SITE.
19. PROPOSED FIRE HYDRANT LOCATIONS WERE DETERMINED DURING A MEETING WITH THE HAMILTON CITY FIRE DEPARTMENT ON 2-13-17.

APPLICANT

GINNO CONSTRUCTION, INC.
ATTN: BRYAN GINNO
297 CONVAIR AVE., STE. 2
CHICO, CA 95973
(530) 894-6859

PROPERTY OWNER

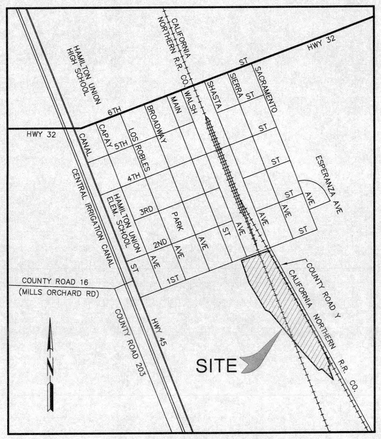
CROP PRODUCTION SERVICES, INC.
ATTN: G. REY REINHARDT
3005 ROCKY MOUNTAIN AVENUE
LOVELAND, CO 80538
(970) 685-3300

ENGINEER

ROLLS, ANDERSON & ROLLS
ATTN: KEITH DOGLIO
R.C.E. 66358
115 YELLOWSTONE DRIVE
CHICO, CA 95973
(530) 895-1422

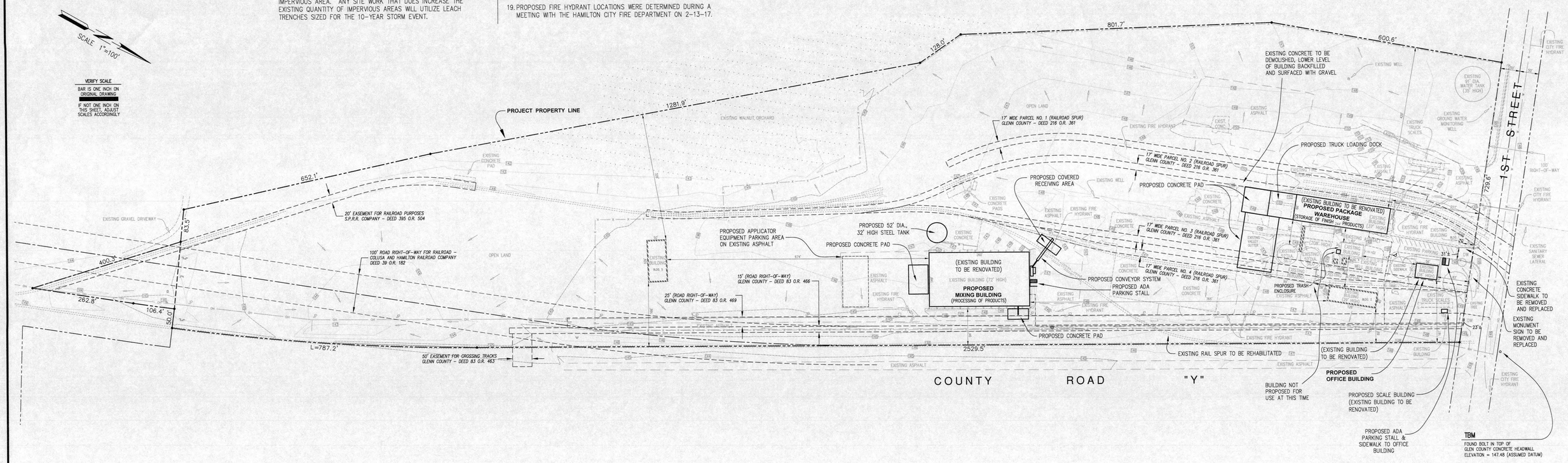
LEGEND

- EXISTING PROPERTY LINE
- PROPOSED FIRE WATER MAIN
- EXISTING SANITARY SEWER
- EXISTING RAILROAD SPUR RAIL
- EXISTING EDGE OF CONCRETE
- EXISTING EDGE OF PAVEMENT
- EXISTING FENCE
- EXISTING OVERHEAD UTILITY LINES
- EXISTING JOINT UTILITY POLE
- EXISTING DRIVEWAY
- EXISTING STRUCTURE TO BE DEMOLISHED
- EXISTING 5' GROUND CONTOUR (GLENN COUNTY DATUM)
- EXISTING 1' GROUND CONTOUR (GLENN COUNTY DATUM)
- EXISTING DIRECTION OF GROUND
- PROPOSED FIRE HYDRANT LOCATION



LOCATION MAP

NO SCALE



COUNTY OF GLENN

USE PERMIT SITE PLAN

FOR

CROP PRODUCTION SERVICES

HOLLY SUGAR PLANT SITE

HAMILTON CITY

RAR
ROLLS ANDERSON & ROLLS
CIVIL ENGINEERS
115 YELLOWSTONE DRIVE – CHICO, CALIFORNIA 95973-5811
TELEPHONE 530-895-1422

FEBRUARY 14, 2017 | 16161 | SHEET 1 OF 1