

### Material 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:** For Commercial Use

**Synonyms:** Copper Sulfate Crystals, Blue Copper, Blue Stone, Blue Vitriol, Copper (II) sulfate, Cupric Sulfate, Copper Sulfate Fine 200, Fine 100, Fine 30, 20, Small, Medium, Large, FCC IV, and Very High Purity

**Supplier Information**

Chem One Ltd. (Importer of record)  
8017 Pinemont Drive, Suite 100  
Houston, Texas 77040-6519

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 \*\*\***

CAS #	Component	Percent
7758-99-8	Copper (II) Sulfate Pentahydrate	> 99

**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.

**Component Information/Information on Non-Hazardous Components**

This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

**\*\*\* Section 3 - Hazards Identification \*\*\***

**Emergency Overview**

Copper Sulfate Pentahydrate is a blue crystalline or powdered, odorless solid. Potentially fatal if swallowed. May cause irritation to the eyes, respiratory system and skin. Fire may produce irritating, corrosive and/or toxic fumes. Firefighters should use full protective equipment and clothing.

**Hazard Statements**

HARMFUL OR FATAL IF SWALLOWED. Can cause irritation of eyes, skin, respiratory tract and, in extreme cases, burns. Avoid contact with eyes and skin. Avoid breathing dusts. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. Keep from contact with clothing and other combustible materials.

**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.

**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.

**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.

**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.

**HMIS Ratings: Health Hazard: 2\* Fire Hazard: 0 Physical Hazard: 1 Personal Protective Equipment: E = chemical goggles, impervious gloves, dust respirator.**

**Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe \* = Chronic hazard**

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### \*\*\* Section 4 - First Aid Measures \*\*\*

**First Aid: Eyes**

In case of contact with eyes, rinse immediately with plenty of water for at least 20 minutes. Seek immediate medical attention.

**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.

**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.

**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 \*\*\*

**Flash Point:** Not flammable

**Method Used:** Not applicable

**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

**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.

**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.

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### 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<sup>3</sup> TWA (dusts & mists)  
0.2 mg/m<sup>3</sup> TWA (fume)

OSHA: 1 mg/m<sup>3</sup> TWA (dusts & mists)  
0.1 mg/m<sup>3</sup> TWA (fume)

NIOSH: 1 mg/m<sup>3</sup> TWA (dusts & mists)  
0.1 mg/m<sup>3</sup> TWA (fume)

DFG MAKs 1 mg/m<sup>3</sup> TWA Peak, 30 minutes, average value (copper and inorganic copper compounds)  
0.1 mg/m<sup>3</sup> TWA Peak, 30 minutes, average value (fume)

### 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.

### PERSONAL PROTECTIVE EQUIPMENT

*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: 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.

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### \*\*\* Section 8 - Exposure Controls / Personal Protection (Continued) \*\*\*

#### Personal Protective Equipment: Respiratory

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). If airborne concentrations are above the applicable exposure limits, use NIOSH-approved respiratory protection. If airborne concentrations are above the applicable exposure limits, use NIOSH-approved respiratory protection. The following NIOSH Guidelines for Copper dust and mists (as Cu) are presented for further information.

Up to 5 mg/m<sup>3</sup>: Dust and mist respirator.

Up to 10 mg/m<sup>3</sup>: Any dust and mist respirator except single-use and quarter mask respirators or any SAR.

Up to 25 mg/m<sup>3</sup>: SAR operated in a continuous-flow mode or powered air-purifying respirator with a dust and mist filter(s).

Up to 50 mg/m<sup>3</sup>: 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<sup>3</sup>: 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<sup>3</sup>.

#### Personal Protective Equipment: General

Have an eyewash fountain and safety shower available in the work area

### \*\*\* 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.

<b>Appearance:</b> Blue crystals or powder	<b>Odor:</b> Odorless
<b>Physical State:</b> Solid	<b>pH:</b> 3.7-4.2 (10% soln.)
<b>Vapor Pressure:</b> 20 torr at 22.5 deg C	<b>Vapor Density:</b> 8.6
<b>Boiling Point:</b> 560 deg C (1040 deg F) [decomposes]	<b>Freezing/Melting Point:</b> 150 deg C (302 deg F)
<b>Solubility (H2O):</b> 31.6 g/100 cc (@ 0 deg C)	<b>Specific Gravity:</b> 2.28 @ 15.6 deg C (H2O = 1)
<b>Softening Point:</b> Not available	<b>Particle Size:</b> Various
<b>Molecular Weight:</b> 249.68	<b>Bulk Density:</b> Not available
	<b>Chemical Formula:</b> CuSO4*5H2O

### \*\*\* 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 steel and iron. Copper Sulfate Pentahydrate is incompatible with magnesium, strong bases, alkalines, phosphates, acetylene, hydrazine, and zirconium. Copper Sulfate Pentahydrate can be corrosive to aluminum.

#### Hazardous Decomposition

Sulfur oxides and Copper oxides.

#### Hazardous Polymerization

Will not occur.

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### \*\*\* Section 11 - Toxicological Information \*\*\*

#### Acute and Chronic Toxicity

##### A: General Product Information

Acute toxicity is largely due to the caustic (alkaline) 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<sub>50</sub>/LC<sub>50</sub>

###### Copper Sulfate Pentahydrate (7758-99-8)

Oral-rat LD<sub>50</sub>: = 300 mg/kg; Intraperitoneal-Rat LD<sub>50</sub>: 18,700 mg/kg; Intraperitoneal-rat LD<sub>50</sub>: 20 mg/kg; Subcutaneous-rat LD<sub>50</sub>: 43 mg/kg; Intravenous-rat LD<sub>50</sub>: 48900 µg/kg; Unreported-rat LD<sub>50</sub>: 520 mg/kg; Oral-mouse LD<sub>50</sub>: 369 mg/kg; Intraperitoneal-Mouse LD<sub>50</sub>: 33 mg/kg; Intraperitoneal-mouse LD<sub>50</sub>: 7182 µg/kg; Intravenous-mouse LD<sub>50</sub>: 23300 µg/kg

##### 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; Subcutaneous-rat 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 weeks-continuous: Blood: changes in spleen; Immunological Including Allergic: decrease in cellular immune response, decrease in humoral immune 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: post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants), Specific Developmental Abnormalities: Central Nervous System, body wall

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### \*\*\* Section 11 - Toxicological Information (Continued) \*\*\*

#### 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.

#### 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)**

LC<sub>50</sub> (*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<sub>50</sub> (*Leopmis cyanellus*, Green Sunfish) = 1.1 g, 3,510 µg/L at °C; LC<sub>50</sub> (*Pimephales promelas*, Fat-head minnow) = 1.2 g, 838 µg/L at 18°C; LC<sub>50</sub> (*Crassius auratus*, Goldfish) = 0.9 g, 1380 µg/L at 18°C; LC<sub>50</sub> (*Crassius auratus*, Goldfish) = 0.1-2.5 mg/L; LC<sub>50</sub> (*EEL*) = 0.1-2.5 mg/L; LC<sub>50</sub> (*Salmo gairdneri*, Rainbow trout) = 1.6 g, 135 µg/L at 18°C; LC<sub>50</sub> (*Salmo gairdneri*, Rainbow trout) 48 hours = 0.14 ppm; LC<sub>50</sub> (*Daphnia magna*) no time specified = 0.182 mg/L; LC<sub>50</sub> (*Salmo gairdneri*, Rainbow trout) no time specified = 0.17 mg/L; LC<sub>50</sub> (*Lepomis machochirus*, Blue gill) no time specified = 1.5 g, 884 µg/L at 18°C; LC<sub>50</sub> (Stripped Bass) 96 hours = 1 ppm or lower; LC<sub>50</sub> (Prawn) 48 hours = 0.14; LC<sub>50</sub> (Shrimp) 96 hours = 17.0 ppm copper; LC<sub>50</sub> (Blue Crab) 96 hours = 28 ppm copper; LC<sub>50</sub> (Oyster) 96 hours = 5.8 ppm copper; LC<sub>50</sub> (*Viviparus bengalensis* snail) 96 hours = 0.060 ppm copper (at 32.5°C; 0.066 ppm copper static bioassay); LC<sub>50</sub> (*Viviparus bengalensis* snail) 96 hours = 0.09 ppm copper (at 27.3°C; 0.066 ppm copper static bioassay); LC<sub>50</sub> (*Viviparus bengalensis* snail) 96 hours = 0.39 ppm copper (at 20.3°C; 0.066 ppm copper static bioassay)

#### 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.

### \*\*\* 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.

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### \*\*\* Section 13 - Disposal Considerations (Continued) \*\*\*

#### Disposal Instructions

All wastes must be handled in accordance with local, state and federal regulations. 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 or (1-800-CLEANUP or equivalent organization) 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 for guidance.

### \*\*\* Section 14 - Transportation Information \*\*\*

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 I.M.O., I.C.A.O. (I.A.T.A.) and 49 CFR to assure regulatory compliance.

#### US DOT Information

**Shipping Name:** Environmentally Hazardous Substance, solid, n.o.s. (cupric sulfate)

**Hazard Class:** 9 (Miscellaneous Hazardous Materials)

**UN/NA #:** UN 3077

**Packing Group:** III

**Required Label(s):** Class 9 (Miscellaneous Hazardous Materials)

**RQ Quantity:** 10 lbs (4.54 kg)[Cupric Sulfate]

#### Additional Shipping Information

Cupric Sulfate is a Severe Marine Pollutant (49 CFR 172.322) and requires the marine pollutant mark for vessel transportation. Because Copper Sulfate is listed as a Severe Marine Pollutant as found in Appendix B to 172.101 and when shipped by vessel, each inner package which exceeds 500 g (17.6 ounces) will need a marine pollutant marking. UN-certified package, marked with the Proper Shipping Name, UN Number will be required when shipped by vessel, when each inner package exceeds 500 g (17.6 ounces).

**Limited Quantity Shipments:** Inner packagings less than 500 g (17.6 ounces) will not need to be in a UN-approved box and will not need a Marine Pollutant marking. Such shipments need not be marked with the Proper Shipping Name of the contents, but shall be marked with the UN Number (3077) of the contents, preceded by the letters "UN", placed within a diamond. The width of the line forming the diamond shall be at least 2 mm; the number shall be at least 6 mm high. The total weight of each outer packaging cannot exceed 30 kg (66 pounds). For a shipment by air the class 9 label will be required.

#### Domestic Transportation Exception

49 CFR 172.504(f)(9) Domestic transportation, a Class 9 placard is not required. A bulk packaging containing a Class 9 material must be marked with the appropriate identification number displayed on a Class 9 placard, an orange panel or a white-square-on-point display configuration as required by subpart D of this part. 49 CFR 172(d)(3) allows the use of the class 9 placard to replace the marine pollutant marking for domestic shipments.

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## \*\*\* Section 14 - Transportation Information (Continued) \*\*\*

### International Air Transport Association (IATA)

For Shipments by Air transport: We classify this product as hazardous (Class 9) when shipped by air because 49 CFR 173.140 (a). "For the purposes of this subchapter, miscellaneous hazardous material (Class 9) means a material which presents a hazard during transportation, but which does not meet the definition of any other hazard class. This class includes: (a) Any material which has an anesthetic, noxious, or other similar property which could cause extreme annoyance or discomfort to a flight crew member so as to prevent the correct performance of assigned duties."

**Proper Shipping Name:** Environmentally hazardous substance, solid, n.o.s. (cupric sulfate)

**Hazard Class:** 9

**UN:** UN 3077

**Packing Group:** III

**Passenger & Cargo Aircraft Packing Instruction:** 911

**Passenger & Cargo Aircraft Maximum Net Quantity:** No Limit

**Limited Quantity Packing Instruction (Passenger & Cargo Aircraft):** Y911

**Limited Quantity Maximum Net Quantity (Passenger & Cargo Aircraft):** 30 kg

**Special Provisions:** A97

**ERG Code:** 9L

### International Maritime Organization (I.M.O.) Classification

For shipments via marine vessel transport, the following classification information applies.

**Proper Shipping Name:** Environmentally hazardous substance, solid, n.o.s. (Cupric sulfate)

**Hazard Class:** class 9

**UN #:** UN3077

**Packing Group:** III

**Special Provisions:** 274, 909, 944

**Limited Quantities:** 500g.

**Packing Instructions:** P002, LP02

**Packing Provisions:** PP12

**IBC Provisions:** IBC07

**IBC Provisions:** B3

**EmS:** Fire F-A Spill S-B

**Stowage and Segregation:** Category A

This material is considered a severe marine pollutant by the IMO and shipments of the material must carry the marine pollutant mark label. Refer to IMO Amendment 31-02 Chapter 2.10.

## \*\*\* 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

## Material Safety Data Sheet

**Material Name: Copper Sulfate Pentahydrate**

**ID: C1-121A**

**\*\*\* Section 15 - Regulatory Information (Continued)\*\*\***

**US Federal Regulations (continued)**

**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		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	Excluded	No	Yes

Although this compound is not on the TSCA Inventory, it is excluded 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 excluded.

**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

**ANSI Labeling (Z129.1):**

**DANGER! MAY BE 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<sub>2</sub>, 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.

## Material Safety Data Sheet

Material Name: Copper Sulfate Pentahydrate

ID: C1-121A

### \*\*\* Section 15 - Regulatory Information (Continued)\*\*\*

#### US Federal Regulations (continued)

##### Labeling Information for Pesticide Use of Product (continued):

**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 1 to 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 or 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 24 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.

**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 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

## Material Safety Data Sheet

**Material Name: Copper Sulfate Pentahydrate**

**ID: C1-121A**

**\*\*\* Section 16 - Other Information \*\*\***

### 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](mailto:Safety@chemone.com). Revision date: 05/31/01

### 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  
223/03: 2:21 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 entire Section 14 Transportation Information to include IATA, IMO transport information.

This is the end of MSDS # C1-121A

3

**Material Safety Data Sheet**  
**J. R. Simplot Company**  
**AgriBusiness**

Trade Name: Greenhouse Sulfate 21-0-0  
Registration No: None

**M73038**

**SECTION 1 CHEMICAL PRODUCT AND COMPANY INFORMATION**

**Manufacturer or Formulator:** J.R. Simplot Company  
P.O. Box 912  
Pocatello, ID 83204  
**Emergency Phone - Chemtrec:** 1-800-424-9300

**Product Name:** Greenhouse Sulfate 21-0-0  
**Common Name:** 21-0-0  
**Chemical Type:** Salt

**SECTION 2 COMPOSITION/INFORMATION ON INGREDIENTS**

Chemical Name and Synonyms	C.A.S. No.	Chemical Formula	WT% Hazardous	TLV	PEL
None			<b>Non-Hazardous</b>		
Ammonium Sulfate	7783-20-2	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	100	10 mg/M <sup>3</sup> - Nuisance Dust	Not available

**SECTION 3 HAZARDS IDENTIFICATION**

**Ingestion:** Small doses may cause mild discomfort. Used as a general purpose food additive for buffer and neutralizing agent.  
**Inhalation:** Slight discomfort possible--causes readily reversible changes which disappear after end of exposure. Dust may cause further aggravation to those predisposed to respiratory problems.  
**Eye Contact:** Slight eye abrasion possible.  
**Skin Absorption:** Prolonged contact may cause slight skin abrasion.  
**Skin Contact:** Slight abrasion possible.  
**Effects of Overdose:** One reference lists that massive doses ingested or large doses administered under the skin, or in the blood stream, may cause diarrhea, and there arises the possibility of sufficient absorption to produce diuresis and systemic ammonia poisoning. Another reference lists unknown--no information on humans considered valid by authors.

**SECTION 4 FIRST AID MEASURES**

**Ingestion:** If ingested in large amount, give 2-3 glasses of water and induce vomiting. Call a doctor.  
**Inhalation:** Should cause no problems by inhalation.  
**Eyes:** Flush eyes with running water for 15 minutes. Seek medical attention if condition persists.  
**Skin:** Wash skin with mild soap and water. Seek medical attention if condition persists.

**SECTION 5 FIRE FIGHTING MEASURES**

**Extinguishing Media:** Used in a solution as a fire retardant and to fight fires. Use media suitable to extinguish source of fire.  
**Special Fire Fighting Procedures:** Use media suitable to extinguish source of fire.  
**Unusual Fire and Explosion Hazards:** Releases NH<sub>3</sub> and Sulfur Oxides when decomposing. If accidentally mixed with oxidizers it will sensitize these materials and make them more reactive under fire conditions.

**SECTION 6 ACCIDENTAL RELEASE MEASURES**

**Environmental Precautions:** Keep out of waterways and all bodies of water. Do not contaminate any body of water by direct application, cleaning of equipment or disposal. Since Ammonium Sulfate is a fertilizer, it may promote algae growth in waterways.  
**Steps to be taken in case material is released or spilled:**  
Contain spill. Sweep up and scoop into suitable container for use or recycle. May be used as a fertilizer using good agronomic practices.

**SECTION 7 HANDLING AND STORAGE**

**Precautions to be taken in handling and storing:**  
Avoid prolonged contact with skin. Use dust mask if material is dusty. Separate from strong oxidizers such as chlorates, nitrates and nitrites.  
**Other Precautions:**  
Store in cool, dry area--preferably on pallets off of floor.

**SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Ventilation Protection:** Adequate ventilation for bulk storage.  
**Respiratory Protection:** Use dust mask if material is dusty.  
**Protective Clothing:** Normal clean work clothing. Gloves as needed.  
**Eye Protection:** Safety glasses with side shield.  
**Other:** Eyewash fountain in area.



# MATERIAL SAFETY DATA SHEET

# 5-26-25 FERTILIZER

**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:

United Horticultural Supply  
P.O. Box 1286 • Greeley, CO 80632-1286

**24-Hour Emergency Phone:** 1-800-424-9300  
**Medical Emergencies:** 1-800-301-7976

**PRODUCT NAME:** 5-26-25 FERTILIZER  
**CHEMICAL NAME:** Inorganic/Organic Chemical Fertilizer Mixture  
**CHEMICAL FAMILY:** N-P-K Mixed dry blended fertilizer  
**EPA REG. NO.:** not applicable  
**MSDS Number:** 567720-03 **MSDS Revisions:** New

**Date Of Issue:** 09/24/03 **Supersedes:** New

## 2. COMPOSITION, INFORMATION ON INGREDIENTS (Note: See Product Tag or Label for Specific Ingredients)

<u>Chemical Ingredients:</u>	<u>Percentage by Weight:</u>	<u>CAS No.</u>
Total Nitrogen (N)	5.00	Mixture
Available Phosphate (P <sub>2</sub> O <sub>5</sub> )	26.00	Mixture
Soluble Potash (K <sub>2</sub> O)	25.00	Mixture
Total Sulfur (S)	9.70	Mixture
Fertilizer salts and inert ingredients	34.30	

## 3. HAZARDS IDENTIFICATION SUMMARY

**KEEP OUT OF REACH OF CHILDREN – CAUTION –** Harmful if swallowed. Avoid contact with eyes, skin and clothing. Avoid breathing spray mist. This product is a light tan to brown granule with salt odor. Primary routes of entry are Inhalation, eye contact and skin contact.

## 4. FIRST AID MEASURES

**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 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.

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):** Not applicable

**FLAMMABLE LIMITS (LEL & UEL):** Not applicable

**EXTINGUISHING MEDIA:** Use medium appropriate to surrounding fire. Dry chemical, carbon dioxide, foam, water spray or fog.

**HAZARDOUS COMBUSTION PRODUCTS:** May include but are not limited to oxides of carbon, hydrogen chloride, hydrogen fluoride, oxides of nitrogen, ammonia, oxides of metal, oxides of sulfur, and ammonia.

**SPECIAL FIRE FIGHTING PROCEDURES:** Use water spray to cool containers exposed to fire. Remain upwind. Avoid breathing smoke. Wear self-contained breathing apparatus and full protective gear.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** None known.

## 6. ACCIDENTAL RELEASE MEASURES

### STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

Sweep up dry spills immediately and transfer to suitable containers for possible land application according to label use or for disposal. Check local, state and federal regulations for proper disposal.

**CAUTION:** Keep spills and cleaning runoff out of municipal sewers and open bodies of water.

## 7. HANDLING AND STORAGE

**HANDLING:** Follow label instructions carefully. Keep away from children, domestic animals, feed and foodstuffs and pesticides.

**STORAGE:** Keep bags closed securely when not in use. Store in a cool, secure place. Do not contaminate water supplies by handling and storage of product. Drift or runoff may adversely affect non-target plants.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**ENGINEERING CONTROLS:** Not normally required.

**RESPIRATORY PROTECTION:** Not normally required, if vapors or dusts exceed acceptable levels, wear a MSHA/NIOSH approved pesticide respirator.

**EYE PROTECTION:** Chemical goggles or shielded safety glasses.

**SKIN PROTECTION:** Long-sleeved shirts and pants, hat, rubber boots with socks, rubber or chemical-resistant gloves.

**MATERIAL SAFETY DATA SHEET**

**5-26-25 FERTILIZER**

Nuisance particulates      OSHA PEL 8 hr TWA      ACGIH TLV-TWA  
15 mg/m<sup>3</sup> (total dust)      not listed

**9. PHYSICAL AND CHEMICAL PROPERTIES**

**APPEARANCE AND ODOR:** Light tan to brown granule with salt odor      **SOLUBILITY:** Insoluble  
**SPECIFIC GRAVITY (Water= 1):** 0.961 g/ml      **BULK DENSITY:** 60.0 lbs/ft<sup>3</sup>      **pH:** Not established  
**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:** None known.  
**INCOMPATIBILITY:** None known.  
**HAZARDOUS DECOMPOSITION PRODUCTS:** Metal oxides, sulfur oxides, and ammonia.  
**HAZARDOUS POLYMERIZATION:** Will not occur.

**11. TOXICOLOGICAL INFORMATION**

**Acute Oral LD50 (rat):** >5000 mg/kg      **Acute Dermal LD 50 (rabbit):** >5000 mg/kg  
**Eye Irritation (rabbit):** May cause moderate irritation      **Skin Irritation (rabbit):** May cause skin irritation  
**Inhalation LC<sub>50</sub> (rat):** Not established.      **Skin Sensitization (guinea pig):** Not established  
**Carcinogenic Potential:** None listed in OSHA, NTP, IARC or ACGIH

**12. ECOLOGICAL INFORMATION**

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.

**13. DISPOSAL CONSIDERATIONS**

Do not reuse container. Completely empty bag into dispensing equipment and dispose of in a sanitary landfill or by incineration, or if allowed or by local, state and federal authorities, by burning. If burned, stay out of smoke.

**14. TRANSPORT INFORMATION**

**DOT Shipping Description:** NOT REGULATED BY USDOT  
**U.S. Surface Freight Classification:** FERTILIZING COMPOUNDS (MANUFACTURED FERTILIZERS), NOI; DRY (NMFC 68140, SUB 5; CLASS 50)

**15. REGULATORY INFORMATION**

<b>NFPA &amp; HMIS Hazard Ratings:</b>	<b>NFPA</b>		<b>HMIS</b>
	1 Health	0 Least	1 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:** Not listed  
**SARA, Title III, Section 313:** Not listed  
**RCRA Waste Code:** Not listed  
**CA Proposition 65:** This product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

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**16. OTHER**

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MSDS STATUS: New

PREPARED BY: Registrations and Regulatory Affairs

REVIEWED BY: Environmental/ Regulatory Services

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, United Horticultural Supply makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving it will make their own determination as to its suitability for their purposes prior to use. **In no event will United Horticultural Supply be responsible for any damages of any nature including, without limitation, direct, special or consequential, resulting from the use, reliance upon, or the accuracy, completeness or furnishing of such 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 THE PRODUCT TO WHICH INFORMATION REFERS.

**MATERIAL SAFETY DATA SHEET**

**SIGNATURE® 10-4-20 GREENS GRADE FERTILIZER**

**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:** SIGNATURE® 10-4-20 GREENS GRADE FERTILIZER  
**CHEMICAL NAME:** Inorganic/Organic Chemical Fertilizer Mixture  
**CHEMICAL FAMILY:** N-P-K Mixed dry blended fertilizer  
**EPA REG. NO.:** not applicable  
**MSDS Number:** .103347-06-LP1

**MSDS Revisions:** New

**Date Of Issue:** 06/29/06

**Supersedes:** New

**2. HAZARDS IDENTIFICATION SUMMARY**

**KEEP OUT OF REACH OF CHILDREN - CAUTION** - May cause mild eye and skin irritation. Avoid contact with skin, eyes, open cuts, or sores. In case of contact, flush with water. Get medical attention for eyes. This blended dry fertilizer is a mixture of Monoammonium Phosphate, Sulfate of Potash, Ammonium Sulfate, and Iron Oxide. Nausea and vomiting could be expected upon large dose ingestion. The acute ingestive effects are described as nausea, chills, and diarrhea. Eye or skin contact with these products could cause irritation (particularly in sensitive persons), and respiratory irritation could be expected from the unprotected inhalation of fertilizer dusts. Product users should avoid prolonged or repeated skin contact by wearing impervious gloves, long sleeve shirt, long pants, socks and rubber boots. Goggles for eye protection are recommended. Wash thoroughly after handling and using this product.

This product is a multi-colored granule with dusty odor. Primary routes of entry are Inhalation, eye contact and skin contact.

**3. COMPOSITION, INFORMATION ON INGREDIENTS**

**N-P-K (NITROGEN-PHOSPHORUS-POTASSIUM) MIXED DRY BLENDED FERTILIZERS** – No hazardous ingredient exceeds 1% of mixture.

<u>Chemical Ingredients:</u>	<u>Percentage by Weight:</u>	<u>CAS No.</u>	<u>TLV (Units)</u>
Total Nitrogen (N)	10.00	Mixture	not established
Available Phosphate (P <sub>2</sub> O <sub>5</sub> )	4.00	Mixture	not established
Soluble Potash (K <sub>2</sub> O)	20.00	Mixture	not established
Sulfur (S)	17.26	Mixture	not established
Iron (Fe)	4.00	Mixture	not established
Fertilizer salts and inert ingredients	44.74		

**4. FIRST AID MEASURES**

**Eyes:** Flush eyes with large amount of water for at least 15 minutes. Consult a physician if irritation persists.  
**Skin:** Remove all contaminated clothing. Wash skin, hair, and fingernails thoroughly with soap and water. If irritation persists seek medical attention. Wash clothing before reuse.  
**Ingestion:** If swallowed, give 2 glasses of water to drink. Do not induce vomiting or give anything by mouth to an unconscious person. Call a physician to get medical attention; the emergency telephone number is 1-800-301-7976  
**Inhalation:** Move subject to fresh air. Give artificial respiration if breathing has stopped. If breathing is difficult, give oxygen. Get medical attention immediately.

**5. FIRE FIGHTING MEASURES**

**FLASH POINT (°F/Test Method):** Not applicable  
**FLAMMABLE LIMITS (LFL & UFL):** Not applicable  
**EXTINGUISHING MEDIA:** Use medium appropriate to surrounding fire. Dry chemical, carbon dioxide, foam, water spray or fog.  
**HAZARDOUS COMBUSTION PRODUCTS:** May include but are not limited to oxides of carbon, hydrogen chloride, hydrogen fluoride, oxides of nitrogen, ammonia, oxides of phosphorus, oxides of sulfur, hydrogen sulfide.  
**SPECIAL FIRE FIGHTING PROCEDURES:** Use water spray to cool containers exposed to fire. Remain upwind. Avoid breathing smoke. Wear self-contained breathing apparatus and full protective gear.  
**UNUSUAL FIRE AND EXPLOSION HAZARDS:** Dusts or vapors can travel to a sources of ignition and flash back.

**6. ACCIDENTAL RELEASE MEASURES**

**STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:**  
Avoid breathing dusts. Sweep up dry spills immediately and transfer to suitable containers for possible land application according to label use or for disposal. Check local, state and federal regulations for proper disposal.  
**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 fertilizer 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 dry place away from children, feed and food products, and seed. Do not contaminate water, food, or feed by storage or disposal.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**ENGINEERING CONTROLS:** Not normally required.

**RESPIRATORY PROTECTION:** Not normally required, if vapors or dusts exceed acceptable levels, wear a MSHA/NIOSH approved pesticide respirator.

**EYE PROTECTION:** Chemical goggles or shielded safety glasses.

**SKIN PROTECTION:** Wear protective clothing: long-sleeved shirts and pants, hat, rubber boots with socks. Wear rubber or chemical-resistant gloves.

	<b>OSHA PEL 8 hr TWA</b>	<b>ACGIH TLV-TWA</b>
Nuisance Particulates	15 mg/m <sup>3</sup>	not listed

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>APPEARANCE AND ODOR:</b> Multi-colored granules with dusty odor	<b>SOLUBILITY:</b> Appreciable
<b>SPECIFIC GRAVITY (Water = 1):</b> 1.126 g/ml	<b>BULK DENSITY:</b> 70.34 lbs/ft <sup>3</sup>
<b>VAPOR PRESSURE:</b> Not applicable	<b>BOILING POINT:</b> Not applicable
<b>PERCENT VOLATILE (by volume):</b> Not applicable	<b>EVAPORATION RATE:</b> Not applicable

**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

**INCOMPATIBILITY:** None known.

**HAZARDOUS DECOMPOSITION PRODUCTS:** May decompose to release ammonia, HCN, NO.

**HAZARDOUS POLYMERIZATION:** Will not occur.

**CONDITIONS TO AVOID:** None known.

**11. TOXICOLOGICAL INFORMATION**

<b>Acute Oral LD<sub>50</sub> (rat):</b> >5000 mg/kg	<b>Acute Dermal LD<sub>50</sub> (rabbit):</b> >2000 mg/kg
<b>Eye Irritation (rabbit):</b> Not established	<b>Skin Irritation (rabbit):</b> Not established
<b>Inhalation LC<sub>50</sub> (rat):</b> Not established.	<b>Skin Sensitization (guinea pig):</b> Not established
<b>Carcinogenic Potential:</b> None listed in OSHA, NTP, IARC or ACGIH	

**12. ECOLOGICAL INFORMATION**

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.

**13. DISPOSAL CONSIDERATIONS**

Do not reuse empty 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. Do not contaminate water, food, or feed by storage or disposal.

**14. TRANSPORT INFORMATION**

**DOT Shipping Description:** NOT REGULATED BY USDOT.

**U.S. Surface Freight Classification:** FERTILIZING COMPOUNDS (MANUFACTURED FERTILIZERS), NOI; DRY (NMFC 68140, SUB 5; CLASS 50)

**15. REGULATORY INFORMATION**

<b>NFPA &amp; HMIS Hazard Ratings:</b>		<b>NFPA</b>		<b>HMIS</b>		
	1	Health	0	Least	1	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: Not listed

SARA, Title III, Section 313: Not listed

RCRA Waste Code: Not listed

CA Proposition 65: Not listed.

**16. OTHER**

MSDS STATUS: New

PREPARED BY: Registrations and Regulatory Affairs

REVIEWED BY: Environmental/ Regulatory Services

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# MATERIAL SAFETY DATA SHEET

UNITED HORTICULTURAL SUPPLY

12-8-16 Mini  
with Iron

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300

## SECTION I - IDENTIFICATION OF PRODUCT

### MANUFACTURER'S NAME:

United Horticultural Supply  
150 South Main Street  
Fremont, NE 68025-5697

### EMERGENCY TELEPHONE NO.:

CHEMTREC (800) 424-9300 (24 Hours)

**TRADE NAME AND SYNONYMS:** 12-8-16 Mini with Iron

**CHEMICAL NAME AND SYNONYMS:** Inorganic/Organic Chemical Fertilizer Mixture

**MATERIAL IDENTIFICATION - INGREDIENTS** (Note: See product tag or label for specific ingredients.)

N-P-K (NITROGEN-PHOSPHORUS-POTASSIUM) MIXED DRY BLENDED FERTILIZERS - No hazardous ingredient exceeds 1% of total mixture.

Typical Composition: 12% - Total Nitrogen as N TLV = 10 mg/m<sup>3</sup> nuisance dust

8% - Total Phosphorus as P2O5  
16% - Total Potassium  
15% - Total Sulfur  
3% - Total Iron  
46% - Fertilizer salts, inert ingredients

## HEALTH HAZARD INFORMATION

These blended dry fertilizers are typically mixtures of potassium, phosphates, chlorides, nitrates, sulfur, sulfates, urea, and micro-ingredient range quantities of metal salts such as iron, manganese, copper and zinc. A review of the ingredient salts indicates that ingestion may cause diarrhea, purging, and flatulence. Nausea and vomiting could be expected upon large dose ingestion. The acute ingestive effects are described as nausea, chills and diarrhea. Eye or skin contact with these products could cause irritation (particularly in sensitive persons), and respiratory irritation could be expected from the unprotected breathing of fertilizer dust. Product users should avoid prolonged or repeated skin contact, and they should use eye protection when required by conditions of use. Product users should wash thoroughly after using or handling these fertilizers. Since children could receive toxic ingestive doses of fertilizers, these products should be stored in a secure place where children cannot get at them.

**EMERGENCY AND FIRST AID PROCEDURES:** Call a physician immediately in all cases of suspected poisoning.

**Ingestion:** Dilute with water or milk. If necessary induce vomiting only when victim is conscious.  
**Inhalation:** Remove to fresh air. If not breathing give artificial respiration.  
**Skin:** Wash from skin with soap and water.  
**Eyes:** Flush with running water for at least 15 minutes until irritation subsides.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** None known. Preexisting respiratory conditions may be aggravated by exposure to dusts.

**POTENTIAL CARCINOGEN STATUS** (Source of Information - Registry of Toxic Effects of Chemical Substances):  
None listed

## PHYSICAL DATA

Boiling Point - n.a. Vapor Pressure - n.a. Specific Gravity - > 1  
Solubility-Water - Appreciable (n.a. - not available/not applicable) Vapor Density - n.a.  
Appearance/Odor: White to off-white and light colored granular powders with fertilizer-like odors.

## FIRE, EXPLOSION AND REACTIVITY DATA

**FLASH POINT** (Specify Method - °C): Not Flammable

**FLAMMABLE LIMITS (PERCENT BY VOLUME):** Not Applicable

**FIRE EXTINGUISHING MEDIA:** Determined by surrounding fire. Not considered combustible.

**SPECIAL FIRE FIGHTING PROCEDURES:** Full protective equipment and self contained breathing apparatus.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** Urea may decompose in a fire situation and release cyanuric acid, ammonia, hydrogen cyanide, oxides of nitrogen, and irritating particulates. Sulfur-containing components may release oxides of sulfur.

## NFPA HAZARD RATING:

0 Least	1	Health
1 Slight	0	Flammability
2 Moderate	0	Reactivity
3 High		
4 Severe		

# MSDS: 12-8-16 Mini with Iron

## SPECIAL PROTECTION INFORMATION

Avoid breathing fertilizer dusts. Avoid prolonged or repeated skin contact. Avoid eye contact with fertilizers. Use a NIOSH approved particulate respirator if respirable dust generation occurs or is anticipated during product use. Use other protective equipment (goggles, gloves, etc.) as required by conditions of product use. Wash thoroughly after handling fertilizers or other chemicals.

## CAUTIONARY STATEMENTS FOR PERSONS HANDLING THIS MATERIAL

**CAUTION -** May be harmful if swallowed in quantity. Fertilizer dusts may irritate the eyes and respiratory system. Prolonged product contact may irritate sensitive skin. Wash thoroughly after handling. Keep fertilizers out of the reach of children

**Note:** These products are fertilizers. Do not eat them and avoid breathing their dusts.

## MATERIAL STORAGE INFORMATION

Store these products in a cool, dry place, away from sources of high heat. Protect bags or other containers from damage. Keep bags or other containers closed when not in use.

## SPILL, LEAK AND DISPOSAL PROCEDURES

Notify management of any fertilizer spills. Fertilizer spills should be swept up and/or be shoveled into closed containers for recovery and use or dispose.

**DISPOSAL:** Recover spills for reuse, or place recovered material in a state approved landfill or incinerator. Follow Federal, state and local regulations for disposal.

## REACTIVITY INFORMATION

**STABILITY:** Stable **CONDITIONS TO AVOID:** Excessive heat; moisture

**INCOMPATIBILITY (Avoid contact with):** Strong oxidizing agents

**HAZARDOUS DECOMPOSITION PRODUCTS:** Urea may decompose to release cyanuric acid, ammonia, HCN, NO<sub>x</sub>

**HAZARDOUS POLYMERIZATION:** Will not occur **CONDITIONS TO AVOID:** None known

## REGULATORY INFORMATION

**SARA TITLE III HAZARD CATEGORY:** IMMEDIATE N FIRE N SUDDEN RELEASE  
DELAYED N REACTIVE N OF PRESSURE N

**SUBSTANCES REGULATED UNDER SARA, TITLE III, SEC. 313:**

None Listed

**DATE OF ISSUE:** 01/09/97

**SUPERSEDES:** 05/13/96

All information contained in this Material Safety Data Sheet is furnished free of charge and is intended for your evaluation. In our opinion, the information is as of the date of this Material Safety Data Sheet, reliable, however, it is your responsibility to determine the suitability of the information for your use. You are advised not to construe the information as absolutely complete since additional information may be necessary or desirable when particular, exceptional or variable conditions or circumstances exist or because of applicable laws or government regulations. Therefore, you should use this information only as a supplement to other information gathered by you, and you must make independent determinations of the suitability and completeness of information from all sources to assure both proper use of the material described herein and the safety and health of employees. Accordingly, no guarantee is expressed or implied as to the results to be obtained based upon your use of the information.



Hydro Agri  
North America

Hydro works harder for you.

# Material Safety Data Sheet

## HYDRO AGRI NORTH AMERICA, INC.

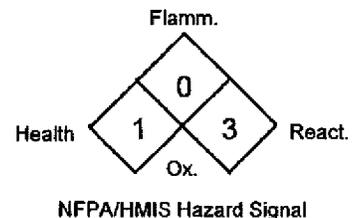
### I. PRODUCT IDENTIFICATION

Trade Name (as Labeled): Potassium Nitrate Ag Prills 13.75-0-44.5

Manufacturer's Name: Vicksburg Chemical c/o Hydro Agri North America, Inc.

Complete Mailing Address: 100 North Tampa Street, Suite 3200  
Tampa, Florida 33602

Phone Number for Additional Information: 813-222-5700  
or Chemtrec 24-hour Emergency Response: 1-800-424-9300



Date Prepared or Revised: 01/01/00

Name of Preparer: Bill Easterwood

### II. HAZARDOUS INGREDIENTS

Chemical Names	CAS Numbers	Percent	Exposure Limits in Air (Give Units)			
			ACGIH TLV	OSHA PEL	Other (Specify)	
Potassium Nitrate	7757-79-1	95.5-99.2	None listed.			

NFPA and HMIS Rating: 1, 0, 3, ox; Health, Flammability, Reactivity

### III. PHYSICAL PROPERTIES

Vapor Density (Air=1):	N/A	Melting Point or Range:	630° F
Specific Gravity:	2.11	Boiling Point or Range:	Decomposes @ 750° F.
Bulk Density:	76 lbs/ft <sup>3</sup>		
Solubility in Water:	31.6g/100g H <sub>2</sub> O @ 68° F	Evaporation Rate:	N/A (Butyl Acetate=1)
Vapor Pressure, mm Hg at 20°C:	Below 1.		

Appearance and Odor: White to buff prills, odorless.

**IV. FIRE AND EXPLOSION**

Flash Point, °F (Give Method): Non-flammable.

Auto Ignition Temperature, °F: Non-flammable.

Flammable Limits in Air, Volume %: N/A Lower (LEL): N/A Upper (UEL): N/A

Fire Extinguishing Materials:

Water Spray       Carbon Dioxide       Other  
 Foam                       Dry Chemical

Special Fire Fighting Procedures: Self contained air supply to protect from oxides of nitrogen.

Unusual Fire and Explosion Hazards: Noxious fumes such as oxides of nitrogen may form. Potassium nitrate is an oxidizer and therefore increases fire intensity and the risk of explosion.

**V. HEALTH HAZARD INFORMATION**

**SYMPTOMS OF OVEREXPOSURE - FOR EACH POTENTIAL ROUTE OF EXPOSURE**

Inhaled: Irritation.

Contact with Skin or Eyes: Skin - Not normally hazardous.  
 Eyes - Irritation and burn.

Absorbed through Skin: Will not occur.

Swallowed: Low toxicity. Ingestion of large quantities may cause nitrate poisoning.

**HEALTH EFFECTS OR RISKS FROM EXPOSURE - EXPLAIN IN LAY TERMS**

Acute: Weakness, general depression, headache and mental impairment.

Chronic: Dizziness, abdominal cramps, vomiting, bloody diarrhea, weakness, convulsions and collapse.

**FIRST AID - EMERGENCY PROCEDURES: IN CASE OF DISCOMFORT DUE TO EXPOSURE, SEEK MEDICAL ATTENTION.**

Eye Contact: Flood immediately with clean water for 30 minutes.

Skin Contact: Wash with copious amounts of soap and water. Remove contaminated clothing.

Inhaled: Move to fresh air.

Swallowed: Give large quantities of water and induce vomiting. Seek medical attention.

SUSPECTED CANCER AGENT?

NO. This product's ingredients are not found in the lists below.

YES.  Federal OSHA  NTP  IARC

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: None known.

VI. REACTIVITY DATA

Stability:  Stable  Unstable

Conditions to Avoid: Fire conditions.

Incompatibility: Organic and oxidizable materials. Corrosive to metals.  
(Materials to Avoid)

Hazardous Decomposition Products: Oxides of nitrogen.  
(Including Combustion Products)

Hazardous Polymerization:  May Occur  Will Not Occur

VII. SPILL, LEAK AND DISPOSAL PROCEDURES

Spill Response Procedures: Contain spill. Sweep up and scoop into suitable container  
(Include Employee Protection for use or recycle. Keep away from combustible  
Measures) substances.

Preparing Wastes for Disposal: Spread on arable land at standard agricultural rates. If  
(Container Types, Neutralization, contaminated, dispose in a properly designated landfill.  
etc.)

**NOTE: DISPOSE OF ALL MATERIALS IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS.**

**VIII. SPECIAL HANDLING INFORMATION**

Ventilation and Engineering Controls:	Adequate ventilation for dust control.
Respiratory Protection (Type):	NIOSH approved dust respirator.
Eye Protection (Type):	Safety goggles/glasses.
Gloves (Specify Material):	Rubber gloves.
Other Clothing and Equipment:	Clean coveralls and a long sleeved shirt.
Work and Hygienic Practices:	Shower with soap and water. Wash clothing separately with laundry detergent.
Other Handling and Storage Requirements:	Prevent eye contact, skin contact and oral ingestion. Store in a dry place. Avoid storing with oxidizable materials.
Protective Measures During Maintenance of Contaminated Equipment:	Same as handling and storage requirements.

**WARNING:** This product contains a chemical (or chemicals) known to the State of California to cause cancer and birth defects or other reproductive harm.

**Customer Service**

1-800-23-HYDRO (1-800-234-9376) • FAX (813-875-5735)

100 North Tampa Street, Suite 3200, Tampa, Florida 33602

**VIKING SHIP**Hydro Agri  
North America*Hydro works harder for you.*

# Technical Data Sheet

**VIKING SHIP<sup>®</sup> CALCIUM NITRATE****15.5-0-0-19Ca****GRANULAR, COATED**TYPICAL ANALYSIS

Total Nitrogen	15.5%
1.0% Ammoniacal Nitrogen	
14.5% Nitrate Nitrogen	
Calcium (Expressed as Ca)	19.0%
Screen Analysis: Tyler Mesh (-5+10)	
2.0-4.0 mm - 90%	
Bulk Density	
1.1 kg/dm <sup>3</sup> (68 lb/ft <sup>3</sup> ) ± 5%	
Crushing Strength	4.5 - 5.0 kg (9.9 - 11 lbs)
Angle of Repose	32°

01/01/00

**Customer Service****1-800-23-HYDRO (1-800-234-9376) • FAX (813-875-5735)**

100 North Tampa Street, Suite 3200, Tampa, Florida 33602

9

**Material Safety Data Sheet**  
**J. R. Simplot Company**  
**AgriBusiness**

Trade Name: Micro Green 15  
Registration No: None

M74017

**SECTION 1**

**CHEMICAL PRODUCT AND COMPANY INFORMATION**

**Manufacturer or Formulator:** J.R. Simplot Company  
P.O. Box 912  
Pocatello, ID 83204  
**Emergency Phone - Chemtrec:** 1-800-424-9300

**Product Name:** Micro Green 15  
**Common Name:** 15-8-8  
**Chemical Type:** Inorganic Chemical Fertilizer

**SECTION 2**

**COMPOSITION INFORMATION**

Chemical Name and Synonyms	C.A.S. No.	Chemical Formula	WT% Hazardous	TLV	PEL
None listed					
This is a homogeneous granular product of:			<b>Non-Hazardous</b>		
Ammonium Sulfate	7783-20-2	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	100	10 mg/M <sup>3</sup> - Nuisance Dust	Not available
Ammonium Phosphate	7783-28-0	(NH <sub>4</sub> ) <sub>2</sub> HPO <sub>4</sub>			
Muriate of Potash	7447-40-7	KCl			

**SECTION 3**

**HAZARDS IDENTIFICATION**

**Ingestion:** Minimal hazard under normal conditions and use. Ingestion of large quantities may cause gastrointestinal discomfort, vomiting, weakness or other medically related problems.

**Inhalation:** Dusty conditions may cause mechanical aggravation to respiratory mucous membranes.

**Eye Contact:** Dust from this product may cause particulate discomfort to eyes.

**Skin Absorption:** Not normally absorbed through the skin.

**Skin Contact:** Slight dermal abrasion is possible with prolonged contact, especially around cuffs and collars.

**Effects of Overdose:** Ingestion of large doses may cause diarrhea, nausea, abdominal cramps or formation of methemoglobinemia. Seek medical attention.

**SECTION 4**

**FIRST AID MEASURES**

**Ingestion:** If large amount is ingested, give 2-3 glasses of water and induce vomiting. Seek medical attention.

**Inhalation:** Remove to fresh air. Seek medical attention if condition persists.

**Eyes:** Flush eyes with running water for at least 15 minutes. Seek medical attention if condition persists.

**Skin:** Wash with soap and water. Seek medical attention if condition persists.

**Notes to Physician:** Consult standard literature. Treatment based on the sound judgment of the physician and the individual reactions of the patient.

**SECTION 5**

**FIRE FIGHTING MEASURES**

**Extinguishing Media:** Use media suitable to extinguish source of fire.

**Special Fire Fighting Procedures:** Product is not combustible.

**Unusual Fire and Explosion Hazards:** During extremely high temperature fire conditions, the product may reach melting point and decompose to release NH<sub>3</sub>, SO<sub>x</sub>, PO<sub>x</sub> or CN.

**SECTION 6**

**ACCIDENTAL RELEASE MEASURES**

**Environmental Precautions:** Keep out of water supplies, lakes, ponds, streams and rivers. This product is a fertilizer and may promote algae growth.

**Steps to be taken in case material is released or spilled:**  
Keep from entering waterways. Sweep up material and place in suitable container for use as a fertilizer or for disposal.

**SECTION 7**

**HANDLING AND STORAGE**

**Precautions to be taken in handling and storing:**  
Store in a cool, dry area. Prevent spillage and separate from strong oxidizers. Use normal safety procedures and good personal hygiene. Keep out of the reach of children.

**SECTION 8**

**EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Ventilation Protection:** Adequate ventilation.

**Respiratory Protection:** Approved dust respirator when necessary.

**Protective Clothing:** Normal clean work clothing.

**Eye Protection:** In dusty conditions, safety glasses with side shields or goggles may be necessary.

Trade Name: Micro Green 15  
Registration No: None

M74017

**SECTION 9**

**PHYSICAL AND CHEMICAL PROPERTIES**

<b>Boiling Point:</b>	Not applicable	<b>Solubility in Water:</b>	60 gm/100 gm H <sub>2</sub> O @ 78°F
<b>Density:</b>	63 lbs/ft <sup>3</sup>	<b>% Volatiles (by volume):</b>	Not applicable
<b>Flashpoint:</b>	Non flammable	<b>Vapor Pressure, mm Hg:</b>	Not applicable
<b>pH:</b>	Not listed	<b>Reaction with Water:</b>	None
<b>Appearance:</b>	Solid, granular, dark gray with a slight acidic odor.		
<b>Extinguishing Media:</b>	Use media suitable to extinguish source of fire.		

**SECTION 10**

**STABILITY AND REACTIVITY**

<b>Stability (Normal Conditions):</b>	Stable
<b>Conditions to Avoid:</b>	Extremely high temperatures.
<b>Incompatibility (Material to Avoid):</b>	Strong oxidizing agents. Prolonged contact may cause oxidation of unprotected metals.
<b>Hazardous Decomposition Products:</b>	During extremely high temperature fire conditions, the product may reach melting point and decompose to release NH <sub>3</sub> , SO <sub>x</sub> , PO <sub>x</sub> or CN.
<b>Hazardous Polymerization:</b>	Will not occur
<b>Conditions to Avoid:</b>	Not applicable

**SECTION 11**

**TOXICOLOGY INFORMATION**

**Ingestion:** Acute Oral Toxicity (rat) LD<sub>50</sub>: 3000 mg/kg for Ammonium Sulfate; (rat) LD<sub>50</sub>: 2600 mg/kg for Potassium Chloride.

**SECTION 12**

**ECOLOGICAL INFORMATION**

None listed.

**SECTION 13**

**DISPOSAL CONSIDERATIONS**

**Waste Disposal Procedures:** Pick up with a shovel and broom and use as a fertilizer by applying to soil using good agricultural and soil management.

**SECTION 14**

**TRANSPORT INFORMATION**

<b>Shipping name:</b>	Not regulated by DOT	<b>C.A.S. Number:</b>	See "Ingredients"
<b>Hazard Class:</b>	None	<b>D.O.T. Number:</b>	None
<b>Reportable Quantity (RQ):</b>	None	<b>Haz Waste No:</b>	None
<b>Labels Required:</b>	None	<b>EPA Regist No:</b>	None
<b>Placard:</b>	None		

**SECTION 15**

**REGULATORY INFORMATION**

**Carcinogenicity:**  
by IARC?: Yes ( ) No (X) by NTP?: Yes ( ) No (X)

Not on the 302 list of SARA reportable quantities.

**SECTION 16**

**OTHER INFORMATION**

<b>Flash Point (Test Method):</b>	Non flammable	<b>Flammable Limits</b>	<b>LOWER</b>	<b>UPPER</b>
<b>Autoignition Temperature:</b>	Not applicable	<b>(% BY VOLUME)</b>	N/A	N/A

MSDS Version Number: 3 (revisions to Section 15)

**Disclaimer:** This information relates to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty or guarantee is made as to its accuracy, reliability or completeness. **NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, IS MADE CONCERNING THE INFORMATION HEREIN PROVIDED.** It is the user's responsibility to satisfy themselves as to the suitability and completeness of such information for their own particular use. We do not accept liability for any loss or damage that may occur from the use of this information nor do we offer warranty against patent infringement.

Reviewed by: The Department of Regulatory Affairs  
May 1999 (208) 238-2700

**MATERIAL SAFETY DATA SHEET**

**SIGNATURE® 22-0-6 WITH XCU™**

**FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300**

**1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

**GUARANTEED BY:**

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 National Response Center:** 1-800-424-8802

**PRODUCT NAME:** SIGNATURE® 22-0-6 WITH 50% XCU™  
**CHEMICAL NAME:** Inorganic/Organic Chemical Fertilizer Mixture  
**CHEMICAL FAMILY:** N-P-K Mixed dry blended fertilizer  
**EPA REG. NO.:** not applicable  
**MSDS Number:** .231078-08-LPI **MSDS Revisions:** New

**Date of Issue:** 09/08/08

**Supersedes:** New

**2. HAZARDS IDENTIFICATION SUMMARY**

**KEEP OUT OF REACH OF CHILDREN** – May cause mild eye and skin irritation. Avoid contact with skin, eyes, open cuts, or sores. In case of contact, flush with water. Get medical attention for eyes. This blended dry fertilizer is derived from Urea, Polymer Coated Sulfur Coated Urea, and Muriate of Potash. Nausea and vomiting could be expected upon large dose ingestion. The acute ingestive effects are described as nausea, chills, and diarrhea. Eye or skin contact with these products could cause irritation (particularly in sensitive persons), and respiratory irritation could be expected from the unprotected inhalation of fertilizer dusts. Product users should avoid prolonged or repeated skin contact by wearing impervious gloves, long sleeve shirt, long pants, socks and rubber boots. Goggles for eye protection are recommended. Wash thoroughly after handling and using this product.

This product is a multi-colored granule with typical odor. Primary routes of entry are Inhalation, eye contact and skin contact.

**3. COMPOSITION, INFORMATION ON INGREDIENTS**

<u>Chemical Ingredients:</u>	<u>Percentage by Weight:</u>	<u>CAS No.</u>	<u>TLV (Units)</u>
Total Nitrogen (N)	22.00	Mixture	not listed
Soluble Potash (K <sub>2</sub> O)	6.00	Mixture	not listed
Fertilizer salts and inert ingredients	72.00		

**4. FIRST AID MEASURES**

**If in Eyes:** Flush with clean running water for at least 15 minutes. If irritation persists, get medical attention  
**If on Skin:** Remove contaminated clothing. Wash thoroughly with soap and water. If irritation persists, or if rash develops, get medical attention.  
**If Swallowed:** If conscious, drink 1 or 2 glasses of water. Get medical attention. Never induce vomiting or give anything by mouth to an unconscious person.  
**If inhaled:** Remove to fresh air. If irritation persists, get medical attention.  
**FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: 1-800-301-7976.**

**5. FIRE FIGHTING MEASURES**

**FLASH POINT (°F/Test Method):** Not applicable  
**FLAMMABLE LIMITS (LFL & UFL):** Not applicable  
**EXTINGUISHING MEDIA:** Use medium appropriate to surrounding fire. Dry chemical, CO<sub>2</sub>, foam, water spray, or fog.  
**HAZARDOUS COMBUSTION PRODUCTS:** May include but are not limited to oxides of carbon, hydrogen chloride, hydrogen fluoride, oxides of nitrogen, ammonia, oxides of phosphorus, oxides of sulfur, hydrogen sulfide, and cyanuric acid.  
**SPECIAL FIRE FIGHTING PROCEDURES:** Wear self-contained breathing apparatus and full protective gear.  
**UNUSUAL FIRE AND EXPLOSION HAZARDS:** Sulfur-containing components may release oxides of sulfur.

**6. ACCIDENTAL RELEASE MEASURES**

**STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:**  
Avoid breathing dusts, mists and vapors. Sweep up dry spills immediately and transfer to suitable containers for possible land application according to label use or for disposal. Check local, state and federal regulations for proper disposal.  
**CAUTION:** Keep spills and cleaning runoff out of municipal sewers and open bodies of water.

**7. HANDLING AND STORAGE**

**HANDLING:** Avoid breathing fertilizer dusts and mists. Avoid prolonged or repeated skin contact. Avoid eye contact. Wash hands thoroughly after handling this product.

**STORAGE:** After partial use, fold and roll back bags, clamp and close tightly. Store in original containers in a cool, dry well-ventilated area, preferably in a locked storage area away from children, feed and food products, and seed. Do not contaminate water, food, or feed by storage or disposal.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**ENGINEERING CONTROLS:** Not normally required.

**RESPIRATORY PROTECTION:** Not normally required, if vapors or dusts exceed acceptable levels, wear a NIOSH approved pesticide respirator.

**EYE PROTECTION:** Chemical goggles or shielded safety glasses.

**SKIN PROTECTION:** Wear protective clothing: long-sleeved shirts and pants, hat, rubber boots with socks. Wear rubber or chemical-resistant gloves.

	<b>OSHA PEL 8 hr TWA</b>	<b>ACGIH TLV-TWA</b>
Nuisance particulates	15 mg/m <sup>3</sup> (total dust)	Not Established

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>APPEARANCE AND ODOR:</b> Multi-colored granules with typical odor	<b>SOLUBILITY:</b> Appreciable
<b>SPECIFIC GRAVITY (Water = 1):</b> 0.6407 – 1.041 g/ml	<b>BULK DENSITY:</b> 40 - 65 lbs/ft <sup>3</sup>
<b>VAPOR PRESSURE:</b> Not established	<b>BOILING POINT:</b> Not established
<b>PERCENT VOLATILE (by volume):</b> Not established	<b>EVAPORATION RATE:</b> 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

**INCOMPATIBILITY:** Strong oxidizing agents.

**CONDITIONS TO AVOID:** Excessive heat and moisture.

**HAZARDOUS DECOMPOSITION PRODUCTS:** May include but are not limited to oxides of carbon, hydrogen chloride, hydrogen fluoride, oxides of nitrogen, ammonia, oxides of phosphorus, oxides of sulfur, hydrogen sulfide, and cyanuric acid.

**HAZARDOUS POLYMERIZATION:** Will not occur.

**11. TOXICOLOGICAL INFORMATION**

<b>Acute Oral LD<sub>50</sub> (rat):</b> >5000 mg/kg	<b>Acute Dermal LD<sub>50</sub> (rabbit):</b> >2000 mg/kg
<b>Eye Irritation (rabbit):</b> May cause irritation	<b>Skin Irritation (rabbit):</b> May cause irritation in sensitive individuals
<b>Inhalation LC<sub>50</sub> (rat):</b> May cause respiratory tract irritation.	<b>Skin Sensitization (guinea pig):</b> Not established.
<b>Carcinogenic Potential:</b> None listed in OSHA, NTP, IARC or ACGIH	

**12. ECOLOGICAL INFORMATION**

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.

**13. DISPOSAL CONSIDERATIONS**

Do not reuse container. 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. Do not contaminate water, food or feed by storage and disposal.

**14. TRANSPORT INFORMATION**

**DOT Shipping Description:** NOT REGULATED BY USDOT.

**U.S. Surface Freight Classification:** FERTILIZING COMPOUNDS (MANUFACTURED FERTILIZERS), NOI; DRY (NMFC 68140, SUB 5; CLASS 50)

**15. REGULATORY INFORMATION**

<b>NFPA &amp; HMIS Hazard Ratings:</b>	<b>NFPA</b>		<b>HMIS</b>
	1 Health	0 Least	1 Health
	0 Flammability	1 Slight	0 Flammability
	0 Instability	2 Moderate	0 Reactivity
		3 High	H PPE
		4 Severe	

**MATERIAL SAFETY DATA SHEET**

**SIGNATURE® 22-0-6 WITH XCU™**

**SARA Hazard Notification/Reporting**

**SARA Title III Hazard Category:**

Immediate Y  
Delayed N

Fire N  
Reactive N

Sudden Release of Pressure 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

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**16. OTHER INFORMATION**

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**MSDS STATUS:** New

**PREPARED BY:** Registrations and Regulatory Affairs

**REVIEWED BY:** Environmental/ Regulatory Services

*®Signature is a registered trademark of Loveland Products, Inc.*

*XCU is a trademark of Agrium Advanced Technologies*

**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****SIGNATURE® FERTILIZER WITH 0.86% PENDIMETHALIN**

**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:** SIGNATURE® FERTILIZER WITH 0.86% PENDIMETHALIN  
**CHEMICAL NAME:** Herbicide (Pendimethalin); N-(1-ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzenamine) on N-P-K Fertilizer  
**CHEMICAL FAMILY:** Dinitroaniline Herbicide-Fertilizer Combination  
**EPA REG. NO.:** 34704-832  
**MSDS Number:** 000832-06-LPI      **MSDS Revisions:** New      **Date of Issue:** 10/19/06      **Supersedes:** New

**2. HAZARDS IDENTIFICATION SUMMARY**

**KEEP OUT OF REACH OF CHILDREN – CAUTION – Si usted entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand this label, find someone to explain it to you in detail.)** Causes eye irritation. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush eyes or skin with plenty of water. Get medical attention if irritation persists. Wash thoroughly with soap and water after handling. May be harmful if swallowed. Avoid inhalation. Do not contaminate feed or foodstuffs. Do not feed clippings to livestock. Do not graze treated areas.

This product is a multi-colored granule with slight odor.

**3. COMPOSITION, INFORMATION ON INGREDIENTS (Note: See Product Label for Guaranteed Analysis)**

<u>Chemical Ingredients:</u>	<u>Percentage by Weight:</u>	<u>CAS No.</u>	<u>TLV (Units)</u>
Pendimethalin	0.86	40487-42-1	None Established
Fertilizer: see label for N-P-K analysis	99.14		

**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.

**IF IN EYES:** Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing. Call a poison control center or doctor for treatment advice.

**IF ON SKIN:** 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.

**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 container or label with you when calling a poison control center, or doctor, or when going for treatment

**5. FIRE FIGHTING MEASURES**

**FLASH POINT (°F/Test Method):** Not applicable  
**FLAMMABLE LIMITS (LFL & UFL):** Not applicable  
**EXTINGUISHING MEDIA:** Considered non-combustible, use medium appropriate to surrounding fire. Dry chemical, carbon dioxide, foam, water spray or fog.

**HAZARDOUS COMBUSTION PRODUCTS:** May include but are not limited to oxides of carbon, hydrogen chloride, hydrogen fluoride, oxides of nitrogen, ammonia, oxides of phosphorus, oxides of sulfur, hydrogen sulfide.

**SPECIAL FIRE FIGHTING PROCEDURES:** Use water spray to cool containers exposed to fire. Remain upwind. Avoid breathing smoke. Wear self-contained breathing apparatus and full protective gear.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** Dusts or vapors can travel to a sources of ignition and flash back.

**6. ACCIDENTAL RELEASE MEASURES****STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:**

Avoid breathing dusts. Sweep up dry spills immediately and transfer to suitable containers for possible land application according to label use or for disposal. Check local, state and federal regulations for proper disposal.

**CAUTION:** Keep spills and cleaning runoff out of municipal sewers and open bodies of water.

**7. HANDLING AND STORAGE**

**HANDLING:** 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. Remove PPE as soon as possible 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 labeled container in a dry, cool area out of reach of children and pets. Partially used bags should be sealed by folding down the top and securing. Do not contaminate water, food or feed by storage or disposal.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**ENGINEERING CONTROLS:** Not normally required.  
**RESPIRATORY PROTECTION:** Not normally required, if vapors or dusts exceed acceptable levels, wear a NIOSH approved pesticide respirator.  
**EYE PROTECTION:** Chemical goggles or shielded safety glasses.  
**SKIN PROTECTION:** Wear protective clothing: long-sleeved shirts and pants, hat, rubber boots with socks. Wear rubber or chemical-resistant gloves.

	<b>OSHA PEL 8 hr TWA</b>	<b>ACGIH TLV-TWA</b>
Nuisance Particulates	15 mg/m <sup>3</sup> (total dust)	not listed

**Personal Protective Equipment (PPE): Applicators and other handlers must wear:** long sleeved shirt and long pants, chemical resistant gloves made of waterproof materials such as butyl rubber ≥ 14 mils, natural rubber ≥ 14 mils, neoprene rubber ≥ 14 mils, or nitrile rubber ≥ 14 mils, shoes plus socks. 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**

<b>APPEARANCE AND ODOR:</b> Multi-colored granules with slight odor	<b>BULK DENSITY:</b> 59-60 lbs/ft <sup>3</sup>	<b>SOLUBILITY:</b> Insoluble
<b>SPECIFIC GRAVITY (Water = 1):</b> 0.96-0.97 g/ml	<b>BOILING POINT:</b> Not applicable	<b>pH:</b> Not applicable
<b>VAPOR PRESSURE:</b> Not applicable	<b>EVAPORATION RATE:</b> Not applicable	
<b>PERCENT VOLATILE (by volume):</b> Not applicable		

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  
**INCOMPATIBILITY:** Caustics, acids, oxidizers, fluorine, metals.  
**HAZARDOUS DECOMPOSITION PRODUCTS:** None known.  
**HAZARDOUS POLYMERIZATION:** Will not occur.  
**CONDITIONS TO AVOID:** Excessive heat, open flame, other ignition sources.

**11. TOXICOLOGICAL INFORMATION**

<b>Acute Oral LD<sub>50</sub> (rat):</b> (technical material) 1050 mg/kg	<b>Acute Dermal LD<sub>50</sub> (rabbit):</b> >5000 mg/kg
<b>Eye Irritation (rabbit):</b> Causes eye irritation	<b>Skin Irritation (rabbit):</b> May cause irritation
<b>Inhalation LC<sub>50</sub> (rat):</b> Not established.	<b>Skin Sensitization (guinea pig):</b> Not established

**Carcinogenic Potential:** None listed in OSHA, NTP, IARC or ACGIH

**12. ECOLOGICAL INFORMATION**

This pesticide is toxic to fish. Do not apply directly to water, or to area 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 adjacent areas. Do not contaminate water when cleaning equipment or disposing of equipment wash water.  
 Do not apply when weather conditions favor drift from target area. Drift or runoff may adversely affect non-target plants.

**13. DISPOSAL CONSIDERATIONS**

Do not reuse empty 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. Wastes resulting from the use of 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.

**14. TRANSPORT INFORMATION**

**DOT Shipping Description:** NOT REGULATED BY USDOT.  
**U.S. Surface Freight Classification:** FERTILIZING COMPOUNDS (MANUFACTURED FERTILIZERS), NOI; DRY (NMFC 50320, SUB 5; CLASS 50)

**15. REGULATORY INFORMATION**

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	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: Not listed  
 SARA, Title III, Section 313: Pendimethalin (CAS: 40487-42-1): 0.86%  
 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: New  
 PREPARED BY: Registrations and Regulatory Affairs REVIEWED BY: Environmental/ Regulatory Services  
 ©Signature is a registered trademark of Loveland Products, Inc.

**Note:** This material safety data sheet applies to all Signature® N-P-K fertilizer analyses containing 0.86% Pendimethalin.

**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

# 23-4-8 FERTILIZER

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:

United Horticultural Supply  
P.O. Box 1286 • Greeley, CO 80632-1286

24-Hour Emergency Phone: 1-800-424-9300  
Medical Emergencies: 1-800-301-7976

PRODUCT NAME: 23-4-8 FERTILIZER  
CHEMICAL NAME: Inorganic/Organic Chemical Fertilizer Mixture  
CHEMICAL FAMILY: N-P-K Mixed dry blended fertilizer  
EPA REG. NO.: not applicable  
MSDS Number: 1325560-03      MSDS Revisions: New

Date Of Issue: 09/15/03      Supersedes: New

## 2. COMPOSITION, INFORMATION ON INGREDIENTS (Note: See Product Tag or Label for Specific Ingredients)

Chemical Ingredients:	Percentage by Weight:	CAS No.
Total Nitrogen (N)	23.00	Mixture
Available Phosphate (P <sub>2</sub> O <sub>5</sub> )	4.00	Mixture
Soluble Potash (K <sub>2</sub> O)	8.00	Mixture
Total Sulfur (S)	8.50	Mixture
Total Iron (Fe)	1.50	Mixture
Micro ingredient: Zn, fertilizer salts and inert ingredients	55.00	

## 3. HAZARDS IDENTIFICATION SUMMARY

KEEP OUT OF REACH OF CHILDREN – CAUTION – Harmful if swallowed. Avoid contact with eyes, skin and clothing. Avoid breathing spray mist. This product is a white and gray prilled granule with slight salt odor. Primary routes of entry are Inhalation, eye contact and skin contact.

## 4. FIRST AID MEASURES

**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 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.

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):** Not applicable

**FLAMMABLE LIMITS (LEL & UEL):** Not applicable

**EXTINGUISHING MEDIA:** Use medium appropriate to surrounding fire. Dry chemical, carbon dioxide, foam, water spray or fog.

**HAZARDOUS COMBUSTION PRODUCTS:** May include but are not limited to oxides of carbon, hydrogen chloride, hydrogen fluoride, oxides of nitrogen, ammonia, oxides of metal, oxides of sulfur, and ammonia.

**SPECIAL FIRE FIGHTING PROCEDURES:** Use water spray to cool containers exposed to fire. Remain upwind. Avoid breathing smoke. Wear self-contained breathing apparatus and full protective gear.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** None known.

## 6. ACCIDENTAL RELEASE MEASURES

**STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:**  
Absorb and sweep up liquid spills immediately and transfer to suitable containers for possible land application according to label use or for disposal. Check local, state and federal regulations for proper disposal.

**CAUTION:** Keep spills and cleaning runoff out of municipal sewers and open bodies of water.

## 7. HANDLING AND STORAGE

**HANDLING:** Follow label instructions carefully. Keep away from children, domestic animals, feed and foodstuffs and pesticides.

**STORAGE:** Keep container tightly closed when not in use. Store in a cool, secure place. Do not contaminate water supplies by handling and storage of product. Drift or runoff may adversely affect non-target plants.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**ENGINEERING CONTROLS:** Not normally required.

**RESPIRATORY PROTECTION:** Not normally required, if vapors or dusts exceed acceptable levels, wear a MSHA/NIOSH approved pesticide respirator.

**EYE PROTECTION:** Chemical goggles or shielded safety glasses.

**SKIN PROTECTION:** Wear protective clothing: long-sleeved shirts and pants, hat, rubber boots with socks. Wear rubber or chemical-resistant gloves.

# MATERIAL SAFETY DATA SHEET

# 23-4-8 FERTILIZER

Nuisance particulates      OSHA PEL 8 hr TWA      ACGIH TLV-TWA  
15 mg/m<sup>3</sup> (total dust)      not listed

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**APPEARANCE AND ODOR:** White and gray prilled granule with slight salt odor  
**SPECIFIC GRAVITY (Water= 1):** 0.9931 g/ml  
**VAPOR PRESSURE:** Not established  
**PERCENT VOLATILE (by volume):** 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.

**BULK DENSITY:** 62.0 lbs/ft<sup>3</sup>  
**BOILING POINT:** Not established  
**EVAPORATION RATE:** Not established

**SOLUBILITY:** Insoluble  
**pH:** Not established

## 10. STABILITY AND REACTIVITY

**STABILITY:** Stable  
**INCOMPATIBILITY:** None known.  
**HAZARDOUS DECOMPOSITION PRODUCTS:** Metal oxides, sulfur oxides, and ammonia.  
**HAZARDOUS POLYMERIZATION:** Will not occur.

**CONDITIONS TO AVOID:** None known.

## 11. TOXICOLOGICAL INFORMATION

**Acute Oral LD50 (rat):** >5000 mg/kg  
**Eye Irritation (rabbit):** May cause moderate irritation  
**Inhalation LC50:** Not established.  
**Carcinogenic Potential:** None listed in OSHA, NTP, IARC or ACGIH

**Acute Dermal LD 50 (rabbit):** >5000 mg/kg  
**Skin Irritation (rabbit):** May cause skin irritation  
**Ingestion:** May cause stomach distress, nausea or vomiting.

## 12. ECOLOGICAL INFORMATION

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.

## 13. DISPOSAL CONSIDERATIONS

Do not reuse container. Completely empty bag into dispensing equipment and dispose of in a sanitary landfill or by incineration, or if allowed or by local, state and federal authorities, by burning. If burned, stay out of smoke.

## 14. TRANSPORT INFORMATION

**DOT Shipping Description:** NOT REGULATED BY USDOT  
**U.S. Surface Freight Classification:** FERTILIZING COMPOUNDS (MANUFACTURED FERTILIZERS), NOI; DRY (NMFC 68140, SUB 5; CLASS 50)

## 15. REGULATORY INFORMATION

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	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:** Not listed  
**SARA, Title III, Section 313:** Not listed  
**RCRA Waste Code:** Not listed  
**CA Proposition 65:** This product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

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**16. OTHER**

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MSDS STATUS: New

PREPARED BY: Registrations and Regulatory Affairs

REVIEWED BY: Environmental/ Regulatory Services

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, United Horticultural Supply makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving it will make their own determination as to its suitability for their purposes prior to use. **In no event will United Horticultural Supply be responsible for any damages of any nature including, without limitation, direct, special or consequential, resulting from the use, reliance upon, or the accuracy, completeness or furnishing of such 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 THE PRODUCT TO WHICH INFORMATION REFERS.

**SAFETY DATA SHEET****Prilled Urea**

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**1. Identification of the substance/preparation and of the company/undertaking****Identification of the substance or preparation**

Product name : Prilled Urea

Synonyms : 46%N

Use of the substance/preparation : Fertilizer.

**Company/undertaking identification**Manufacturer / Supplier : Yara UK Limited  
Immingham  
North East Lincolnshire  
DN40 2NS  
UK  
T: +44 (0) 1469 554600  
F: +44 (0) 1469 571624

Emergency telephone number : +44 (0) 1865 407333 National Chemical Emergency Centre (NCEC)

**2. Composition/information on ingredients**

Substance/preparation : Preparation

Within the present knowledge of the supplier, this product does not contain any hazardous ingredients in quantities requiring reporting in this section, in accordance with EU regulations or National regulations.

Contains urea

**3. Hazards identification**

The preparation is not classified as dangerous according to Directive 1999/45/EC and its amendments.

See section 11 for more detailed information on health effects and symptoms.

**4. First aid measures**

Inhalation : Avoid breathing dust. If inhaled, remove to fresh air.

Ingestion : If large quantities of this material are swallowed, call a physician immediately. Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.

Skin Contact : Avoid prolonged or repeated contact with skin. After handling, always wash hands thoroughly with soap and water. Get medical attention if irritation develops.

Eye contact : In case of contact with eyes, rinse immediately with a copious amount of water. Get medical attention if irritation occurs.

See section 11 for more detailed information on health effects and symptoms.

**5. Fire-fighting measures**

Extinguishing media : Use water only in flooding quantities. Do not release runoff from fire to sewers or waterways.

Special exposure hazards : Fire-fighters should wear self-contained positive pressure breathing apparatus (SCBA) and full turnout gear.

Hazardous thermal decomposition products : These products can be carbon oxides (CO, CO<sub>2</sub>), nitrogen oxides (NO, NO<sub>2</sub>...), ammonia (NH<sub>3</sub>).

## 6. Accidental release measures

**Personal Precautions** : Use suitable protective equipment (Section 8). Follow all fire fighting procedures (Section 5).

**Environmental precautions and clean-up methods** : Minimize contact of spilled material with soils to prevent runoff to surface waterways.

Use a tool to scoop up solid or absorbed material and place into appropriate labelled waste container. Absorb with dry sand or other noncombustible material. Avoid creating dusty conditions and prevent wind dispersal. Keep out of waterways. See Section 13 for Waste Disposal Information.

Note: see section 8 for personal protective equipment and section 13 for waste disposal.

## 7. Handling and storage

**Handling** : Avoid creating dust when handling and avoid all possible sources of ignition (spark or flame). Avoid contamination by any source including metals, dust and organic materials.

**Storage** : Store and use away from heat, sparks, open flame, or any other ignition source. Avoid contact with combustible materials. On farm keep away from hay, grain, diesel, etc.

## 8. Exposure controls/personal protection

**Occupational exposure limits** : Total inhalable dust - 10 mg/m<sup>3</sup>

Respirable dust - 4 mg/m<sup>3</sup>

### Exposure controls

**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.

**Hand protection** : Chemical-resistant, impervious gloves or gauntlets complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

**Eye protection** : Use dust goggles if high dust concentration is generated.

**Skin protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved.

## 9. Physical and chemical properties

### General information

#### Appearance

**Physical state** : Solid.

**Colour** : White to yellowish. White.

**Odour** : Odourless.

### Important health, safety and environmental information

**pH** : 4 to 10 (Conc. (% w/w): 10) [Neutral.]

**Boiling point** : Decomposes.

**Melting/freezing point** : 133 to 253°C (271.4 to 487.4°F)

**Density** : 0.7 to 1 g/cm<sup>3</sup> (20°C / 68°F)

**Solubility** : Soluble in cold water.

## 10. Stability and reactivity

**Stability** : Stable under recommended storage and handling conditions (see section 7).

**Materials to avoid** : Urea reacts with calcium hypochlorite or sodium hypochlorite to form the explosive nitrogen trichloride.

**Hazardous Decomposition Products** : These products can be carbon oxides (CO, CO<sub>2</sub>), nitrogen oxides (NO, NO<sub>2</sub>...), ammonia (NH<sub>3</sub>).

## 11. Toxicological information

### Potential acute health effects

Adverse health effects are considered unlikely, when the product is used according to directions.

### Acute toxicity

Ingredient name	Test	Result	Route	Species
Preparation	LD50	>2000 mg/kg	Oral	Rat

### Over-exposure signs/symptoms

Target organs : Contains material which causes damage to the following organs: skin, eye, lens or cornea.

## 12. Ecological information

Other adverse effects : Used in excess quantities the product can cause eutrophication.

## 13. Disposal considerations

Methods of disposal : Empty containers or liners may retain some product residues. Do not empty into drains; dispose of this material and its container in a safe way. Dispose of in accordance with all applicable local and national regulations.

Hazardous waste : To present knowledge of the supplier, this product is not regarded as hazardous waste as defined by EU Directive 2001/118/EC.

## 14. Transport information

Not regulated.

## 15. Regulatory information

### EU Regulations

Risk Phrases : This product is not classified according to the EU regulations.

Product use : Consumer applications.

Classification and labelling have been performed according to EU directives 67/548/EEC, 1999/45/EC, including amendments and the intended use.

## 16. Other information

### History

Date of issue : 2004-07-23.

Date of previous issue : 2004-07-23.

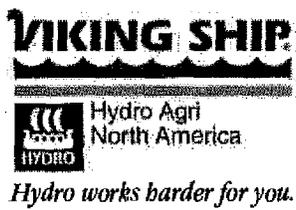
Version : 1

Indicates information that has changed from previously issued version.

### 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.*

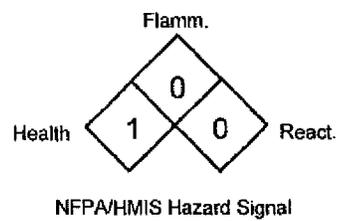


# Material Safety Data Sheet

## HYDRO AGRI NORTH AMERICA, INC.

### I. PRODUCT IDENTIFICATION

Trade Name (as Labeled): Ferrous Sulfate Monohydrate  
 Manufacturer's Name: QC Corporation c/o Hydro Agri North America, Inc.  
 Complete Mailing Address: 100 North Tampa Street, Suite 3200  
 Tampa, Florida 33602  
 Phone Number for Additional Information: 813-222-5700  
 or Chemtrec 24-hour Emergency Response: 1-800-424-9300  
 Date Prepared or Revised: 01/01/00 Name of Preparer: Bill Easterwood



### II. HAZARDOUS INGREDIENTS

Chemical Names	CAS Numbers	Percent	Exposure Limits in Air (Give Units)			
			ACGIH TLV	OSHA PEL	Other (Specify)	
Ferrous Sulfate - Monohydrate	7720-78-7	> 90%	1 mg/m <sup>3</sup>			

NFPA and HMIS Rating: 1, 0, 0; Health, Flammability, Reactivity

### III. PHYSICAL PROPERTIES

Vapor Density (Air=1): N/A Melting Point or Range: Decomposes at 572° F (300° C)  
 Bulk Density: 78-80 lbs/ft<sup>3</sup> Boiling Point or Range: Decomposes at 572° F (300° C)  
 Solubility in Water: 57g in 100 ml water at 158° C. Evaporation Rate: (Butyl Acetate=1) N/A  
 Vapor Pressure, mm Hg at 20°C: N/A  
 Appearance and Odor: Grayish white to light gray crystalline solid; acidic; odorless.

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**IV. FIRE AND EXPLOSION**

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Flash Point, °F (Give Method): Not combustible.

Auto Ignition Temperature, °F: N/A

Flammable Limits in Air, Volume %: N/A Lower (LEL): N/A Upper (UEL): N/A

Fire Extinguishing Materials:

Water Spray       Carbon Dioxide       Other  
 Foam                       Dry Chemical

Special Fire Fighting Procedures: None

Unusual Fire and Explosion Hazards: None

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**V. HEALTH HAZARD INFORMATION**

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**SYMPTOMS OF OVEREXPOSURE - FOR EACH POTENTIAL ROUTE OF EXPOSURE**

Inhaled: Respiratory irritation that creates breathing difficulty.

Contact with Skin or Eyes: Skin: Mild Irritation.  
Eyes: Severe irritant.

Absorbed through Skin: N/A

Swallowed: Gastrointestinal irritation, shock, liver damage, tachycardia and death.

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**HEALTH EFFECTS OR RISKS FROM EXPOSURE - EXPLAIN IN LAY TERMS**

Acute: Irritant to skin and eyes.

Chronic: Irritant to skin and eyes; lethal if ingested in large quantities.

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**FIRST AID - EMERGENCY PROCEDURES: IN CASE OF DISCOMFORT DUE TO EXPOSURE, SEEK MEDICAL ATTENTION.**

Eye Contact: Flood immediately with clean water for 15 minutes.

Skin Contact: Wash with copious amounts of soap and water.

Inhaled: Move to fresh air.

Swallowed: Give milk immediately, induce vomiting and contact physician immediately.

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**SUSPECTED CANCER AGENT?**

NO.                      This product's ingredients are not found in the lists below.  
 YES.                       Federal OSHA       NTP                       IARC

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**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:**      Dermatitis, asthma, conjunctivitis, stomach or digestive problems.

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**VI. REACTIVITY DATA**

**Stability:**                       Stable                       Unstable

**Conditions to Avoid:**                      Extremely high temperatures.

**Incompatibility:**                      Oxidizing agents and alkalis.  
**(Materials to Avoid)**

**Hazardous Decomposition Products:**      Sulfur oxides (SO<sub>2</sub> & SO<sub>3</sub>) if material is heated  
**(Including Combustion Products)**                      above 572° F.

**Hazardous Polymerization:**       May Occur       Will Not Occur

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**VII. SPILL, LEAK AND DISPOSAL PROCEDURES**

**Spill Response Procedures:**                      If dry, sweep up and scoop into suitable container for use  
**(Include Employee Protection**                      or recycle. If wet, wash to waste water drain leading to  
**Measures)**                      iron solid removal and solution neutralization treatment.

**Preparing Wastes for Disposal:**                      Spread on arable land at standard agricultural rates. If  
**(Container Types, Neutralization,**                      contaminated, dispose in a properly designated landfill.  
**etc.)**

**NOTE: DISPOSE OF ALL MATERIALS IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS.**

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**VIII. SPECIAL HANDLING INFORMATION**

**Ventilation and Engineering Controls:**                      Adequate ventilation for dust control.

**Respiratory Protection (Type):**                      NIOSH approved dust respirator.

**Eye Protection (Type):**                      Safety goggles/glasses.

**Gloves (Specify Material):**                      Rubber gloves.

Other Clothing and Equipment:	Clean coveralls and a long sleeved shirt.
Work and Hygienic Practices:	Shower with soap and water. Wash clothing separately with laundry detergent.
Other Handling and Storage Requirements:	Prevent eye contact, skin contact and oral ingestion.
Protective Measures During Maintenance of Contaminated Equipment:	Same as handling and storage requirements.

**WARNING:** This product contains a chemical (or chemicals) known to the State of California to cause cancer and birth defects or other reproductive harm.

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**Customer Service**

**1-800-23-HYDRO** (1-800-234-9376) • FAX (813-875-5735)

100 North Tampa Street, Suite 3200, Tampa, Florida 33602

**MATERIAL SAFETY DATA SHEET**

**PROSPECT®**

**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:**

United Horticultural Supply  
P.O. Box 667 • Greeley, CO 80632-0667

24-Hour Emergency Phone: 1-800-424-9300  
Medical Emergencies: 1-800-301-7976

**PRODUCT NAME:** PROSPECT® 6-0-1  
**CHEMICAL NAME:** Inorganic/Organic Chemical Fertilizer additive  
**CHEMICAL FAMILY:** N-K Mixed liquid blended fertilizer additive  
**EPA REG. NO.:** not applicable

©Prospect is a registered trademark of Platte Chemical Company - U.S Patent No. 4,352,688; 5,637,553

**MSDS Number:** p601-03      **MSDS Revisions:** New ANSI format      **Date Of Issue:** 06/27/03      **Supersedes:** 11/09/01

**2. COMPOSITION, INFORMATION ON INGREDIENTS**

<u>Chemical Ingredients:</u>	<u>Percentage by Weight:</u>	<u>CAS No.</u>	<u>TLV (Units)</u>
Total Nitrogen (N)	6.00	Mixture	None established
Soluble Potash (K <sub>2</sub> O)	1.00	Mixture	None established
Zinc (Zn)	5.00	Mixture	None established
Micro ingredients B, Cu, Fe, Mn, Mo, Fertilizer salts and inert ingredients	88.00		

**3. HAZARDS IDENTIFICATION SUMMARY**

**CAUTION: KEEP OUT OF REACH OF CHILDREN.** May be harmful if swallowed, inhaled or absorbed through skin. May cause eye and skin irritation. This product is a clear dark green-colored liquid with slightly sweet non-offensive odor. Primary routes of entry are eye contact and skin contact.

**4. FIRST AID MEASURES**

**Eyes:** Flush eyes with large amount of water for at least 15 minutes. Consult a physician if irritation persists.

**Skin:** Remove all contaminated clothing. Wash skin, hair, and fingernails thoroughly with soap and water. If irritation persists seek medical attention. Wash clothing before reuse.

**Ingestion:** If swallowed, give 2 glasses of water to drink. Do not induce vomiting or give any thing by mouth to an unconscious person. Call a physician to get medical attention; the emergency telephone number is 1-800-301-7976

**Inhalation:** Move subject to fresh air. Give artificial respiration if breathing has stopped. If breathing is difficult, give oxygen. Get medical attention immediately.

**5. FIRE FIGHTING MEASURES**

**FLASH POINT (°F/Test Method):** Does not flash.

**FLAMMABLE LIMITS (LEL & UEL):** Not established

**EXTINGUISHING MEDIA:** Considered non-combustible, use medium appropriate to surrounding fire. Dry chemical, carbon dioxide (CO<sub>2</sub>), foam, water spray or fog.

**HAZARDOUS COMBUSTION PRODUCTS:** May include but are not limited to oxides of carbon and oxides of sulfur.

**SPECIAL FIRE FIGHTING PROCEDURES:** Use water spray to cool containers exposed to fire. Remain upwind. Avoid breathing smoke. Wear self-contained breathing apparatus and full protective gear.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** Containers may burst due to pressure build-up of aqua ammonia.

**6. ACCIDENTAL RELEASE MEASURES**

**STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:**  
Ventilate area. Contain spill, absorb liquid with clay or other absorbent material. Sweep up material and place in container for possible land application according to label use or for proper disposal. Check local, state and federal regulations for proper disposal.

**CAUTION:** Keep spills and cleaning runoff out of municipal sewers and open bodies of water.

**7. HANDLING AND STORAGE**

**HANDLING:** Open the container carefully. Contents may be under pressure and has a distinct odor of ammonia. Eye protection and gloves are suggested when handling undiluted product. Use with adequate ventilation.

**STORAGE:** Store in original container, tightly closed, in a cool dry place away from children, feed and food products, seed and fertilizer. Protect from freezing. Store above 45°F.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**ENGINEERING CONTROLS:** Not normally required. If ammonia odor is too strong use an approved respirator for anhydrous ammonia.

**RESPIRATORY PROTECTION:** Not normally required, if ammonia vapors are too strong wear a NIOSH approved respirator for anhydrous ammonia.

**EYE PROTECTION:** Chemical goggles or shielded safety glasses.

**SKIN PROTECTION:** Wear protective clothing: long-sleeved shirts and pants, hat, rubber boots with socks. Wear rubber or chemical-resistant gloves.

Ammonia	<b>OSHA PEL 8 hr TWA</b> 50 ppm/35 mg/m <sup>3</sup>	<b>ACGIH TLV-TWA</b> 25 ppm/35ppm (STEL/C)
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# MATERIAL SAFETY DATA SHEET

PROSPECT®

## 9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR: Clear dark green-colored liquid with slightly sweet non-offensive odor

SOLUBILITY: Soluble

SPECIFIC GRAVITY (Water= 1): 1.19g/ml

BULK DENSITY: 9.92 lbs/gal.

pH: 5.8

VAPOR PRESSURE: Not established

BOILING POINT: 212°F/100°C

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. Keep containers tightly closed.

INCOMPATIBILITY: Strong oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: Ammonia, oxides of nitrogen and other unknown hazardous materials may be formed in a fire situation. Oxides of carbon formed from incomplete combustion.

HAZARDOUS POLYMERIZATION: Will not occur.

## 11. TOXICOLOGICAL INFORMATION

Acute Oral LD<sub>50</sub> (rat): Ammonia: 350 mg/kg

Acute Dermal LD<sub>50</sub> (rabbit): not established

Eye Irritation (rabbit): Causes mild irritation

Skin Irritation (rabbit): Causes mild irritation

Inhalation LC<sub>50</sub> (rat): 2000 ppm (4 hr)

Ingestion: May cause stomach distress, nausea or vomiting.

Carcinogenic Potential: None listed in OSHA, NTP, IARC or ACGIH

## 12. ECOLOGICAL INFORMATION

Material is toxic to fish and other aquatic organisms.

Do not contaminate water supplies.

## 13. DISPOSAL CONSIDERATIONS

Do not reuse container. Plastic jugs: Triple rinse (or equivalent), adding rinsate to mix tank, then offer for recycling at an ACRC site or by reconditioning, or puncture and dispose of in a sanitary landfill or by other procedures approved by local, state and federal regulations.

## 14. TRANSPORT INFORMATION

DOT Shipping Description: NOT REGULATED BY USDOT

Freight Classification: FERTILIZING COMPOUNDS (MANUFACTURED FERTILIZERS), NOI, LIQUID (NMFC 68140, SUB 6; CLASS 70)

Consult appropriate ICAO/IATA and IMDG regulations for shipment requirements in the Air and Maritime shipping modes

## 15. REGULATORY INFORMATION

SARA Hazard Notification/Reporting

NFPA & HMIS Hazard Ratings:

NFPA

HMIS

1 Health

0 Least

1 Health

0 Flammability

1 Slight

0 Flammability

1 Instability

2 Moderate

1 Reactivity

3 High

H PPE

4 Severe

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: Ammonia (CAS: 7664-41-7) 100 pounds

SARA, Title III, Section 313: Ammonia (CAS: 7664-41-7)

RCRA Waste Code: Not listed

CA Proposition 65: Not listed

## 16. OTHER

MSDS STATUS: New ANSI format; replaces Prospect® 16-0-2

PREPARED BY: Registrations and Regulatory Affairs

REVIEWED BY: Environmental/ Regulatory Services

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, United Horticultural Supply makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving it will make their own determination as to its suitability for their purposes prior to use. **In no event will United Horticultural Supply be responsible for any damages of any nature including, without limitation, direct, special or consequential, resulting from the use, reliance upon, or the accuracy, completeness or furnishing of such 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 THE PRODUCT TO WHICH INFORMATION REFERS.

## MATERIAL SAFETY DATA SHEET

## GROGANIC® 11-1-1 FERTILIZER

**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:**

UAP DISTRIBUTION, 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:** GROGANIC® 11-1-1 FERTILIZER  
**CHEMICAL NAME:** Inorganic/Organic Chemical Fertilizer Mixture  
**CHEMICAL FAMILY:** N-P-K Mixed dry blended fertilizer  
**EPA REG. NO.:** not applicable  
**MSDS Number:** .167525-07-UAP

**MSDS Revisions:** All sections reviewed

**Date of Issue:** 11/14/07

**Supersedes:** 10/19/06

### 2. HAZARDS IDENTIFICATION SUMMARY

**KEEP OUT OF REACH OF CHILDREN – CAUTION - (This product contains animal manures and/or byproducts that may attract dogs or other pets.) May contain microbiological contamination from animal waste products. May cause eye or skin irritation. May be harmful if swallowed. Keep out of cuts and open wounds. This product is derived from Dried Poultry Manure and Ammonium Sulfate.**

This product is a grayish-brown granule with slight odor.

### 3. COMPOSITION, INFORMATION ON INGREDIENTS

<u>Chemical Ingredients:</u>	<u>Percentage by Weight:</u>	<u>CAS No.</u>	<u>TLV (Units)</u>
Total Nitrogen (N)	11.00	Mixture	not listed
Available Phosphate (P <sub>2</sub> O <sub>5</sub> )	1.00	Mixture	not listed
Soluble Potash (K <sub>2</sub> O)	1.00	Mixture	not listed
Fertilizer salts and inert ingredients	87.00		

### 4. FIRST AID MEASURES

<b>If in eyes:</b>	Flush eyes with water for 15-20 minutes. Consult a poison control center or physician if irritation persists.
<b>If on skin or clothing:</b>	Remove all contaminated clothing. Wash skin, hair, and fingernails thoroughly with soap and water. Call a poison control center or physician if irritation persists. Wash clothing before reuse.
<b>If swallowed:</b>	Call a poison control center or physician immediately for treatment advice; the emergency telephone number is 1-800-301-7976. 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 physician. Do not give anything by mouth to an unconscious person.
<b>If inhaled:</b>	Move person to fresh air. Give artificial respiration if breathing has stopped. If breathing is difficult, give oxygen. Get medical attention immediately; the emergency telephone number is 1-800-301-7976.

### 5. FIRE FIGHTING MEASURES

<b>FLASH POINT (°F/Test Method):</b>	Not applicable
<b>FLAMMABLE LIMITS (LFL &amp; UFL):</b>	Not applicable
<b>EXTINGUISHING MEDIA:</b>	Use medium appropriate to surrounding fire. Dry chemical, carbon dioxide, foam, water spray or fog.
<b>HAZARDOUS COMBUSTION PRODUCTS:</b>	May include but are not limited to oxides of carbon, hydrogen chloride, hydrogen fluoride, oxides of nitrogen, ammonia, oxides of phosphorus, oxides of sulfur, hydrogen sulfide.
<b>SPECIAL FIRE FIGHTING PROCEDURES:</b>	Use water spray to cool containers exposed to fire. Remain upwind. Avoid breathing smoke. Wear self-contained breathing apparatus and full protective gear.
<b>UNUSUAL FIRE AND EXPLOSION HAZARDS:</b>	This product will burn. Dusts can travel to sources of ignition and flash back or create explosive atmospheres in unventilated areas.

### 6. ACCIDENTAL RELEASE MEASURES

**STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:**

Avoid breathing dusts. Sweep up dry spills immediately and transfer to suitable containers for possible land application according to label use or for disposal. Check local, state and federal regulations for proper disposal.

**CAUTION:** Keep spills and cleaning runoff out of municipal sewers and open bodies of water.

### 7. HANDLING AND STORAGE

<b>HANDLING:</b>	Avoid eye contact. Avoid breathing dusts if generated. Wash hands and exposed skin after using this product.
<b>STORAGE:</b>	After partial use, fold and roll back bags, clamp and close tightly. Store in original containers away from children and animals, especially household pets. Do not contaminate water, food or feed by storage or disposal.

### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<b>ENGINEERING CONTROLS:</b>	Product is to be used outdoors with good ambient ventilation.
<b>RESPIRATORY PROTECTION:</b>	Not normally required, if dusts exceed acceptable levels, wear a MSHA/NIOSH approved respirator for dusts.
<b>EYE PROTECTION:</b>	Chemical goggles or shielded safety glasses.
<b>SKIN PROTECTION:</b>	None needed under normal conditions of use.

**MATERIAL SAFETY DATA SHEET**

**GROGANIC® 11-1-1 FERTILIZER**

Nuisance Particulates      **OSHA PEL 8 hr TWA**      **ACGIH TLV-TWA**  
15 mg/m<sup>3</sup>

**9. PHYSICAL AND CHEMICAL PROPERTIES**

**APPEARANCE AND ODOR:** Grayish-brown granules with slight odor  
**SPECIFIC GRAVITY (Water = 1):** 0.61 g/ml      **BULK DENSITY:** 38 lbs/ft<sup>3</sup>      **SOLUBILITY:** Appreciable  
**VAPOR PRESSURE:** Not applicable      **BOILING POINT:** Not applicable      **pH:** Not applicable  
**PERCENT VOLATILE (by volume):** Not applicable      **EVAPORATION RATE:** Not applicable  
**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:** May include but are not limited to oxides of carbon, hydrogen chloride, hydrogen fluoride, oxides of nitrogen, ammonia, oxides of phosphorus, oxides of sulfur, hydrogen sulfide.  
**HAZARDOUS POLYMERIZATION:** Will not occur.

**11. TOXICOLOGICAL INFORMATION**

**Acute Oral LD<sub>50</sub> (rat):** >5000 mg/kg      **Acute Dermal LD<sub>50</sub> (rabbit):** >2000 mg/kg  
**Eye Irritation (rabbit):** May cause moderate irritation or corneal injury due to mechanical action  
**Skin Irritation (rabbit):** May cause slight irritation  
**Inhalation LC<sub>50</sub> (rat):** Not established      **Skin Sensitization (guinea pig):** Not established  
**Carcinogenic Potential:** None listed in OSHA, NTP, IARC or ACGIH

**12. ECOLOGICAL INFORMATION**

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.

**13. DISPOSAL CONSIDERATIONS**

Do not reuse container. 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. Do not contaminate water, food or feed by storage and disposal.

**14. TRANSPORT INFORMATION**

**DOT Shipping Description:** NOT REGULATED BY USDOT  
**U.S. Surface Freight Classification:** FERTILIZING COMPOUNDS (MANUFACTURED FERTILIZERS), NOI; DRY (NMFC 68140, SUB 5; CLASS 50)

**15. REGULATORY INFORMATION**

<b>NFPA &amp; HMIS Hazard Ratings:</b>	<b>NFPA</b>		<b>HMIS</b>
	1 Health	0 Least	1 Health
	0 Flammability	1 Slight	0 Flammability
	0 Instability	2 Moderate	0 Reactivity
		3 High	A 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: WARNING:** This product contains chemicals known to the State of California to cause cancer or birth defects or other reproductive harm.

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**16. OTHER INFORMATION**

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**MSDS STATUS:** All sections reviewed and/or revised

**PREPARED BY:** Registrations and Regulatory Affairs

**REVIEWED BY:** Environmental/ Regulatory Services

*®GROGANIC is a registered trademark of United Agri Products, Inc.*

*Note: This MSDS also applies to product number .167452.*

**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 UAP DISTRIBUTION, 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.

United Horticultural Supply

# MATERIAL SAFETY DATA SHEET

## GROGANIC®

### 14-2-8 with 2% Iron

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300

#### SECTION I - IDENTIFICATION OF PRODUCT

**MANUFACTURER'S NAME:**  
United Horticultural Supply  
150 South Main Street  
Fremont, NE 68025-5897

**EMERGENCY TELEPHONE NO.:**  
CHEMTREC (800) 424-9300 (24 Hours)

**TRADE NAME AND SYNONYMS:** GROGANIC® 14-2-8 with 2% Iron

**CHEMICAL NAME AND SYNONYMS:** Inorganic/Organic Chemical Fertilizer Mixture

**MATERIAL IDENTIFICATION - INGREDIENTS** (Note: See product tag or label for specific ingredients.)

**N-P-K (NITROGEN-PHOSPHORUS-POTASSIUM) MIXED DRY BLENDED FERTILIZERS** - No hazardous ingredient exceeds 1% of total mixture.

Typical Composition:	14% - Total Nitrogen as N	TLV = 10 mg/m <sup>3</sup> nuisance dust
	2% - Total Phosphorus as P2O5	
	8% - Total Potassium	
	2% - Total Iron	
	74% - Fertilizer salts, inert ingredients	

#### HEALTH HAZARD INFORMATION

This blended dry fertilizer is a mixture of poultry manure, urea, muriate of potash, polymer coated urea, ferrous sulfate and ammonium phosphates. A review of the ingredient salts indicates that ingestion may cause diarrhea, purging, and flatulence. Nausea and vomiting could be expected upon large dose ingestion. The acute ingestive effects are described as nausea, chills and diarrhea. Eye or skin contact with these products could cause irritation (particularly in sensitive persons), and respiratory irritation could be expected from the unprotected breathing of fertilizer dust. Product users should avoid prolonged or repeated skin contact, and they should use eye protection when required by conditions of use. Product users should wash thoroughly after using or handling these fertilizers. Since children could receive toxic ingestive doses of fertilizers, these products should be stored in a secure place where children cannot get at them.

**EMERGENCY AND FIRST AID PROCEDURES:** Call a physician immediately in all cases of suspected poisoning.

**Ingestion:** Dilute with water or milk. If necessary induce vomiting only when victim is conscious.  
**Inhalation:** Remove to fresh air. If not breathing give artificial respiration.  
**Skin:** Wash from skin with soap and water.  
**Eyes:** Flush with running water for at least 15 minutes until irritation subsides.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** None known. Preexisting respiratory conditions may be aggravated by exposure to dusts.

**POTENTIAL CARCINOGEN STATUS** (Source of Information - Registry of Toxic Effects of Chemical Substances):  
None listed

#### PHYSICAL DATA

Specific Gravity - > 1  
Solubility-Water - Appreciable  
Appearance/Odor: Organic material with fertilizer-like odors.

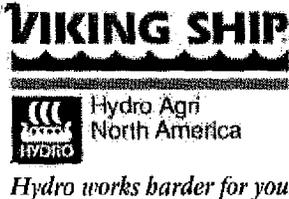
#### FIRE, EXPLOSION AND REACTIVITY DATA

**FLASH POINT** (Specify Method - °C): Not Flammable  
**FLAMMABLE LIMITS (PERCENT BY VOLUME):** Not Applicable  
**FIRE EXTINGUISHING MEDIA:** Determined by surrounding fire. Not considered combustible.  
**SPECIAL FIRE FIGHTING PROCEDURES:** Full protective equipment and self contained breathing apparatus.  
**UNUSUAL FIRE AND EXPLOSION HAZARDS:** Urea may decompose in a fire situation and release cyanuric acid, ammonia, hydrogen cyanide, oxides of nitrogen, and irritating particulates. Sulfur-containing components may release oxides of sulfur.

**NFPA HAZARD RATING:**

0 Least		
1 Slight	2	Health
2 Moderate	0	Flammability
3 High	0	Reactivity
4 Severe		





# Product Information Sheet

## HYDRO AGRI NORTH AMERICA, INC.

**NOTE: THIS IS NOT A MATERIAL SAFETY DATA SHEET SINCE NONE IS REQUIRED FOR THIS PRODUCT. IT IS PROVIDED FOR EMPLOYEE INFORMATION ONLY.**

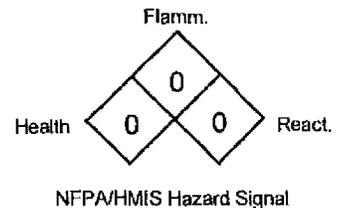
### I. PRODUCT IDENTIFICATION

Trade Name (as Labeled): Viking Ship® Hydro Prills® 21-7-14

Manufacturer's Name: Norsk Hydro ASA c/o Hydro Agri North America, Inc.

Complete Mailing Address: 100 North Tampa Street, Suite 3200  
Tampa, Florida 33602

Phone Number for Additional Information: 813-222-5700  
or Chemtrec 24-hour Emergency Response: 1-800-424-9300



Date Prepared or Revised: 09/29/00

Name of Preparer: Bob Millaway

### II. NON-HAZARDOUS INGREDIENTS

Chemical Names	CAS Numbers	Percent	Exposure Limits in Air (Give Units) ACGIH TLV OSHA PEL Other (Specify)
Ammonium Nitrate	6484-52-2		None listed.
Calcium Phosphate	7757-93-9		
Monoammonium Phosphate	7722-76-1		
Diammonium Phosphate	7783-28-0		
Potassium Sulfate	7778-80-5		

NFPA and HMIS Rating: 0, 0, 0; Health, Flammability, Reactivity

**NOTE: THIS PRODUCT IS NOT CLASSIFIED AS AN OXIDIZER, AND DOES NOT REQUIRE PLACARDING OR SPECIAL HANDLING.**

### III. PHYSICAL PROPERTIES

Vapor Density (Air=1):	(Solid) N/A	Melting Point or Range:	Decomposes on heating.
Bulk Density:	Approx. 1.2kg/dm <sup>3</sup> .	Boiling Point or Range:	Decomposes on heating.
Solubility in Water:	Approx. 90% soluble in water at room temp.	Evaporation Rate: (Solid) N/A (Butyl Acetate=1)	
Vapor Pressure, mm Hg at 20°C:	(Solid) N/A		
Appearance and Odor:	Gray prills, odorless.		

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**IV. FIRE AND EXPLOSION**


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Flash Point, °F (Give Method): Decomposes on heating.

Auto Ignition Temperature, °F: Non-flammable.

Flammable Limits in Air, Volume %: N/A Lower (LEL): N/A Upper (UEL): N/A

Fire Extinguishing Materials:

Water Spray       Carbon Dioxide       Other  
 Foam                       Dry Chemical

Special Fire Fighting Procedures: Flood with water to cool containers. Use self-contained breathing apparatus.

Unusual Fire and Explosion Hazards: No oxidizing properties. Decomposes on heating to nitrogen oxides.

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**V. HEALTH HAZARD INFORMATION**


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**SYMPTOMS OF OVEREXPOSURE - FOR EACH POTENTIAL ROUTE OF EXPOSURE**

Inhaled: Mild nasal irritation.

Contact with Skin or Eyes: Wash with soap and water for at least 15 minutes.

Absorbed through Skin: Not absorbed.

Swallowed: Small Amounts: Weakness, general depression, headache, and mental impairment.Large Amounts: Dizziness, abdominal cramps, vomiting, bloody diarrhea, weakness, convulsions, and collapse.

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**HEALTH EFFECTS OR RISKS FROM EXPOSURE - EXPLAIN IN LAY TERMS**
Acute: Small Amounts: Weakness, general depression, headache, and mental impairment.Large Amounts: Dizziness, abdominal cramps, vomiting, bloody diarrhea, weakness, convulsion, and collapse.

Chronic: None.

FIRST AID - EMERGENCY PROCEDURES: **IN CASE OF DISCOMFORT DUE TO EXPOSURE, SEEK MEDICAL ATTENTION.**

Eye Contact: Flood immediately with clean water for 15 minutes.

Skin Contact: Wash with copious amounts of soap and water.

Inhaled: Move to fresh air.

Swallowed: Delay absorption of ingested nitrates by giving water, milk or activated charcoal and then remove by gastric lavage or emesis. Maintain blood pressure.

SUSPECTED CANCER AGENT?

NO. This product's ingredients are not found in the lists below.  
 YES.  Federal OSHA  NTP  IARC

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: None known.

VI. REACTIVITY DATA

Stability:  Stable  Unstable

Conditions to Avoid: None.

Incompatibility: None. Product does not exhibit oxidizer properties.  
(Materials to Avoid)

Hazardous Decomposition Products: Nitrogen oxides formed from thermal decomposition.  
(Including Combustion Products) Non-sustaining when heat source removed.

Hazardous Polymerization:  May Occur  Will Not Occur

VII. SPILL, LEAK AND DISPOSAL PROCEDURES

Spill Response Procedures: Contain spill. Sweep up and scoop into suitable container  
(Include Employee Protection Measures) for use or recycle.

Preparing Wastes for Disposal: Spread on arable land at standard agricultural rates. If  
(Container Types, Neutralization, etc.) contaminated, dispose in a properly designated landfill.

**NOTE: DISPOSE OF ALL MATERIALS IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS.**

**VIII. SPECIAL HANDLING INFORMATION**

Ventilation and Engineering Controls:	Adequate ventilation for dust control.
Respiratory Protection (Type):	NIOSH approved dust respirator.
Eye Protection (Type):	Safety goggles/glasses.
Gloves (Specify Material):	Rubber gloves.
Other Clothing and Equipment:	Clean coveralls and a long sleeved shirt.
Work and Hygienic Practices:	Shower with soap and water. Wash clothing separately with laundry detergent.
Other Handling and Storage Requirements:	Prevent eye contact, skin contact and oral ingestion.
Protective Measures During Maintenance of Contaminated Equipment:	Same as handling and storage requirements.

**WARNING:** This product contains a chemical (or chemicals) known to the State of California to cause cancer and birth defects or other reproductive harm.

**Customer Service**

1-800-23-HYDRO (1-800-234-9376) • FAX (813-875-5735)  
100 North Tampa Street, Suite 3200, Tampa, Florida 33602

**MATERIAL SAFETY DATA SHEET**

**GROGANIC® 4-2-1 FERTILIZER**

**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:**

UAP DISTRIBUTION, 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:** GROGANIC® 4-2-1 FERTILIZER  
**CHEMICAL NAME:** Inorganic/Organic Chemical Fertilizer Mixture  
**CHEMICAL FAMILY:** N-P-K Mixed dry blended fertilizer  
**EPA REG. NO.:** not applicable  
**MSDS Number:** .178332-07-UAP **MSDS Revisions:** New

**Date of Issue:** 11/14/07 **Supersedes:** New

**2. HAZARDS IDENTIFICATION SUMMARY**

**KEEP OUT OF REACH OF CHILDREN – CAUTION - (This product contains animal manures and/or byproducts that may attract dogs or other pets.) May contain microbiological contamination from animal waste products.** May cause eye or skin irritation. May be harmful if swallowed. Keep out of cuts and open wounds. This product is derived from Dried Poultry Manure, Ascophyllum Nodosum Kelp Meal, Sodium Borate, Copper Oxide, Copper Sulfate, Iron Oxide, Manganese Oxide, Manganese Sulfate, Molybdic Oxide, and Molasses. Also contains Humic Acids from Leonardite Ore.

This product is a grayish-brown granule with slight odor.

**3. COMPOSITION, INFORMATION ON INGREDIENTS**

<u>Chemical Ingredients:</u>	<u>Percentage by Weight:</u>	<u>CAS No.</u>	<u>TLV (Units)</u>
Total Nitrogen (N)	4.00	Mixture	not listed
Available Phosphate (P <sub>2</sub> O <sub>5</sub> )	2.00	Mixture	not listed
Soluble Potash (K <sub>2</sub> O)	1.00	Mixture	not listed
Calcium (Ca)	6.00	Mixture	not listed
Boron (B)	0.05	Mixture	not listed
Copper (Cu)	0.125	Mixture	not listed
Iron (Fe)	0.25	Mixture	not listed
Manganese (Mn)	0.125	Mixture	not listed
Molybdenum (Mo)	0.001	Mixture	not listed
Humic Acids	6.00	1415-93-6	not listed
Fertilizer salts and inert ingredients	81.449		

**4. FIRST AID MEASURES**

**If in eyes:** Flush eyes with water for 15-20 minutes. Consult a poison control center or physician if irritation persists.

**If on skin or clothing:** Remove all contaminated clothing. Wash skin, hair, and fingernails thoroughly with soap and water. Call a poison control center or physician if irritation persists. Wash clothing before reuse.

**If swallowed:** Call a poison control center or physician immediately for treatment advice; the emergency telephone number is 1-800-301-7976. 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 physician. Do not give anything by mouth to an unconscious person.

**If inhaled:** Move person to fresh air. Give artificial respiration if breathing has stopped. If breathing is difficult, give oxygen. Get medical attention immediately; the emergency telephone number is 1-800-301-7976.

**5. FIRE FIGHTING MEASURES**

**FLASH POINT (°F/Test Method):** Not applicable

**FLAMMABLE LIMITS (LFL & UFL):** Not applicable

**EXTINGUISHING MEDIA:** Use medium appropriate to surrounding fire. Dry chemical, carbon dioxide, foam, water spray or fog.

**HAZARDOUS COMBUSTION PRODUCTS:** May include but are not limited to oxides of carbon, hydrogen chloride, hydrogen fluoride, oxides of nitrogen, ammonia, oxides of phosphorus, oxides of sulfur, hydrogen sulfide.

**SPECIAL FIRE FIGHTING PROCEDURES:** Use water spray to cool containers exposed to fire. Remain upwind. Avoid breathing smoke. Wear self-contained breathing apparatus and full protective gear.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** This product will burn. Dusts can travel to sources of ignition and flash back or create explosive atmospheres in unventilated areas.

**6. ACCIDENTAL RELEASE MEASURES**

**STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:**  
Avoid breathing dusts. Sweep up dry spills immediately and transfer to suitable containers for possible land application according to label use or for disposal. Check local, state and federal regulations for proper disposal.

**CAUTION:** Keep spills and cleaning runoff out of municipal sewers and open bodies of water.

**7. HANDLING AND STORAGE**

**HANDLING:** Avoid eye contact. Avoid breathing dusts if generated. Wash hands and exposed skin after using this product.

**STORAGE:** After partial use, fold and roll back bags, clamp and close tightly. Store in original containers away from children and animals, especially household pets. Do not contaminate water, food or feed by storage or disposal.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**ENGINEERING CONTROLS:** Product is to be used outdoors with good ambient ventilation.  
**RESPIRATORY PROTECTION:** Not normally required, if dusts exceed acceptable levels, wear a MSHA/NIOSH approved respirator for dusts.  
**EYE PROTECTION:** Chemical goggles or shielded safety glasses.  
**SKIN PROTECTION:** None needed under normal conditions of use.

	<b>OSHA PEL 8 hr TWA</b>	<b>ACGIH TLV-TWA</b>
Nuisance Particulates	15 mg/m <sup>3</sup>	not listed

**9. PHYSICAL AND CHEMICAL PROPERTIES**

**APPEARANCE AND ODOR:** Grayish-brown granules with slight odor  
**SPECIFIC GRAVITY (Water = 1):** 0.61 g/ml  
**VAPOR PRESSURE:** Not applicable  
**PERCENT VOLATILE (by volume):** Not applicable  
**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.

**SOLUBILITY:** Appreciable  
**pH:** Not applicable

**BULK DENSITY:** 38 lbs/ft<sup>3</sup>  
**BOILING POINT:** Not applicable  
**EVAPORATION RATE:** Not applicable

**10. STABILITY AND REACTIVITY**

**STABILITY:** Stable  
**INCOMPATIBILITY:** None known.  
**HAZARDOUS DECOMPOSITION PRODUCTS:** May include but are not limited to oxides of carbon, hydrogen chloride, hydrogen fluoride, oxides of nitrogen, ammonia, oxides of phosphorus, oxides of sulfur, hydrogen sulfide.  
**HAZARDOUS POLYMERIZATION:** Will not occur.

**CONDITIONS TO AVOID:** None known.

**11. TOXICOLOGICAL INFORMATION**

**Acute Oral LD<sub>50</sub> (rat):** >5000 mg/kg  
**Eye Irritation (rabbit):** May cause moderate irritation or corneal injury due to mechanical action  
**Skin Irritation (rabbit):** May cause slight irritation  
**Inhalation LC<sub>50</sub> (rat):** Not established  
**Carcinogenic Potential:** None listed in OSHA, NTP, IARC or ACGIH

**Acute Dermal LD<sub>50</sub> (rabbit):** >2000 mg/kg  
**Skin Sensitization (guinea pig):** Not established

**12. ECOLOGICAL INFORMATION**

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.

**13. DISPOSAL CONSIDERATIONS**

Do not reuse container. 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. Do not contaminate water, food or feed by storage and disposal.

**14. TRANSPORT INFORMATION**

**DOT Shipping Description:** NOT REGULATED BY USDOT  
**U.S. Surface Freight Classification:** FERTILIZING COMPOUNDS (MANUFACTURED FERTILIZERS), NOI; DRY (NMFC 68140, SUB 5; CLASS 50)

**15. REGULATORY INFORMATION**

<b>NFPA &amp; HMIS Hazard Ratings:</b>	<b>NFPA</b>		<b>HMIS</b>
	1 Health	0 Least	1 Health
	0 Flammability	1 Slight	0 Flammability
	0 Instability	2 Moderate	0 Reactivity
		3 High	A PPE
		4 Severe	

**MATERIAL SAFETY DATA SHEET**

**GROGANIC® 4-2-1 FERTILIZER**

SARA Hazard Notification/Reporting  
SARA Title III Hazard Category:

Immediate Y  
Delayed N

Fire N  
Reactive N

Sudden Release of Pressure 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: **WARNING:** This product contains chemicals known to the State of California to cause cancer or birth defects or other reproductive harm.

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**16. OTHER INFORMATION**

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MSDS STATUS: New

PREPARED BY: Registrations and Regulatory Affairs

REVIEWED BY: Environmental/ Regulatory Services

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**MATERIAL SAFETY DATA SHEET**

**SIGNATURE® REGULAS™ 0-0-6**

**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:** SIGNATURE® REGULAS™ 0-0-6 LIQUID TURF & ORNAMENTAL FERTILIZER  
**CHEMICAL NAME:** Inorganic/Organic Chemical Fertilizer Mixture  
**CHEMICAL FAMILY:** K Mixed liquid blended fertilizer  
**EPA REG. NO.:** not applicable  
**MSDS Number:** REG006-06b-LPI      **MSDS Revisions:** Section 15      **Date Of Issue:** 07/31/06      **Supersedes:** 06/14/06

**2. HAZARDS IDENTIFICATION SUMMARY**

**KEEP OUT OF REACH OF CHILDREN - CAUTION -** May cause mild eye and skin irritation. Avoid contact with skin, eyes, open cuts, or sores. In case of contact, flush with water. Get medical attention for eyes. This blended liquid fertilizer is a mixture of Potassium Acetate, Kelp (*Ascophyllum Nodosum*), Iron Sulfate, Molasses, Brewer's Yeast, Humic Acids, and Citric Acid (used in chelation). Nausea and vomiting could be expected upon large dose ingestion. The acute ingestive effects are described as nausea, chills, and diarrhea. Eye or skin contact with these products could cause irritation (particularly in sensitive persons), and respiratory irritation could be expected from the unprotected inhalation of fertilizer mists. Product users should avoid prolonged or repeated skin contact by wearing impervious gloves, long sleeve shirt, long pants, socks and rubber boots. Goggles for eye protection are recommended. Wash thoroughly after handling and using this product.

This product is a black-colored liquid with earthy odor. Primary routes of entry are Inhalation, eye contact and skin contact.

**3. COMPOSITION, INFORMATION ON INGREDIENTS**

**N-P-K (NITROGEN-PHOSPHORUS-POTASSIUM) MIXED LIQUID BLENDED FERTILIZERS** – No hazardous ingredient exceeds 1% of mixture.

<u>Chemical Ingredients:</u>	<u>Percentage by Weight:</u>	<u>CAS No.</u>	<u>TLV (Units)</u>
Soluble Potash (K <sub>2</sub> O)	6.00	Mixture	not established
Fertilizer salts and inert ingredients	94.00		

**4. FIRST AID MEASURES**

**If in eyes:** Flush eyes with clean running water for at least 15 minutes. If irritation persists, get medical attention.  
**If on skin:** Remove contaminated clothing. Wash Thoroughly with soap and water. If irritation persists, or if rash develops, get medical attention.  
**If swallowed:** If conscious, drink 1 or 2 glasses of water. Get medical attention. Never induce vomiting or give anything by mouth to an unconscious person.  
**If inhaled:** Remove to fresh air. If irritation persists, get medical attention.

**5. FIRE FIGHTING MEASURES**

**FLASH POINT (°F/Test Method):** Not applicable  
**FLAMMABLE LIMITS (LFL & UFL):** Not applicable  
**EXTINGUISHING MEDIA:** Use medium appropriate to surrounding fire. Dry chemical, carbon dioxide, foam, water spray or fog.  
**HAZARDOUS COMBUSTION PRODUCTS:** May include but are not limited to oxides of carbon, hydrogen chloride, hydrogen fluoride, oxides of nitrogen, ammonia, oxides of phosphorus, oxides of sulfur, hydrogen sulfide.  
**SPECIAL FIRE FIGHTING PROCEDURES:** Use water spray to cool containers exposed to fire. Remain upwind. Avoid breathing smoke. Wear self-contained breathing apparatus and full protective gear.  
**UNUSUAL FIRE AND EXPLOSION HAZARDS:** None known.

**6. ACCIDENTAL RELEASE MEASURES**

**STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:**  
Avoid breathing mists. Absorb and sweep up spills immediately and transfer to suitable containers for possible land application according to label use or for disposal. Check local, state and federal regulations for proper disposal.  
**CAUTION:** Keep spills and cleaning runoff out of municipal sewers and open bodies of water.

**7. HANDLING AND STORAGE**

**HANDLING:** Avoid breathing fertilizer mists. Avoid prolonged or repeated skin contact. Avoid eye contact. Wash hands thoroughly after using this product and before eating, drinking, chewing gum, using tobacco or using the toilet.

**STORAGE:** Store in original containers only. Keep containers tightly closed when not in use. Store in a cool, dry well-ventilated area, preferably in a locked storage area away from children, feed, and food products, and seed. Store at ambient temperatures. Do not contaminate water, food, or feed by storage or disposal.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**ENGINEERING CONTROLS:** Not normally required.

**RESPIRATORY PROTECTION:** Not normally required, if vapors or mists exceed acceptable levels, wear a MSHA/NIOSH approved respirator.

**EYE PROTECTION:** Chemical goggles or shielded safety glasses.

**SKIN PROTECTION:** Wear protective clothing: long-sleeved shirts and pants, hat, rubber boots with socks. Wear rubber or chemical-resistant gloves.

No listings **OSHA PEL 8 hr TWA** **ACGIH TLV-TWA**

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>APPEARANCE AND ODOR:</b> Black-colored liquid with earthy odor	<b>SOLUBILITY:</b> Appreciable
<b>SPECIFIC GRAVITY (Water = 1):</b> 1.265 g/ml	<b>BULK DENSITY:</b> 10.56 lbs/gal.
<b>VAPOR PRESSURE:</b> Not established	<b>BOILING POINT:</b> Not established
<b>PERCENT VOLATILE (by volume):</b> Not applicable	<b>EVAPORATION RATE:</b> 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:** Urea may decompose to release cyanuric acid, ammonia, HCN, NO.

**HAZARDOUS POLYMERIZATION:** Will not occur.

**11. TOXICOLOGICAL INFORMATION**

<b>Acute Oral LD<sub>50</sub> (rat):</b> >5000 mg/kg	<b>Acute Dermal LD<sub>50</sub> (rabbit):</b> >2000 mg/kg
<b>Eye Irritation (rabbit):</b> Not established	<b>Skin Irritation (rabbit):</b> Not established
<b>Inhalation LC<sub>50</sub> (rat):</b> Not established.	<b>Skin Sensitization (guinea pig):</b> Not established

**Carcinogenic Potential:** None listed in OSHA, NTP, IARC or ACGIH

**12. ECOLOGICAL INFORMATION**

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.

**13. DISPOSAL CONSIDERATIONS**

Do not reuse container. Rinse container thoroughly, adding rinsate to mixing tank. 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 other procedures approved by State and local authorities. Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. Avoid contaminating water by disposal of equipment wash waters or other product wastes.

**14. TRANSPORT INFORMATION**

**DOT Shipping Description:** NOT REGULATED BY USDOT.

**U.S. Surface Freight Classification:** FERTILIZING COMPOUNDS (MANUFACTURED FERTILIZERS), NOI; LIQUID (NMFC 68140, SUB 5; CLASS 50)

**15. REGULATORY INFORMATION**

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	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: Not listed  
 SARA, Title III, Section 313: Not listed  
 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**

MSDS STATUS: Section 15 revised  
 PREPARED BY: Registrations and Regulatory Affairs REVIEWED BY: Environmental/ Regulatory Services

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**MATERIAL SAFETY DATA SHEET**

**SIGNATURE® ALPHANOVA™ 4-0-2**

**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:** SIGNATURE® ALPHANOVA™ 4-0-2 LIQUID TURF & ORNAMENTAL FERTILIZER  
**CHEMICAL NAME:** Inorganic/Organic Chemical Fertilizer Mixture  
**CHEMICAL FAMILY:** N-K Mixed liquid blended fertilizer  
**EPA REG. NO.:** not applicable  
**MSDS Number:** AN402-06b-LPI

**MSDS Revisions:** Section 15

**Date Of Issue:** 07/31/06

**Supersedes:** 06/14/06

**2. HAZARDS IDENTIFICATION SUMMARY**

**KEEP OUT OF REACH OF CHILDREN - CAUTION -** May cause mild eye and skin irritation. Avoid contact with skin, eyes, open cuts, or sores. In case of contact, flush with water. Get medical attention for eyes. This blended liquid fertilizer is a mixture of Urea-Triazone solution, Potassium Acetate, Kelp (Ascophyllum Nodosum), Brewer's Yeast, and Molasses. Nausea and vomiting could be expected upon large dose ingestion. The acute ingestive effects are described as nausea, chills, and diarrhea. Eye or skin contact with these products could cause irritation (particularly in sensitive persons), and respiratory irritation could be expected from the unprotected inhalation of fertilizer mists. Product users should avoid prolonged or repeated skin contact by wearing impervious gloves, long sleeve shirt, long pants, socks and rubber boots. Goggles for eye protection are recommended. Wash thoroughly after handling and using this product.

This product is a dark brown-colored liquid with sugary, molasses and slight ammonia odor. Primary routes of entry are Inhalation, eye contact and skin contact.

**3. COMPOSITION, INFORMATION ON INGREDIENTS**

N-P-K (NITROGEN-PHOSPHORUS-POTASSIUM) MIXED LIQUID BLENDED FERTILIZERS – No hazardous ingredient exceeds 1% of mixture.

<u>Chemical Ingredients:</u>	<u>Percentage by Weight:</u>	<u>CAS No.</u>	<u>TLV (Units)</u>
Total Nitrogen (N)	4.00	Mixture	not established
Soluble Potash (K <sub>2</sub> O)	2.00	Mixture	not established
Fertilizer salts and inert ingredients	94.00		

**4. FIRST AID MEASURES**

- If in eyes:** Flush eyes with clean running water for at least 15 minutes. If irritation persists, get medical attention.
- If on skin:** Remove contaminated clothing. Wash Thoroughly with soap and water. If irritation persists, or if rash develops, get medical attention.
- If swallowed:** If conscious, drink 1 or 2 glasses of water. Get medical attention. Never induce vomiting or give anything by mouth to an unconscious person.
- If inhaled:** Remove to fresh air. If irritation persists, get medical attention.

**5. FIRE FIGHTING MEASURES**

- FLASH POINT (°F/Test Method):** Not applicable
- FLAMMABLE LIMITS (LFL & UFL):** Not applicable
- EXTINGUISHING MEDIA:** Use medium appropriate to surrounding fire. Dry chemical, carbon dioxide, foam, water spray or fog.
- HAZARDOUS COMBUSTION PRODUCTS:** May include but are not limited to oxides of carbon, hydrogen chloride, hydrogen fluoride, oxides of nitrogen, ammonia, oxides of phosphorus, oxides of sulfur, hydrogen sulfide.
- SPECIAL FIRE FIGHTING PROCEDURES:** Use water spray to cool containers exposed to fire. Remain upwind. Avoid breathing smoke. Wear self-contained breathing apparatus and full protective gear.
- UNUSUAL FIRE AND EXPLOSION HAZARDS:** None known.

**6. ACCIDENTAL RELEASE MEASURES**

- STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:**  
Avoid breathing mists. Absorb and sweep up spills immediately and transfer to suitable containers for possible land application according to label use or for disposal. Check local, state and federal regulations for proper disposal.
- CAUTION:** Keep spills and cleaning runoff out of municipal sewers and open bodies of water.

**7. HANDLING AND STORAGE**

**HANDLING:** Avoid breathing fertilizer mists. Avoid prolonged or repeated skin contact. Avoid eye contact. Wash hands thoroughly after using this product and before eating, drinking, chewing gum, using tobacco or using the toilet.

**STORAGE:** Store in original containers only. Keep containers tightly closed when not in use. Store in a cool, dry well-ventilated area, preferably in a locked storage area away from children, feed, and food products, and seed. Store at ambient temperatures. Do not contaminate water, food, or feed by storage or disposal.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**ENGINEERING CONTROLS:** Not normally required.

**RESPIRATORY PROTECTION:** Not normally required, if vapors or mists exceed acceptable levels, wear a MSHA/NIOSH approved respirator.

**EYE PROTECTION:** Chemical goggles or shielded safety glasses.

**SKIN PROTECTION:** Wear protective clothing: long-sleeved shirts and pants, hat, rubber boots with socks. Wear rubber or chemical-resistant gloves.

**OSHA PEL 8 hr TWA**                      **ACGIH TLV-TWA**

No listings

**9. PHYSICAL AND CHEMICAL PROPERTIES**

**APPEARANCE AND ODOR:** Dark brown-colored liquid with sugary, molasses and slight ammonia odor

**SPECIFIC GRAVITY (Water = 1):** 1.234 g/ml

**VAPOR PRESSURE:** Not established

**PERCENT VOLATILE (by volume):** Not applicable

**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.

**BULK DENSITY:** 10.30 lbs/gal.

**BOILING POINT:** Not established

**EVAPORATION RATE:** Not established

**SOLUBILITY:** Appreciable  
pH: 5.0 – 5.5

**10. STABILITY AND REACTIVITY**

**STABILITY:** Stable

**INCOMPATIBILITY:** None known.

**HAZARDOUS DECOMPOSITION PRODUCTS:** Urea may decompose to release cyanuric acid, ammonia, HCN, NO.

**HAZARDOUS POLYMERIZATION:** Will not occur.

**CONDITIONS TO AVOID:** None known.

**11. TOXICOLOGICAL INFORMATION**

**Acute Oral LD<sub>50</sub> (rat):** >5000 mg/kg

**Eye Irritation (rabbit):** Not established

**Inhalation LC<sub>50</sub> (rat):** Not established.

**Carcinogenic Potential:** None listed in OSHA, NTP, IARC or ACGIH

**Acute Dermal LD<sub>50</sub> (rabbit):** >2000 mg/kg

**Skin Irritation (rabbit):** Not established

**Skin Sensitization (guinea pig):** Not established

**12. ECOLOGICAL INFORMATION**

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.

**13. DISPOSAL CONSIDERATIONS**

Do not reuse container. Rinse container thoroughly, adding rinsate to mixing tank. 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 other procedures approved by State and local authorities. Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. Avoid contaminating water by disposal of equipment wash waters or other product wastes.

**14. TRANSPORT INFORMATION**

**DOT Shipping Description:** NOT REGULATED BY USDOT.

**U.S. Surface Freight Classification:** FERTILIZING COMPOUNDS (MANUFACTURED FERTILIZERS), NOI; LIQUID (NMFC 68140, SUB 5; CLASS 50)

15. REGULATORY INFORMATION

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	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: Not listed

SARA, Title III, Section 313: Not listed

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

MSDS STATUS: Section 15 revised

PREPARED BY: Registrations and Regulatory Affairs

REVIEWED BY: Environmental/ Regulatory Services

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## MATERIAL SAFETY DATA SHEET

## FEATURE® 6-0-0 WATER SOLUBLE FERTILIZER WITH FERION 138®

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:

United Horticultural Supply  
P.O. Box 1286 • Greeley, CO 80632-1286

24-Hour Emergency Phone: 1-800-424-9300  
Medical Emergencies: 1-800-301-7976

PRODUCT NAME: FeATURE® 6-0-0 WATER SOLUBLE FERTILIZER WITH FERION 138®

CHEMICAL NAME: Water Soluble Micronutrient

CHEMICAL FAMILY: Inorganic Salts

EPA REG. NO.: not applicable

MSDS Number: Fe600-03b MSDS Revisions: Section 15 Revised

Date Of Issue: 12/02/03

Supersedes: 08/20/03

## 2. COMPOSITION, INFORMATION ON INGREDIENTS (Note: See Product Tag or Label for Specific Ingredients)

Chemical Ingredients:	Percentage by Weight:	CAS No.
Total Nitrogen (N)	6.00	Mixture
Total Sulfur (S)	15.00	Mixture
Total Magnesium (Mg)	1.00	Mixture
Total Iron (Fe)	10.00	Mixture
Total Manganese (Mn)	2.50	Mixture
Fertilizer salts and inert ingredients	65.50	

## 3. HAZARDS IDENTIFICATION SUMMARY

## KEEP OUT OF REACH OF CHILDREN

This product is a tan powder with little to no odor. Primary routes of entry are Inhalation, eye contact and skin contact.

## 4. FIRST AID MEASURES

<b>Eyes:</b>	Flush eyes with large amount of water for at least 15 minutes. Consult a physician if irritation persists.
<b>Skin:</b>	Remove all contaminated clothing. Wash skin, hair, and fingernails thoroughly with soap and water. If irritation persists seek medical attention. Wash clothing before reuse.
<b>Ingestion:</b>	If swallowed, give 2 glasses of water to drink. Do not induce vomiting or give anything by mouth to an unconscious person. Call a physician to get medical attention; the emergency telephone number is 1-800-301-7976
<b>Inhalation:</b>	Move subject to fresh air. Give artificial respiration if breathing has stopped. If breathing is difficult, give oxygen. Get medical attention immediately.

## 5. FIRE FIGHTING MEASURES

<b>FLASH POINT (°F/Test Method):</b>	Not applicable
<b>FLAMMABLE LIMITS (LEL &amp; UEL):</b>	Not applicable
<b>EXTINGUISHING MEDIA:</b>	Considered non-combustible, use medium appropriate to surrounding fire. Dry chemical, carbon dioxide, foam, water spray or fog.
<b>HAZARDOUS COMBUSTION PRODUCTS:</b>	May include but are not limited to oxides of nitrogen, ammonia, and sulfur.
<b>SPECIAL FIRE FIGHTING PROCEDURES:</b>	Use water spray to cool containers exposed to fire. Remain upwind. Avoid breathing smoke. Wear self-contained breathing apparatus and full protective gear.
<b>UNUSUAL FIRE AND EXPLOSION HAZARDS:</b>	This product contains an oxidizer and may increase the intensity of a fire.

## 6. ACCIDENTAL RELEASE MEASURES

## STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

Avoid breathing dusts. Sweep up dry spills immediately and transfer to suitable containers for possible land application according to label use or for disposal. Check local, state and federal regulations for proper disposal.

**CAUTION:** Keep spills and cleaning runoff out of municipal sewers and open bodies of water.

## 7. HANDLING AND STORAGE

<b>HANDLING:</b>	Store in a cool dry place away from children, feed and food products, and seed.
<b>STORAGE:</b>	Do not contaminate water supplies by handling and storage of product. Drift or runoff may adversely affect aquatic invertebrates and non-target plants.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<b>ENGINEERING CONTROLS:</b>	Not normally required.
<b>RESPIRATORY PROTECTION:</b>	Not normally required, if vapors or dusts exceed acceptable levels, wear a NIOSH approved pesticide respirator.
<b>EYE PROTECTION:</b>	Chemical goggles or shielded safety glasses.
<b>SKIN PROTECTION:</b>	Wear protective clothing: long-sleeved shirts and pants, hat, rubber boots with socks. Wear rubber or chemical-resistant gloves.

Nuisance Dust

OSHA PEL 8 hr TWA  
15 mg/m<sup>3</sup>

ACGIH TLV-TWA  
10 mg/m<sup>3</sup>

**9. PHYSICAL AND CHEMICAL PROPERTIES**

APPEARANCE AND ODOR: Tan powder with little or no odor  
 SPECIFIC GRAVITY (Water= 1): 1.212 g/ml  
 VAPOR PRESSURE: Not applicable  
 PERCENT VOLATILE (by volume): Not applicable  
 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.

BULK DENSITY: 70 lbs/ft<sup>3</sup>  
 BOILING POINT: Not applicable  
 EVAPORATION RATE: Not applicable

SOLUBILITY: Appreciable  
 pH: Not applicable

**10. STABILITY AND REACTIVITY**

STABILITY: Stable  
 INCOMPATIBILITY: None known.  
 HAZARDOUS DECOMPOSITION PRODUCTS: None known.  
 HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Contact with oxidizers.

**11. TOXICOLOGICAL INFORMATION**

Acute Oral LD<sub>50</sub> (rat): >5000 mg/kg  
 Eye Irritation (rabbit): May cause irritation  
 Inhalation: May cause respiratory tract irritation.  
 Carcinogenic Potential: None listed in OSHA, NTP, IARC or ACGIH

Acute Dermal LD<sub>50</sub> (rat): >5000 mg/kg  
 Skin Irritation (rabbit): May cause irritation  
 Skin Sensitization (guinea pig): Not established

**12. ECOLOGICAL INFORMATION**

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.

**13. DISPOSAL CONSIDERATIONS**

Do not reuse container. Place in trash or offer for recycling. Incinerate contaminated solids in accordance with local, state and federal regulations. (See 40 CFR 268).

**14. TRANSPORT INFORMATION**

DOT Shipping Description: NOT REGULATED BY USDOT.  
 U.S. Surface Freight Classification: FERTILIZING COMPOUNDS (MANUFACTURED FERTILIZERS), NO1; DRY (NMFC 68140, SUB 5; CLASS 50)

**15. REGULATORY INFORMATION**

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	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: **WARNING:** This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

**16. OTHER**

MSDS STATUS: Section 15 revised  
 PREPARED BY: Registrations and Regulatory Affairs  
 REVIEWED BY: Environmental/ Regulatory Services  
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MATERIAL SAFETY DATA SHEET

KLEENUP® PRO HERBICIDE

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:

VERDICON, 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: KLEENUP® PRO HERBICIDE  
CHEMICAL NAME: Glyphosate; N- (phosphonomethyl) glycine, in the form of its isopropylamine salt  
CHEMICAL FAMILY: Herbicide  
EPA REG. NO.: 228-366-65783  
MSDS Number: 228366-05-VER      MSDS Revisions: Sections 3 and 13      Date Of Issue: 05/02/05      Supersedes: 03/10/04

2. HAZARDS IDENTIFICATION SUMMARY

KEEP OUT OF REACH OF CHILDREN – CAUTION - CAUTION: Causes moderate eye irritation. Harmful if swallowed or inhaled. Do not get in eyes or on clothing. Avoid breathing spray mist. Eye Contact: This product may cause pain, redness and tearing based on toxicity studies. Skin contact: This product is no more than slightly toxic and no more than slightly irritating based on toxicity studies. Ingestion: This product is no more than slightly toxic based on toxicity studies. No significant adverse health effects are expected to develop if only small amounts (less than a mouthful) are swallowed. Ingestion of similar formulations has been reported to produce gastrointestinal discomfort with irritation of the mouth, nausea, vomiting and diarrhea. Oral ingestion of large quantities of one similar product has been reported to result in hypotension and lung edema, Inhalation: This product is no more than slightly toxic if inhaled based on toxicity studies. Medical Conditions Aggravated by Exposure: None known. This product is a clear, viscous greenish/yellow solution with no odor.

3. COMPOSITION, INFORMATION ON INGREDIENTS

Chemical Ingredients:	Percentage by Weight:	CAS No.	TLV (Units)
Glyphosate, isopropylamine salt	41.00	38641-94-0	None Established
Other Ingredients	59.00	(1071-83-6 for Glyphosate Acid) Mixture	None Established

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 a person sip a glass of water if able to do so. 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 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: 1-800-301-7976. 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): None  
FLAMMABLE LIMITS (LEL & UEL): Not applicable  
EXTINGUISHING MEDIA: Considered non-combustible, use medium appropriate to surrounding fire. Dry chemical, carbon dioxide, foam, water spray or fog.  
HAZARDOUS COMBUSTION PRODUCTS: May include but are not limited to CO<sub>2</sub>, CO, NO<sub>x</sub>.  
SPECIAL FIRE FIGHTING PROCEDURES: Use water spray to cool containers exposed to fire. Remain upwind. Avoid breathing smoke. Wear self-contained breathing apparatus and full protective gear.  
UNUSUAL FIRE AND EXPLOSION HAZARDS: None.

6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:  
Contain large spills with dikes and transfer the material to appropriate containers for reclamation or disposal. Absorb remaining material or small spills with an inert material and place in a chemical waste container. Flush residual spill area with water. Large spills that soak into the ground should be dug up, placed in metal drums and disposed of in accordance with instructions provided under DISPOSAL, Section 13 of this MSDS. Contact appropriate state agency when considering a land spreading disposal option. Leaking containers should be separated from non-leakers and either the container or its contents transferred to a drum or other non-leaking container 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. Check local, state and federal regulations for proper disposal.  
CAUTION: Keep spills and cleaning runoff out of municipal sewers and open bodies of water.

**7. HANDLING AND STORAGE**

**HANDLING:** Avoid contact with eyes, skin or clothing. Avoid breathing 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. Spray solutions of this product should be mixed, stored or applied using only stainless steel, aluminum, fiberglass, plastic or plastic-lined containers. Do not mix, store or apply this product or spray solutions of this product in galvanized or unlined steel (except stainless steel) containers or spray tanks. This product or spray solutions of this product react with such containers and tanks to produce hydrogen gas that may form a highly combustible gas mixture. This gas mixture could flash or explode, causing serious personal injury, if ignited by open flame, spark, welder's torch, lighted cigarette or other ignition source.

**STORAGE:** Store above 10°F / -12°C to keep product from crystallizing. Crystals will settle to the bottom. If allowed to crystallize, place in a warm room at 68°F / 20°C for several days to redissolve and shake or roll to mix well before using. Product is stable under normal conditions of storage and handling for at least 5 years. Store in a cool, well-ventilated place away from foodstuffs, reducing agents and acids. Do not contaminate water, food, or feed by storage or disposal.

**EPA HANDLER REQUIREMENTS**  
**Worker Protection Standard – 40 CFR 170**

**Personal Protective Equipment: Applicators and other handlers must wear:** long-sleeved shirt and long pants, shoes plus socks and protective eyewear. 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.

**RESPIRATORY PROTECTION:** Not normally required, if vapors or dusts exceed acceptable levels, wear a NIOSH approved pesticide respirator.

**EYE PROTECTION:** Chemical goggles or shielded safety glasses.

**SKIN PROTECTION:** Wear protective clothing: long-sleeved shirts and pants, hat, rubber boots with socks. Wear rubber or chemical-resistant gloves.

	<b>OSHA PEL 8 hr TWA</b>	<b>ACGIH TLV-TWA</b>
For product	Not Established	Not Established

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>APPEARANCE AND ODOR:</b> Clear, viscous greenish/yellow solution with no odor	<b>SOLUBILITY:</b> Soluble
<b>SPECIFIC GRAVITY (Water = 1):</b> 1.16 g/ml @ 20°C	<b>BULK DENSITY:</b> 9.68 pounds/gal.
<b>VAPOR PRESSURE:</b> Not established	<b>BOILING POINT:</b> Not established
<b>PERCENT VOLATILE (by volume):</b> Not established	<b>EVAPORATION RATE:</b> 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

**INCOMPATIBILITY:** Acids and bases.

**HAZARDOUS DECOMPOSITION PRODUCTS:** None.

**HAZARDOUS POLYMERIZATION:** Will not occur. This product can react with caustic (basic) materials to liberate heat. This is not a polymerization but rather a chemical neutralization in an acid base reaction.

**CONDITIONS TO AVOID:** Excessive heat, open flame, other ignition sources.

**11. TOXICOLOGICAL INFORMATION**

<b>Acute Oral LD<sub>50</sub> (rat):</b> >5000 mg/kg; FIFRA Category IV	<b>Acute Dermal LD<sub>50</sub> (rabbit):</b> >5000 mg/kg; FIFRA Category IV
<b>Eye Irritation (rabbit):</b> Moderately irritating; FIFRA Category III	<b>Skin Irritation (rabbit):</b> Slightly irritating; FIFRA Category IV
<b>Inhalation LC<sub>50</sub> (rat):</b> >2.05 mg/L (4-hr); FIFRA Category IV	<b>Skin sensitization (guinea pig):</b> Not determined
<b>Carcinogenic Potential:</b> None listed in OSHA, NTP, IARC or ACGIH	

**12. ECOLOGICAL INFORMATION**

This product has been shown to be slightly to moderately toxic in aquatic studies. This product has been shown to be practically non-toxic to avian species following sub-acute dietary exposure. 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 supplies when disposing of equipment wash waters.

**13. DISPOSAL CONSIDERATIONS**

Wastes resulting from the use of this product that cannot be used or chemically reprocessed should be disposed of in a landfill approved for pesticide disposal or in accordance with applicable Federal, state and local procedures. Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned, or destroyed.

**Container Disposal:** Do not reuse container. Triple rinse (or equivalent), adding rinse water to spray tank, 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 other procedures approved by state and local authorities.

**Container Disposal for Refillable Containers:** After use, close all openings that have been opened during use and replace all caps. Return the container to the point of purchase or other designated locations for return of the empty refillable container. Do not contaminate water, food, or feed by storage or disposal.

**14. TRANSPORT INFORMATION**

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**

<b>NFPA &amp; HMIS Hazard Ratings:</b>		<b>NFPA</b>		<b>HMIS</b>		
	1	Health	0	Least	1	Health
	1	Flammability	1	Slight	1	Flammability
	0	Instability	2	Moderate	0	Reactivity
			3	High	H	PPE
			4	Severe		

**SARA Hazard Notification/Reporting**

<b>SARA Title III Hazard Category:</b>	Immediate	<u>Y</u>	Fire	<u>N</u>	Sudden Release of Pressure	<u>N</u>
	Delayed	<u>N</u>	Reactive	<u>N</u>		

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

**16. OTHER**

MSDS STATUS: Sections 3 and 13 revised

PREPARED BY: Registrations and Regulatory Affairs

REVIEWED BY: Environmental/ Regulatory Services

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MATERIAL SAFETY DATA SHEET

26

Syngenta Crop Protection, Inc.
Post Office Box 18300
Greensboro, NC 27419

In Case of Emergency, Call
1-800-888-8372

1. PRODUCT IDENTIFICATION

Product Name: REWARD LANDSCAPE AND AQUATIC HERBICIDE
Product No.: A12872A
EPA Signal Word: Caution
Active Ingredient(%): Diquat dibromide (37.3%)
CAS No.: 85-00-7
Chemical Name: [6,7-dihydrodipyrido(1,2-a:2',1'-c)pyrazinediium dibromide]
Chemical Class: Bipyridilium (dipyridilium) contact herbicide
EPA Registration Number(s): 100-1091
Section(s) Revised: 12

2. HAZARDS IDENTIFICATION

Health and Environmental

Toxic by inhalation. Irritating to eyes and skin. Harmful if swallowed.

Hazardous Decomposition Products

Flammable hydrogen gas may be formed on contact with aluminum. See "Conditions to Avoid", Section 10.
May decompose at high temperatures forming toxic gases.

Physical Properties

Appearance: Dark brown liquid
Odor: Odorless

Unusual Fire, Explosion and Reactivity Hazards

This product may form flammable and explosive hydrogen gas when in contact with aluminum.
During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Table with 5 columns: Material, OSHA PEL, ACGIH TLV, Other, NTP/IARC/OSHA Carcinogen. Row 1: Diquat dibromide (37.3%), Not Established, 0.5 mg/m³ TWA (inhalable); 0.1 mg/m³ TWA (respirable), skin, 0.5 mg/m³ TWA (0.5 total; 0.08 respirable), \*\*\*

\*\*\* Syngenta Occupational Exposure Limit (OEL)

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.
Syngenta Hazard Category: B

4. FIRST AID MEASURES

Have the product container, label or Material 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. Have the person sip a glass of water if able to swallow. 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.

#### Notes to Physician

To be effective, treatment for ingestion of the product must begin IMMEDIATELY. Treatment consists of binding the active ingredient, diquat, in the gut with suspensions of activated charcoal or bentonite clay, administration of cathartics to enhance elimination and removal of diquat from the blood by charcoal hemoperfusion or continuous hemodialysis.

#### Medical Condition Likely to be Aggravated by Exposure

None known.

## **5. FIRE FIGHTING MEASURES**

### Fire and Explosion

Flash Point (Test Method):	Not Applicable	
Flammable Limits (% in Air):	Lower: Not Applicable	Upper: Not Applicable
Autoignition Temperature:	Not Applicable	
Flammability:	Not Applicable	

### Unusual Fire, Explosion and Reactivity Hazards

This product may form flammable and explosive hydrogen gas when in contact with aluminum.  
During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

### In Case of Fire

Use dry chemical, foam or CO2 extinguishing media. 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. Prevent use of contaminated buildings, area, and equipment until decontaminated. Water runoff can cause environmental damage. If water is used to fight fire, dike and collect runoff.

## **6. ACCIDENTAL RELEASE MEASURES**

### In Case of Spill or Leak

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**

This product reacts with aluminum to produce flammable hydrogen gas. Do not mix or store in containers or systems made of aluminum or having aluminum fittings.

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.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION, PACKAGING AND USE OF THIS PRODUCT.

FOR COMMERCIAL APPLICATIONS AND/OR ON-FARM APPLICATIONS CONSULT THE PRODUCT LABEL.

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, natural rubber, polyvinyl chloride [PVC] or Viton), coveralls, socks and chemical-resistant footwear. For overhead exposure, wear chemical-resistant headgear.
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:	Dark brown liquid
Odor:	Odorless
Melting Point:	Not Applicable
Boiling Point:	Not Available
Specific Gravity/Density:	1.20 g/ml @ 68°F (20°C)
pH:	4 - 6

### Solubility in H<sub>2</sub>O

Diquat dibromide: 718,000 mg/l @ 68°F (20°C) and pH 7.2

### Vapor Pressure

Diquat dibromide: < 10(-8) mmHg @ 77°F (25°C)

## 10. STABILITY AND REACTIVITY

Stability:	Stable under normal use and storage conditions.
Hazardous Polymerization:	Will not occur.
Conditions to Avoid:	Concentrate should not be stored in aluminum containers. Spray solutions should not be mixed, stored or applied in containers other than plastic, plastic-lined steel, stainless steel or fiberglass.
Materials to Avoid:	Strong alkalis and anionic wetting agents (e.g., alkyl and alkylaryl sulfonates). Corrosive to aluminum.
Hazardous Decomposition Products:	Flammable hydrogen gas may be formed on contact with aluminum. See "Conditions to Avoid", Section 10. May decompose at high temperatures forming toxic gases.

## 11. TOXICOLOGICAL INFORMATION

### Acute Toxicity/Irritation Studies (Finished Product)

Ingestion:	Oral (LD50 Female Rat) :	= 886 mg/kg body weight
Dermal:	Dermal (LD50 Rat) :	> 5050 mg/kg body weight
Inhalation:	Inhalation (LC50 Rat) :	= 0.62 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

Diquat dibromide: Mutagenicity: No evidence in in vivo assays.

Development Toxicity: In rabbit studies a small percentage of fetuses had minor defects at 3 and 10 mg ion/kg/d.

Chronic/Subchronic Toxicity Studies

Diquat dibromide: Kidney weight decreases and cataracts seen in dogs at 12.5 mg ion/kg/d.

No evidence for neurotoxic effects in rats dosed up to 400 ppm ion in the diet for 13 weeks.

Carcinogenicity

Diquat dibromide: No evidence of carcinogenicity in rat and mouse studies.

Other Toxicity Information

None

Toxicity of Other Components

Not Applicable

Target Organs

Active Ingredients

Diquat dibromide: Eye, kidney

Inert Ingredients

Not Applicable

**12. ECOLOGICAL INFORMATION**

Summary of Effects

Diquat dibromide:

Very toxic to aquatic organisms.

Eco-Acute Toxicity

Diquat dibromide:

Fish (Rainbow Trout) 96-hour LC50 14.83 ppm

Fish (Bluegill Sunfish) 96-hour LC50 13.9 ppm

Bird (Mallard Duck) LD50 Oral 60.6 mg/kg

Bird (Bobwhite Quail) 8-day dietary LC50 2932

Bird (Mallard Duck) 8-day dietary LC50 > 5000 ppm

Bee (Contact) LD50 100 ug/bee

Invertebrate (Water Flea) 48-hour EC50 0.77 ppm

Green Algae 4-day EC50 9.4 ppb

Eco-Chronic Toxicity

Diquat dibromide:

Invertebrate (Water Flea) 21-day LOEC 0.17 ppm

Bird (Mallard Duck) Reproduction LOEL 25 ppm

Fish (Fathead Minnow) 34-day LOEC 1.5 ppm

Environmental Fate

Diquat dibromide:

The information presented here is for the active ingredient, diquat dibromide.

Stable in soil and 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. (Diquat Dibromide)

Hazard Class or Division: Class 8

Identification Number: UN 1760

Packing Group: PG III

B/L Freight Classification

Herbicides, NOI (NMC Class 60)

Comments

Water Transport - International

Proper Shipping Name: Corrosive Liquid, N.O.S. (Diquat Dibromide)

Hazard Class or Division: Class 8

Identification Number: UN 1760

Packing Group: PG III

Air Transport - International

Proper Shipping Name: Corrosive Liquid, N.O.S. (Diquat Dibromide)

Hazard Class or Division: Class 8

Identification Number: UN 1760

Packing Group: PG III

Packing Instructions: Passenger - 818, Cargo 820

Packaging Limitations: Inner packages over 5 liters and single packages over 60 liters cannot be shipped by cargo aircraft;

Inner packages over 2.5 liters and outer packages over 5 liters cannot be shipped by passenger aircraft.

**15. REGULATORY INFORMATION**

EPCRA SARA Title III Classification

Section 311/312 Hazard Classes: Acute Health Hazard  
Chronic Health Hazard

Section 313 Toxic Chemicals: Not Applicable

California Proposition 65

None

CERCLA/SARA 302 Reportable Quantity (RQ)

Report product spills  $\geq$  268 gal. (based on diquat [RQ = 1,000 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

Health: 2  
Flammability: 1  
Instability: 0

HMIS Hazard Ratings

Health: 2  
Flammability: 1  
Reactivity: 0

0	Minimal
1	Slight
2	Moderate
3	Serious
4	Extreme

For non-emergency questions about this product call:

1-800-334-9481

Original Issued Date: 4/11/2002

Revision Date: 1/18/2008

Replaces: 7/24/2007

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.

End of MSDS

# MATERIAL SAFETY DATA SHEET



Emergency Phone: 800-992-5994  
Dow AgroSciences LLC  
Indianapolis, IN 46268

Effective Date: 22-May-07  
Product Code: 49015  
MSDS: 006301

## SPOTLIGHT\* SPECIALTY HERBICIDE

### 1. PRODUCT AND COMPANY IDENTIFICATION:

**PRODUCT:** Spotlight\* Specialty Herbicide

#### COMPANY IDENTIFICATION:

Dow AgroSciences LLC  
9330 Zionsville Road  
Indianapolis, IN 46268-1189

### 2. HAZARDOUS IDENTIFICATIONS:

#### EMERGENCY OVERVIEW

Brown liquid with no odor. May cause eye irritation and corneal injury. May cause skin irritation, even a burn. Repeated contact may cause drying or flaking of the skin.  
**EMERGENCY PHONE NUMBER:** 800-992-5994

### 3. COMPOSITION/INFORMATION ON INGREDIENTS:

COMPONENT	CAS NUMBER	W/W%
Fluroxypyr	81406-37-3	26.2
1-Methyl-2-Pyrrolidinone	872-50-4	5.1
Naphthalene	91-20-3	<5.4
Balance		63.3

### 4. FIRST AID:

**EYES:** Immediately flush eyes with water; remove contact lenses, if present, after the first 5 minutes, then continue flushing eyes for at least 15 minutes. Obtain medical attention without delay, preferably from an ophthalmologist.

**SKIN:** Wash skin with plenty of water.

**INGESTION:** Do not induce vomiting. Call a physician and/or transport to emergency facility immediately.

**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.

**NOTE TO PHYSICIAN:** The decision of whether to induce vomiting or not should be made by a physician. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. If burn is present, treat as any thermal burn, after decontamination. 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:

**FLASH POINT:** 145°F (63°C)  
**METHOD USED:** PMCC

#### FLAMMABLE LIMITS

LFL: Not determined  
UFL: Not determined

**EXTINGUISHING MEDIA:** Foam, CO<sub>2</sub>, or dry chemical.

**FIRE & EXPLOSION HAZARDS:** Foam fire-extinguishing system is preferred because uncontrolled water can spread possible contamination. Toxic irritating gases and fumes will be formed.

**FIRE-FIGHTING EQUIPMENT:** Wear positive pressure self-contained breathing apparatus.

### 6. ACCIDENTAL RELEASE MEASURES:

**ACTION TO TAKE FOR SPILLS/LEAKS:** Absorb small spills with dry material such as sand, ZORBALL, or dirt. Wash thoroughly after handling. Contain large spills by diking to keep out of sewers. Report large spills to Dow AgroSciences at 800-992-5994.

### 7. HANDLING AND STORAGE:

**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:** See product label. Keep out of reach of children. Do not swallow. Avoid skin and eye contact. Avoid breathing mist or vapors. Store in original container with the lid tightly closed. Handle concentrate in ventilated area. Keep away from food, feedstuffs, and domestic water supplies. Wash thoroughly after handling.

\*Trademark of Dow AgroSciences LLC

# MATERIAL SAFETY DATA SHEET



Emergency Phone: 800-992-5994  
Dow AgroSciences LLC  
Indianapolis, IN 46268

Effective Date: 22-May-07  
Product Code: 49015  
MSDS: 006301

## SPOTLIGHT\* SPECIALTY HERBICIDE

### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION:

These precautions are suggested for conditions where the potential for exposure exists. Emergency conditions may require additional precautions.

#### EXPOSURE GUIDELINE(S):

1-Methyl-2-pyrrolidinone: AIHA WEEL is 10 ppm, Skin. Interim Dow AgroSciences Industrial Hygiene Guide is 500 ppm.

Naphthalene: ACGIH TLV is 10 ppm TWA, 15 ppm STEL, Skin, A4. OSHA PEL is 10 ppm TWA.

Fluroxypyr 1-methylheptyl ester: Dow AgroSciences Industrial Hygiene Guide is 10 mg/M<sup>3</sup>.

A 'skin' notation following the exposure guideline refers to the potential for dermal absorption of the material including mucous membranes and the eyes either by contact with vapors or by direct skin contact. It is intended to alert the reader that inhalation may not be the only route of exposure and that measures to minimize dermal exposure should be considered.

**ENGINEERING CONTROLS:** Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.

#### RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:

**RESPIRATORY PROTECTION:** Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required, use a NIOSH approved air-purifying or positive-pressure supplied-air respirator depending on the potential airborne concentration.

**SKIN PROTECTION:** When prolonged or frequently repeated contact could occur, use chemically protective clothing resistant to this material. Selection of specific items such as faceshield, gloves, boots, apron, or full-body suit will depend on the operation.

**EYE/FACE PROTECTION:** Use chemical goggles. If exposure causes eye discomfort, use a full-face respirator.

**APPLICATORS AND ALL OTHER HANDLERS:** Refer to the product label for personal protective clothing and equipment.

### 9. PHYSICAL AND CHEMICAL PROPERTIES:

**BOILING POINT:** 182°F (202°C)

**VAPOR PRESSURE:** Not determined

**DENSITY:** 0.984-0.995 @ 20°C or 8.2-8.3 lbs/gal

**SOLUBILITY IN WATER:** Not determined

**SPECIFIC GRAVITY:** 0.99 g/mL @ 25°C or 8.24 lbs/gal

**APPEARANCE:** Dark brown liquid

**ODOR:** None

**FREEZE POINT:** -10°C

**pH:** 5.5 (as 1% aqueous sol)

### 10. STABILITY AND REACTIVITY:

**STABILITY: (CONDITIONS TO AVOID)** This product is stable under normal use and storage conditions.

**INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID)** Avoid acids, oxidizing and base materials.

**HAZARDOUS DECOMPOSITION PRODUCTS:** Under fire conditions, oxides of nitrogen, hydrogen chloride, and hydrogen fluoride may be produced.

**HAZARDOUS POLYMERIZATION:** Not known to occur.

### 11. TOXICOLOGICAL INFORMATION:

**POTENTIAL HEALTH EFFECTS:** This section includes possible adverse effects, which could occur if this material is not handled in the recommended manner.

**EYE:** May cause moderate eye irritation. May cause slight corneal injury. Vapor may cause eye irritation experienced as mild discomfort and redness.

**SKIN:** Brief contact is essentially non-irritating to skin. Prolonged contact may cause skin irritation with local redness. Repeated contact may cause skin burns. Symptoms may include pain, severe local redness, swelling, and tissue damage. May cause drying and flaking of skin. Prolonged skin contact is unlikely to result in absorption of harmful amounts. The LD<sub>50</sub> for skin absorption in rabbits is >2,000 mg/kg. Did not cause allergic skin reactions when tested in guinea pigs.

\*Trademark of Dow AgroSciences LLC

# MATERIAL SAFETY DATA SHEET



Emergency Phone: 800-992-5994  
Dow AgroSciences LLC  
Indianapolis, IN 46268

Effective Date: 22-May-07  
Product Code: 49015  
MSDS: 006301

## SPOTLIGHT\* SPECIALTY HERBICIDE

**INGESTION:** Low toxicity if swallowed. The oral LD<sub>50</sub> for rats is 3,738 mg/kg (males) and 3,162 mg/kg (females). Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. Aspiration into the lungs may occur during ingestion or vomiting, causing lung damage or even death due to chemical pneumonia.

**INHALATION:** No adverse effects are anticipated from single exposure to vapor. The LC<sub>50</sub> for rats is >6.2 mg/L for 4 hours. Excessive exposure to solvent may cause respiratory irritation and central nervous system depression. May cause nausea or vomiting.

**SYSTEMIC (OTHER TARGET ORGAN) EFFECTS:** Effects have been reported on the following organs: bone marrow, kidney, liver and respiratory tract.

**CANCER INFORMATION:** Fluroxypyr did not cause cancer in laboratory animals.

**TERATOLOGY (BIRTH DEFECTS):** 1-Methyl-2-pyrrolidinone caused toxic effects to the fetus in laboratory animals at high dose levels with either mild or undetectable maternal toxicity. Fluroxypyr did not cause birth defects; however, in laboratory animals, other toxic effects to the fetus have been seen.

**REPRODUCTIVE EFFECTS:** Fluroxypyr did not interfere with reproduction in laboratory animal studies.

**MUTAGENICITY:** For the solvent, in-vitro genetic toxicity studies were negative in some cases and positive in other cases. For fluroxypyr, in-vitro and animal genetic toxicity studies were negative.

### 12. ECOLOGICAL INFORMATION:

#### ENVIRONMENTAL FATE:

#### ECOTOXICOLOGY:

Material is practically non-toxic to birds on an acute basis (LD<sub>50</sub> is >2,000 mg/kg in most sensitive species tested).

### 13. DISPOSAL CONSIDERATIONS:

**DISPOSAL METHOD:** 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 and regulations.

### 14. TRANSPORT INFORMATION:

#### U.S. DEPARTMENT OF TRANSPORTATION (DOT) INFORMATION:

For non-bulk shipments by all modes of transportation:  
This material is not regulated for transport.

For bulk shipments by all land, rail and vessel:  
NA1993/COMBUSTIBLE LIQUID, N.O.S./(CONTAINS NAPHTHALENE)/COMBUSTIBLE LIQUID/PG III/  
RQ(NAPHTHALENE)

# MATERIAL SAFETY DATA SHEET



Emergency Phone: 800-992-5994

Dow AgroSciences LLC

Indianapolis, IN 46268

Effective Date: 22-May-07

Product Code: 49015

MSDS: 006301

## SPOTLIGHT\* SPECIALTY HERBICIDE

### 15. REGULATORY INFORMATION:

**NOTICE:** The information herein is presented 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 from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations.

#### U.S. REGULATIONS

**SARA 313 INFORMATION:** This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

CHEMICAL NAME	CAS NUMBER	CONCENTRATION
Naphthalene	91-20-3	5.4%
1-methyl-2-Pyrrolidinone	872-50-4	5.1%

**SARA HAZARD CATEGORY:** This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard  
A delayed health hazard

**CALIFORNIA PROPOSITION 65:** The following statement is made in order to comply with the California Safe Drinking Water and Toxic Enforcement Act of 1986:

This product contains a chemical(s) known to the State of California to cause cancer. The chemical is naphthalene (CAS # 91-20-3).

This product contains a chemical(s) known to the State of California to be a developmental toxin. The chemical is 1-methyl-2-Pyrrolidinone CAS # 872-50-4.

**TOXIC SUBSTANCES CONTROL ACT (TSCA):** All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

**STATE RIGHT-TO-KNOW:** The following product components are cited on certain state lists as mentioned. Non-listed components may be shown in the composition section of the MSDS.

CHEMICAL NAME	CAS NUMBER	LIST
Naphthalene	91-20-3	NJ2 NJ3 PA1 PA3
1-methyl-2-Pyrrolidinone	872-50-4	NJ2 PA1

NJ2=New Jersey Environmental Hazardous Substance (present at > or = to 1.0%).

NJ3=New Jersey Workplace Hazardous Substance (present at > or = or equal to 1.0%).

PA1=Pennsylvania Hazardous Substance (present at > or = to 1.0%).

PA3=Pennsylvania Environmental Hazardous Substance (present at > or = to 1.0%).

**OSHA HAZARD COMMUNICATION STANDARD:** This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

**COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT (CERCLA, or SUPERFUND):** This product contains the following substance(s) listed as "Hazardous Substances" under CERCLA, which may require reporting of releases:

Chemical Name	CAS Number	RQ	% in Product
Naphthalene	91-20-3	100 lbs.	5.4

**RCRA Categorization:** USEPA Hazardous Waste # Naphthalene = U165

### 16. OTHER INFORMATION:

**MSDS STATUS:** Revised Sections: 2, 3, 11, 12, 13, 15  
Reference: DR-0328-2766  
Replaces MSDS Dated: 6/3/04  
Document Code: D03-197-003  
Replaces Document Code: D03-197-002

The Information Herein Is Given In Good Faith, But No Warranty, Express or Implied, Is Made. Consult Dow AgroSciences for Further Information.



The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont  
Material Safety Data Sheet

Page 1

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"DuPont" "TRANXIT" HERBICIDE  
M0000561 Revised 14-JUN-2005  
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-----  
CHEMICAL PRODUCT/COMPANY IDENTIFICATION  
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Material Identification

"TRANXIT" is a registered trademark of DuPont.

"DuPont" is a trademark of DuPont.

Tradenames and Synonyms

TRANXIT  
RIMSULFURON

Company Identification

MANUFACTURER/DISTRIBUTOR  
DuPont  
1007 Market Street  
Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-800-441-7515 (outside the U.S.  
302-774-1000)  
Transport Emergency : CHEMTREC 1-800-424-9300 (outside U.S.  
703-527-3887)  
Medical Emergency : 1-800-441-3637 (outside the U.S.  
302-774-1000)

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COMPOSITION/INFORMATION ON INGREDIENTS  
-----

Components

Material	CAS Number	%
RIMSULFURON	122931-48-0	25
N-((4,6-dimethoxypyrimidin-2-yl)aminocarbonyl)- 3-(ethylsulfonyl)-2- pyridinesulfonamide		
INERT INGREDIENTS		75

-----  
HAZARDS IDENTIFICATION  
-----

Potential Health Effects

CAUTION! Causes eye irritation. Harmful if absorbed through the skin. Avoid contact with skin, eyes, or clothing. Avoid breathing dust or spray mist.

Based on animal data, prolonged exposure by ingestion or inhalation may cause abnormal liver function as detected by laboratory tests.

## (HAZARDS IDENTIFICATION - Continued)

Based on animal data, significant skin permeation, and systemic toxicity, after contact appears unlikely. Based on animal testing, it is not expected to be a skin irritant or sensitizer in humans.

## Carcinogenicity Information

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 a carcinogen.

-----  
FIRST AID MEASURES  
-----

## 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 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.

IF INHALED: No specific intervention is indicated, as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary.

IF INGESTED: No specific intervention is indicated, as the compound is not likely to be hazardous by ingestion. Consult a physician if necessary.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-441-3637 for emergency medical treatment information.

-----  
FIRE FIGHTING MEASURES  
-----

## Flammable Properties

Not a fire or explosion hazard.

## Extinguishing Media

Water, Foam, Dry Chemical, CO2.

## (FIRE FIGHTING MEASURES - Continued)

## Fire Fighting Instructions

Evacuate personnel to a safe area. Wear self-contained breathing apparatus. Wear full protective equipment. Use water spray. Runoff from fire control may be a pollution hazard.

-----  
ACCIDENTAL RELEASE MEASURES  
-----

## Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

## Initial Containment

Dike spill. Prevent material from entering sewers, waterways, or low areas.

## Spill Clean Up

Shovel or sweep up.

-----  
HANDLING AND STORAGE  
-----

## Handling (Personnel)

Avoid contact with eyes, skin or clothing. Wash thoroughly after handling. Wash clothing after use. Avoid breathing dust. Avoid breathing mist.

USERS SHOULD: Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.

## Storage

Store product in original container only. Do not contaminate water, other pesticides, fertilizer, food or feed in storage.

-----  
EXPOSURE CONTROLS/PERSONAL PROTECTION  
-----

## Personal Protective Equipment

Always follow the label instructions when handling this product.

Some materials that are chemical resistant to this product are listed below. If you want more options, follow the instructions for Category A on an EPA chemical-resistance category selection chart.

## (EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

## Non-Agricultural Use PPE:

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants.
- Chemical-resistant gloves made of any waterproof material such as butyl rubber, natural rubber, or neoprene rubber, greater than or equal 14 mils.
- Shoes plus socks.

## Agricultural Use Worker Reentry PPE:

Sod farms are within the scope of the Worker Protection Standard.

Do not enter or allow worker entry to treated areas during the restricted entry interval (REI) of 4 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.
- Chemical-resistant gloves made of any waterproof material, such as butyl rubber, natural rubber, or neoprene rubber, greater than or equal to 14 mils.
- Shoes plus socks.

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.

## Exposure Guidelines

## Applicable Exposure Limits

RIMSULFURON  
 PEL (OSHA) : None Established  
 TLV (ACGIH) : None Established  
 AEL \* (DuPont) : 5 mg/m<sup>3</sup>, 8 & 12 Hr. TWA, total dust

\* 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.

-----  
PHYSICAL AND CHEMICAL PROPERTIES  
-----

## Physical Data

pH : 7 (1% in water)  
 Density : 0.62-0.68 g/mL  
 Bulk Density (Loose) : 38.5-42.5 lb/cu ft  
 Odor : No Distinct Odor.  
 Color : Off-White to Tan.

## (PHYSICAL AND CHEMICAL PROPERTIES - Continued)

Solubility in Water : Dispersible  
Physical State : Dry Flowable

-----  
STABILITY AND REACTIVITY  
-----

## Chemical Stability

Stable at normal conditions.

## Incompatibility with Other Materials

None reasonably foreseeable.

## Polymerization

Polymerization will not occur.

-----  
TOXICOLOGICAL INFORMATION  
-----

## Animal Data

Acute Oral LD50: > 5,000 mg/kg in rats.  
Very low toxicity by ingestion.

Acute Dermal LD50: > 2,000 mg/kg in rabbits.  
Slightly to moderately toxic by skin  
contact.

4-hour Inhalation LC50: > 7.5 mg/L in rats.  
Very low toxicity by inhalation.

DuPont TranXit Herbicide is not a skin irritant or skin sensitizer in animals. It produced moderate eye irritation in rabbit eyes but has been classified as a non-irritant according to the guidance provided in EEC Directive 83/467.

## RIMSULFURON

Repeated and long term ingestion exposures in animals resulted in non-specific body weight, organ weight, and mild hematologic and clinical chemistry changes. A 1-year feeding study in dogs resulted in mild tracheal effects.

Rimsulfuron did not demonstrate carcinogenic effects in long-term feeding studies in rats or mice. Rimsulfuron did not cause developmental or reproductive effects in animals. Rimsulfuron did not produce genetic damage in bacterial or mammalian cell cultures or in animals.

-----  
ECOLOGICAL INFORMATION  
-----

## Ecotoxicological Information

## AQUATIC TOXICITY:

96 hour LC50 - Bluegill sunfish: &gt; 1000 mg/L.

96 hour LC50 - Rainbow trout: &gt; 1000 mg/L.

48 hour EC50 - Daphnia magna: &gt; 1000 mg/L.

## AVIAN TOXICITY:

## RIMSULFURON

Acute Oral LD50 - Bobwhite Quail: &gt; 2250 mg/kg.

Acute Oral LD50 - Mallard Duck: &gt; 2250 mg/kg.

Acute Dietary LC50 - Bobwhite Quail: &gt; 5620 ppm.

Acute Dietary LC50 - Mallard Duck: > 5620 ppm  
-----DISPOSAL CONSIDERATIONS  
-----

## Waste Disposal

## Pesticide Disposal:

Do not contaminate water, food or feed by disposal. Waste resulting from the use of this product may be disposed of on-site or at an approved waste disposal facility.

## 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 by cleaning of equipment or disposal of wastes.

## Container Disposal

Triple rinse (or equivalent) the container. 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.

-----  
TRANSPORTATION INFORMATION  
-----

## Shipping Information

## DOT/IMO

Proper Shipping Name : NOT REGULATED

-----  
REGULATORY INFORMATION  
-----

## U.S. Federal Regulations

In the United States this product is regulated by the US Environmental Protection Agency under the Federal Insecticide, Fungicide and Rodenticide Act. It is a violation of federal law to use this product in a manner inconsistent with its labeling.

EPA Reg. No. 352-643

## OSHA

This product is considered hazardous under the OSHA Hazardous Communication Standard (29 CFR Section 1910.1200).

## TSCA

All product components are on the TSCA Chemical Inventory.

## CERCLA

Releases of this material to air, land, or water are not reportable to the National Response Center under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

## RCRA

When a decision is made to discard this material as supplied, it does not meet RCRA's characteristic definition of ignitability, corrosivity, or reactivity, and is not listed in 40 CFR Section 261.33.

## SARA TITLE III

311/312 Hazard Categories: This product has been reviewed according to the EPA "Hazard Categories" and is categorized as an acute health hazard (40 CFR 370.41).

313 Reportable Ingredients: This product does not contain materials listed in Section 313 above de minimis concentrations (40 CFR 372.65).

-----  
OTHER INFORMATION  
-----

## NFPA, NPCA-HMIS

## HAZARDS CLASSIFICATION

(0-minimal, 1-slight, 2-moderate, 3-serious, 4-severe)

HMIS: HEALTH-1 FIRE-0 REACTIVITY-0  
NFPA: HEALTH-1 FIRE-0 REACTIVITY-0

(Continued)

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The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS: DuPont Crop Protection  
Address : Wilmington, DE 19898  
Telephone : 1-888-638-7668

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS

# MATERIAL SAFETY DATA SHEET

Emergency Phone: 800-992-5994  
Dow AgroSciences LLC  
Indianapolis, IN 46268



Effective Date: 2/22/02  
Product Code: 88946  
MSDS: 004788

## TURFLON\* ESTER HERBICIDE

### 1. PRODUCT AND COMPANY IDENTIFICATION:

**PRODUCT:** Turflon\* Ester Herbicide

#### COMPANY IDENTIFICATION:

Dow AgroSciences  
9330 Zionsville Road  
Indianapolis, IN 46268-1189

**INGESTION:** Low toxicity if swallowed. The oral LD<sub>50</sub> for rats is 1581 mg/kg (males) and 1338 mg/kg (females). Small amounts swallowed incidental to normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. Aspiration into the lungs may occur during ingestion or vomiting, causing lung damage or even death due to chemical pneumonia.

### 2. COMPOSITION/INFORMATION ON INGREDIENTS:

Triclopyr ((3,5,6-trichloro-2-pyridinyl)oxy) acetic acid, butoxy ethyl ester	CAS# 064700-56-7	61.6%
Other ingredients, total, including:		38.4%
Kerosene	CAS# 008008-20-6	
Proprietary surfactants		

**INHALATION:** Excessive exposure may cause irritation to upper respiratory tract (nose and throat). Kerosene may cause central nervous system effects.

**SYSTEMIC (OTHER TARGET ORGAN) EFFECTS:** Triclopyr BEE, in animals, effects have been reported on the following organs: blood, kidney, and liver.

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

**CANCER INFORMATION:** Triclopyr BEE did not cause cancer in laboratory animals. In a lifetime animal dermal carcinogenicity study, an increased incidence of skin tumors was observed when kerosene was applied at doses that also produced skin irritation. This response was similar to that produced in skin by other types of chronic chemical/physical irritation. No increase in tumors was observed when non-irritating dilutions of kerosene were applied at equivalent doses, indicating that kerosene is unlikely to cause skin cancer in the absence of long-term continued skin irritation. 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, exposures should not pose a carcinogenic risk to man.

### 3. HAZARDOUS IDENTIFICATIONS:

**EMERGENCY OVERVIEW**

Hazardous Chemical. Amber liquid. Combustible. Kerosene-like odor. May cause eye and skin irritation. The LD<sub>5</sub> for skin absorption is >2000 mg/kg (rabbits) and >5000 mg/kg (rats). Oral LD<sub>50</sub> for rats is 1581 mg/kg (males) and 1338 mg/kg (females). Toxic to aquatic organisms.

**EMERGENCY PHONE NUMBER: 800-992-5994**

**TERATOLOGY (BIRTH DEFECTS):** For triclopyr BEE, birth defects are unlikely. Exposures having no effect on the mother should have no effect on the fetus. Did not cause birth defects in animals; other effects were seen in the fetus only at doses which caused toxic effects to the mother.

**POTENTIAL HEALTH EFFECTS:** This section includes possible adverse effects, which could occur if this material is not handled in the recommended manner.

**EYE:** May cause slight temporary eye irritation. Corneal injury is unlikely.

**SKIN:** Prolonged or repeated contact may cause skin irritation. Prolonged or frequently repeated skin contact may cause allergic skin reactions in some individuals. With the dilute mix, no allergic skin reaction is expected. Prolonged skin contact is unlikely to result in absorption of harmful amounts. Repeated skin contact may result in absorption of harmful amounts. The LD<sub>5</sub> for skin absorption is >2000 mg/kg (rabbits) and >5000 mg/kg (rats).

**REPRODUCTIVE EFFECTS:** Triclopyr BEE, in laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

\*Trademark of Dow AgroSciences

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## TURFLON\* ESTER HERBICIDE

### 4. FIRST AID:

**EYES:** Flush eyes thoroughly with water for several minutes. Remove contact lenses after initial 1-2 minutes and continue flushing for several minutes. If affects occur, consult a physician, preferably an ophthalmologist.

**SKIN:** Wash skin with plenty of water.

**INGESTION:** Do not induce vomiting. Call a physician and/or transport to emergency facility immediately.

**INHALATION:** Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

**NOTE TO PHYSICIAN:** The decision of whether to induce vomiting or not should be made by a physician. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. 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:

**FLASH POINT:** 147°F (64°C)  
**METHOD USED:** TCC

**FLAMMABLE LIMITS**  
LFL: Not determined  
UFL: Not determined

**EXTINGUISHING MEDIA:** Water fog, foam, CO<sub>2</sub>, and dry chemical.

**FIRE & EXPLOSION HAZARDS:** Combustible. Toxic, irritating vapors may be produced if product is involved in fire.

**FIRE-FIGHTING EQUIPMENT:** Use positive pressure self-contained breathing apparatus and full protective clothing.

### 6. ACCIDENTAL RELEASE MEASURES:

**ACTION TO TAKE FOR SPILLS/LEAKS:** Keep out of streams and domestic water supplies. Absorb small spills in inert material such as sand. For large spills, dike the area and contact Dow AgroSciences at 800-992-5994.

### 7. HANDLING AND STORAGE:

**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:** Keep out of reach of children. Do not use near heat or open flame. Harmful if swallowed, inhaled, or absorbed through skin. Avoid contact with eyes, skin and clothing. Avoid breathing mists and vapors. Avoid contamination of food. Store above 28°F or agitate before use. Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. For handling relative to end-use of this product, read the product label for further information concerning the use of personal protective equipment (PPE) under the Worker Protection Standard of 1993. Store in the original container.

### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION:

These precautions are suggested for conditions where a potential for exposure exists. Emergency conditions may require additional precautions.

#### EXPOSURE GUIDELINE(S):

3,5,6-Trichloro-2-pyridinyloxyacetic acid, Dowanol EB ester: Dow AgroSciences Industrial Hygiene Guide is 2 mg/M<sup>3</sup> as acid equivalent, Skin.  
Kerosene: Dow AgroSciences Industrial Hygiene Guide is 10 mg/M<sup>3</sup>.

A "skin" notation following the exposure guideline refers to the potential for dermal absorption of the material. It is intended to alert the reader that inhalation may not be the only route of exposure and that measures to minimize dermal exposures should be considered.

**ENGINEERING CONTROLS:** Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.

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## TURFLON\* ESTER HERBICIDE

### RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:

**RESPIRATORY PROTECTION:** Atmospheric levels should be maintained below the exposure guidelines. When respiratory protection is required for certain operations, use a NIOSH approved air-purifying respirator.

**SKIN PROTECTION:** Use protective clothing chemically resistant to this material. Selection of specific items such as faceshield, gloves, boots, apron, or full body suit will depend on operation. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse or dispose of properly.

**EYE/FACE PROTECTION:** Use safety glasses.

**APPLICATORS AND ALL OTHER HANDLERS:** Refer to the product label for personal protective clothing and equipment.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

**BOILING POINT:** >302°F (150°C) initial  
**VAPOR PRESSURE:** 0.1 mm @ 37.8°C (kerosene)  
**VAPOR DENSITY:** >1  
**SOLUBILITY IN WATER:** Emulsifies  
**SPECIFIC GRAVITY:** 1.08  
**APPEARANCE:** Amber liquid  
**ODOR:** Kerosene-like

### 10. STABILITY AND REACTIVITY:

**STABILITY:** (CONDITIONS TO AVOID) Combustible. Avoid sources of ignition if temperature is near or above flash point. Stable under normal storage conditions.

**INCOMPATIBILITY:** (SPECIFIC MATERIALS TO AVOID) Acid, base, and oxidizing material.

**HAZARDOUS DECOMPOSITION PRODUCTS:** Nitrogen oxides, hydrogen chloride, and phosgene may result under fire conditions.

**HAZARDOUS POLYMERIZATION:** Not known to occur.

### 11. TOXICOLOGICAL INFORMATION:

**MUTAGENICITY:** For triclopyr BEE, in-vitro and animal mutagenicity studies were negative.

### 12. ECOLOGICAL INFORMATION:

#### ENVIRONMENTAL FATE:

**MOVEMENT & PARTITIONING:** Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5). Measured log octanol/water partition coefficient (Log Pow) is 4.09. Log air/water partition coefficient (Log Kaw) is -4.0.

**DEGRADATION & PERSISTENCE:** Biodegradation under aerobic static laboratory conditions is moderate (BOD20 or BOD28/ThOD between 10 and 40%).

**ECOTOXICOLOGY:** Material is highly toxic to aquatic organisms on an acute basis (LC<sub>50</sub>/EC<sub>50</sub> is between 0.1 and 1 mg/L in most sensitive species).

Acute LC<sub>50</sub> in rainbow trout (*Oncorhynchus mykiss*) is 0.8 – 4.9 mg/L.

Acute LC<sub>50</sub> for fathead minnow (*Pimephales promelas*) is 2.2 - 6.3 mg/L.

Acute LC<sub>50</sub> for water flea (*Daphnia magna*) is 2.2 mg/L.

Acute LC<sub>50</sub> in bluegill (*Lepomis macrochirus*) is 2.1 mg/L.

Growth inhibition EC<sub>50</sub> in green alga (*Selenastrum capricornutum*) is 13.3 - 16.8 mg/L.

### 13. DISPOSAL CONSIDERATIONS:

**DISPOSAL METHOD:** Excess wastes that cannot be used according to label instructions must be disposed of according to all applicable federal, state, or local procedures.

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## TURFLON\* ESTER HERBICIDE

### 14. TRANSPORT INFORMATION:

#### U.S. DEPARTMENT OF TRANSPORTATION INFORMATION

#### FOR ALL PACKAGE (NON-BULK) SIZES SHIPPED BY AIR, LAND OR WATER:

Material is not regulated for transportation.

#### FOR BULK SHIPMENTS BY LAND:

COMBUSTIBLE LIQUID, N.O.S. (CONTAINS KEROSENE)/COMBUSTIBLE LIQUID/NA1993/PGIII

### 15. REGULATORY INFORMATION:

**NOTICE:** The information herein is presented 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 from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations.

#### U.S. REGULATIONS

**SARA 313 INFORMATION:** To the best of our knowledge, this product contains no chemical subject to SARA Title III Section 313 supplier notification requirements.

**SARA HAZARD CATEGORY:** This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard  
A delayed health hazard  
A fire hazard

**TOXIC SUBSTANCES CONTROL ACT (TSCA):** All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

**STATE RIGHT-TO-KNOW:** The following product components are cited on certain state lists as mentioned. Non-listed components may be shown in the composition section of the MSDS.

CHEMICAL NAME	CAS NUMBER	LIST
Proprietary Ingredient	Proprietary	PA1 NJ3
Kerosene	008008-20-6	PA1 NJ3

NJ3=New Jersey Workplace Hazardous Substance (present at greater than or equal to 1.0%).

PA1=Pennsylvania Hazardous Substance (present at greater than or equal to 1.0%).

**OSHA HAZARD COMMUNICATION STANDARD:** This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

#### NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) RATINGS:

Health	2
Flammability	2
Reactivity	1

**COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT (CERCLA, or SUPERFUND):** To the best of our knowledge, this product contains no chemical subject to reporting under CERCLA.

### 16. OTHER INFORMATION:

**MSDS STATUS:** Revised Sections: 3, 4, 7, 8, 10, 12, & 14  
Reference: DR-0196-5102  
Replaces MSDS dated: 9/9/99  
Document Code: D03-086-002  
Replaces Document Code: D03-086-001

The Information Herein Is Given In Good Faith, But No Warranty, Express or Implied, Is Made. Consult Dow AgroSciences for Further Information.



**Ingredients Name**

Chemical Name	CAS-No	Weight %	OSHA PEL
Oryzalin	19044-88-3	40.9	N/A
Glycerin	56-81-5	<30	5 mg/m <sup>3</sup> Respirable fraction. 10 mg/m <sup>3</sup> Total dust.
Propylene Glycol	57-55-6	<40	N/A

**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 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. If skin irritation persists, call a physician

**Inhalation** Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration. Call a poison control center or doctor for further treatment advice.

**Ingestion** Call a physician or Poison Control Centre immediately. Never give anything by mouth to an unconscious person. Do not induce vomiting unless told to do so by a poison control center or doctor.

**Notes to Physician** No information available

**5. FIRE-FIGHTING MEASURES**

**Flammable Explosive Properties**

**Flash Point** > 93°C > 200°F  
**Autoignition Temperature** Not applicable

**Flammability Limits in Air** Not available

**Extnguishing Media** Use extinguishing measures that are appropriate to local circumstances and the surrounding environment

**Fire/Explosion Hazard** This material will become a fire hazard only when a sufficient amount of water has evaporated. At that point, the material will exhibit the flammability characteristics of propylene glycol and oryzalin. The explosive potential of oryzalin as an airborn dust is rated severe. The minimum ignition temperature for a dust cloud is 714 F (379 C).

**Hazardous Combustion Products** Oxides of nitrogen, Can emit toxic fumes under fire conditions.

**NFPA** Health 1 Flammability 1 Instability 0

**6. ACCIDENTAL RELEASE MEASURES**

**Personal Precautions** Avoid contact with the skin and the eyes. Use personal protective equipment.

**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 pertinent environmental permits..

**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**

**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.

**Storage** Keep container tightly closed in a dry and well-ventilated place.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Exposure Guidelines**

Chemical Name	ACGIH TLV	OSHA PEL
Glycerin	10 mg/m <sup>3</sup> Mist.	5 mg/m <sup>3</sup> Respirable fraction. 10 mg/m <sup>3</sup> Total dust.

**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**

Wear protective gloves/clothing.

**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**

<b>Appearance</b>	Opaque Orange	<b>Odor</b>	Slight Aromatic
<b>Physical State</b>	Liquid	<b>pH</b>	approx.5.9
<b>Boiling Point/Range</b>	Not available	<b>Melting Point/Range</b>	Not available
<b>Specific Gravity</b>	1.138 to 1.239 @ 25 C	<b>Solubility</b>	Miscible
<b>Evaporation Rate</b>	Not available	<b>Vapor Pressure</b>	Not available
<b>Vapor Density</b>	Not available	<b>VOC Content</b>	Not available
<b>Viscosity</b>	Not available	<b>Molecular Weight</b>	No data available
<b>Bulk Density</b>	No data available	<b>Percent Solids</b>	Not available
<b>Percent Volatiles</b>	Not available		

**10. STABILITY AND REACTIVITY**

**Stability** Stable under recommended storage conditions If water mixture evaporates the resultant mixture should be handled with care as the explosive potential of oryzalin as an airborne dust is rated severe.

<b>Conditions to Avoid</b>	Avoid dust formation.
<b>Incompatible Materials</b>	No materials to be especially mentioned.
<b>Hazardous Decomposition Products</b>	Toxic gases and fumes may be formed if product is involved in fire. . Oxides of nitrogen.
<b>Possibility of Hazardous Polymerization</b>	Hazardous polymerisation does not occur

## 11. TOXICOLOGICAL INFORMATION

### Acute Toxicity

#### **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.

##### **Propylene glycol:**

Single exposure studies indicate that this material is practically non-toxic if swallowed (rat LD50 21,000 mg/kg) or absorbed through skin (rabbit LD50 20,800 mg.kg) and slightly irritating to rabbit eyes and skin.

This material is widely used in antifreeze, hydraulic fluids, pharmaceutical solvents, food and cosmetics. Workplace experience has shown this material to have low acute and systemic toxicity. Human patch tests indicate that repeated contact causes mild irritation. Although there have been some reports of skin sensitization, studies with large groups of humans and use in topical medical applications suggest that these are likely irritant rather than sensitization responses.

Repeated administration in the diet or through drinking water to rats and dogs showed essentially no adverse effects other than slight liver toxicity. Similar studies in cats showed increase in Heinz body formation in the red blood cells without anemia. Long-term oral studies in rats, dogs, and cats have shown no evidence of carcinogenic or target organ effects other than increased red blood cell turnover. Long-term inhalation exposure in monkeys showed no adverse effects. Developmental toxicity studies in mice, rats, rabbits and hamsters showed no increased birth defects or other adverse effects on the fetus. Mice and cats had no adverse effects on reproductive ability or development and survival of offspring. No genetic changes were observed in tests using bacteria, animal cells, or animals.

##### **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 absorbed 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.

### Chronic Toxicity

Thyroid follicular cell tumors observed in rats were considered a secondary response

**Carcinogenicity** caused by mechanisms not relevant to humans. Benign skin and adnexal tumors observed in rats may also have been secondary to thyroid effects. In vitro and animal mutagenicity studies on oryzalin and propylene glycol were negative..

**12. ECOLOGICAL INFORMATION**

**Ecotoxicity**

Oryzalin -  
 Bioconcentration potential is low (BCF <100 or low Pow <3)  
 Degradation is expected in the soil environment within days to weeks.  
 Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in most sensitive species).  
 Material is slightly toxic to birds on an acute basis (LD50 is between 501 and 2000 mg/kg.  
 Acute oral LD50 in bobwhite (*Colinus virginianus*) is 1046 mg/kg.  
 Acute oral LD50 in honeybee (*Apis mellifera*) is >100 ug.

**13. DISPOSAL CONSIDERATIONS**

**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** Empty containers should be taken for local recycling, recovery or waste disposal

**14. TRANSPORT INFORMATION**

**DOT** Not regulated  
**ICAO** Not regulated  
**IATA** Not regulated  
**IMDG/IMO** Not regulated

**15. REGULATORY INFORMATION**

**International Inventories**

Oryzalin	
<b>EINECS/ELINCS</b>	Listed
<b>KECL</b>	Listed
Glycerin	
<b>DSL</b>	Listed
<b>EINECS/ELINCS</b>	Listed
<b>ENCS</b>	Listed
<b>CHINA</b>	Listed
<b>KECL</b>	Listed
Propylene Glycol	
<b>DSL</b>	Listed
<b>EINECS/ELINCS</b>	Listed
<b>ENCS</b>	Listed
<b>CHINA</b>	Listed
<b>KECL</b>	Listed

**USA**

**Federal Regulations**

**SARA 313**

Y

Chemical Name	CAS-No	Weight %
Oryzalin	19044-88-3	40.9

**SARA 311/312 Hazardous Categorization**

Chronic Health Hazard	No
Acute Health Hazard	Yes
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

**Clean Water Act**

**Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)**

This product contains the following HAPs:

Chemical Name	CAS-No	Weight %	HAPS data	VOC Chemicals	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Glycerin	56-81-5	<30		Listed.		
Propylene Glycol	57-55-6	<40		Listed.		

**CERCLA**

**RCRA**

**Pesticide Information**

**State Regulations**

**California Proposition 65**

This product does not contain any Proposition 65 chemicals.

**State Right-to-Know**

Chemical Name	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Glycerin	Listed.		Listed.	Listed.	Listed.
Propylene Glycol			Listed.		Listed.

**International Regulations**

**Mexico - Grade**

Not available

Chemical Name	Category	Carcinogen Status	Exposure Limits
Glycerin			10 mg/m <sup>3</sup> Mist.

**Canada**

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**

Not determined

**16. OTHER INFORMATION**

Revision Date

Revision Summary

Add to new MSDS system

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**End of MSDS**



The Chemical Company

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# Safety data sheet

## PENDULUM® 3.3 EC

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### 1. Substance/preparation and company identification

Company  
BASF CORPORATION  
100 Campus Drive  
Florham Park, NJ 07932, USA

24 Hour Emergency Response Information  
CHEMTREC: 1-800-424-9300  
BASF HOTLINE: 1-800-832-HELP

Substance number: 000000184418  
Molecular formula: C(13) H(19) N(3) O(4)  
Molecular weight: 281.35 g/mol  
Chemical family: aniline derivative  
Synonyms: pendimethalin

### 2. Composition/information on ingredients

<u>CAS Number</u>	<u>Content (W/W)</u>	<u>Chemical name</u>
40487-42-1	37.4 %	pendimethalin
64742-94-5	44.64 %	solvent naphtha
91-20-3	7.26 %	naphthalene
	10.74 %	Proprietary ingredients

### 3. Hazard identification

#### Emergency overview

CAUTION: KEEP OUT OF REACH OF CHILDREN.  
KEEP OUT OF REACH OF DOMESTIC ANIMALS.  
HARMFUL IF SWALLOWED.  
HARMFUL IF ABSORBED THROUGH SKIN.  
Causes eye irritation.  
Avoid contact with the skin, eyes and clothing.  
Wash thoroughly after handling.

#### Potential health effects

See Product Label for additional precautionary statements.

#### Primary routes of exposure

Routes of entry for solids and liquids include eye and skin contact, ingestion and inhalation. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquified gases.

#### Acute toxicity:

Slightly toxic after single ingestion. Slightly toxic after short-term skin contact. Relatively nontoxic after short-term inhalation.

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*Information on: Petroleum Distillates with Naphthalene*

*Acute overexposure to solvent naphtha vapors may cause central nervous system effects, including headache, dizziness, drowsiness, and confusion. Ingestion causes nausea, vomiting, blurred vision, and CNS disorders. Aspiration of the liquid into the lungs may result in chemical pneumonitis, which may be fatal. Prolonged or repeated skin contact may cause defatting and dermatitis.*

**Irritation:**

May cause slight irritation to the skin. May cause moderate but temporary irritation to the eyes.

*Information on: Petroleum Distillates with Naphthalene*

*Skin contact may result in irritation, defatting and dermatitis. Vapors cause irritation to the respiratory tract and the eyes.*

**Sensitization:**

Skin sensitizing effects were not observed in animal studies.

**Repeated dose toxicity:**

*Information on: pendimethalin*

*The substance is not considered to pose a carcinogenic risk at low human exposure levels.*

**Medical conditions aggravated by overexposure:**

May aggravate existing skin conditions.

**Potential environmental effects**

**Aquatic toxicity:**

Very toxic (acute effect) to aquatic organisms.

**Terrestrial toxicity:**

Acutely harmful to terrestrial organisms.

---

## 4. 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:**

Remove the affected individual into fresh air and keep the person calm. Assist in breathing if necessary.

**If on skin:**

Rinse skin immediately with plenty of water for 15 - 20 minutes.

**If in eyes:**

Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after first 5 minutes, then continue rinsing.

**If swallowed:**

Rinse mouth and then drink plenty of water. Do not induce vomiting. Never induce vomiting or give anything by mouth if the victim is unconscious or having convulsions. Immediate medical attention required.

**Note to physician**

Symptoms:	orange-red coloured urine caused by dye (not associated with methemoglobinemia)
Hazards:	Vomiting may cause aspiration pneumonia due to the ingredients. Because of the increased risk of chemical pneumonia or pulmonary edema caused by aspiration of the hydrocarbon solvent, vomiting should be induced only under professional supervision.
Antidote:	No known specific antidote.
Treatment:	Treat symptomatically.

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### 5. Fire-fighting measures

Flash point: approx. 208 °F (ASTM D93)  
Autoignition: approx. 707 °F

**Suitable extinguishing media:**  
foam, dry extinguishing media, carbon dioxide, water spray

**Hazards during fire-fighting:**  
carbon monoxide, carbon dioxide, nitrogen oxide, nitrogen dioxide, Hydrocarbons,  
If product is heated above decomposition temperature, toxic vapours will be released. The substances/groups of substances mentioned can be released if the product is involved in a fire.

**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:**  
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.

**Cleanup:**  
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

#### Handling

**General advice:**  
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.

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### **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.

### **Storage**

#### **General advice:**

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.

#### **Storage incompatibility:**

General: Segregate from incompatible substances. Segregate from foods and animal feeds. Segregate from textiles and similar materials.

#### **Storage stability:**

If substance/product crystallizes, thaw at room temperature.

#### **Temperature tolerance**

Protect from temperatures below: 40 °F  
The product can crystallize below the limit temperature.

---

## 8. Exposure controls and personal protection

Users of a pesticidal product should refer to the product label for personal protective equipment requirements.

### **Components with workplace control parameters**

naphthalene	OSHA	PEL 10 ppm 50 mg/m <sup>3</sup> ;
	ACGIH	TWA value 10 ppm ; STEL value 15 ppm ; Skin Designation ;

### **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.

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### 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:	liquid	
Odour:	aromatic, moderate odour	
Colour:	dark amber	
pH value:	6 - 7	( 20 - 40 g/l)
Boiling point:	approx. 244 °C	( 760 mmHg)
Density:	1.06 g/cm <sup>3</sup>	
	8.858 lb/USg	
Partitioning coefficient n-octanol/water (log Pow):		Not applicable

## 10. Stability and reactivity

### 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.

### Substances to avoid:

oxidizing agents, strong alkalies

### Hazardous reactions:

The product is chemically stable.

### Decomposition products:

Hazardous 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:

approx. 244 °C

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 may be released. Risk of exothermic self-accelerating decomposition above the indicated temperature.

### Corrosion to metals:

Corrosive effects to metal are not anticipated.

## 11. Toxicological information

### Acute toxicity

#### Oral:

LD50/rat/male/female: 3,956 mg/kg

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### **Inhalation:**

LC50/rat: > 5.35 mg/l / 4 h

### **Dermal:**

LD50/rat/male/female: > 2,000 mg/kg

### **Skin irritation:**

rabbit: mildly irritating

### **Eye irritation :**

rabbit: mildly irritating

### **Sensitization:**

guinea pig: Non-sensitizing.

### **Chronic toxicity**

#### **Genetic toxicity:**

*Information on: pendimethalin*

*No mutagenic effect was found in various tests with microorganisms and mammals.*

---

#### **Carcinogenicity:**

*Information on: pendimethalin*

*In long-term studies in mice in which the substance was given by feed, a carcinogenic effect was not observed.*

*In long-term studies in rats the substance induced thyroid tumors.*

*A marked decrease in body weight gain and an increase in benign thyroid proliferative lesions were observed in the lifetime rat study at the highest dose tested.*

*The substance is not considered to pose a carcinogenic risk at low human exposure levels.*

---

#### **Reproductive toxicity:**

*Information on: pendimethalin*

*The results of animal studies gave no indication of a fertility impairing effect.*

---

#### **Developmental toxicity/teratogenicity:**

*Information on: pendimethalin*

*No indications of a developmental toxic / teratogenic effect were seen in animal studies.*

---

#### **Experiences in humans:**

Pendimethalin is a strongly orange-red compound - virtually an aniline dye. Cases have been described 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:**

The data on toxicology refer to the active ingredient.

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### 12. Ecological information

Information on: pendimethalin

Evaluation: Not readily biodegradable (by OECD criteria).

#### Environmental toxicity

Information on: pendimethalin

Acute and prolonged toxicity to fish:  
Rainbow trout/LC50 (96 h): 0.89 mg/l

-----

Information on: pendimethalin

Acute toxicity to aquatic invertebrates:  
Daphnia magna/EC50 (48 h): 0.977 mg/l

-----

Information on: pendimethalin

Toxicity to aquatic plants:  
green algae/EC50 (72 h): 0.0081 mg/l

-----

Information on: pendimethalin

Other terrestrial non-mammals:  
mallard duck/LD50: 1,421 mg/kg  
Acutely harmful to terrestrial organisms.  
Honey bee/LD50: 49.8 ug/bee  
Acutely harmful to terrestrial organisms.

-----

#### **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 assignments.

---

### 14. Transport information

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Reference Bill of Lading

### 15. Regulatory information

#### Federal Regulations

**Registration status:**  
TSCA, US released / exempt

**OSHA hazard category:** IARC 1, 2A or 2B carcinogen, NTP listed carcinogen, Chronic target organ effects reported

<u>CERCLA RQ</u>	<u>CAS Number</u>	<u>Chemical name</u>
100 LBS	91-20-3	naphthalene

**SARA hazard categories (EPCRA 311/312):** Acute, Chronic

#### **SARA 313:**

<u>CAS Number</u>	<u>Chemical name</u>
91-20-3	naphthalene
40487-42-1	pendimethalin

#### State regulations

##### State RTK

<u>CAS Number</u>	<u>Chemical name</u>	<u>State RTK</u>
91-20-3	naphthalene	MA, NJ, PA

**CA Prop. 65:**  
THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

### 16. Other information

**Refer to product label for EPA registration number.**

Recommended use: herbicide

#### **Local contact information**

Product Stewardship  
919 547-2000

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DESCRIPTION, DESIGNS, DATA AND INFORMATION GIVEN OR RESULTS OBTAINED, ALL SUCH  
BEING GIVEN AND ACCEPTED AT YOUR RISK.  
END OF DATA SHEET

**MONSANTO Company**  
Material Safety Data Sheet  
Commercial Product

## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product name**

**ROUNDUP PRO® Herbicide**

**EPA Reg. No.**

524-475

**Product use**

Herbicide

**Chemical name**

Not applicable

**Synonyms**

None

**Company**

MONSANTO Company, 800 N. Lindbergh Blvd., St. Louis, MO, 63167

**Telephone:** 800-332-3111, **Fax:** 314-694-5557

**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: 314-694-4000 (collect calls accepted).

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

**Active ingredient**

Isopropylamine salt of N-(phosphonomethyl)glycine; {Isopropylamine salt of glyphosate}

**Composition**

COMPONENT	CAS No.	% by weight (approximate)
Isopropylamine salt of glyphosate	38641-94-0	41
Surfactant		14,5
Water and minor formulating ingredients		44,5

**OSHA Status**

This product is hazardous according to the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

## 3. HAZARDS IDENTIFICATION

**Emergency overview**

**Appearance and odour (colour/form/odour):** Clear - Amber / Liquid / Sweet

CAUTION!

CAUSES EYE IRRITATION

**Potential health effects**

**Likely routes of exposure**

Skin contact, eye contact

**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.

Refer to section 11 for toxicological and section 12 for environmental information.

---

## 4. FIRST AID MEASURES

**Eye contact**

Immediately flush with plenty of water.  
If easy to do, remove contact lenses.

**Skin contact**

Take off contaminated clothing, wristwatch, jewellery.  
Wash affected skin with plenty of water.  
Wash clothes before re-use.

**Inhalation**

Remove to fresh air.

**Ingestion**

Immediately offer water to drink.  
Do NOT induce vomiting unless directed by medical personnel.  
If symptoms occur, get medical attention.

**Advice to doctors**

This product is not an inhibitor of cholinesterase.

**Antidote**

Treatment with atropine and oximes is not indicated.

---

## 5. FIRE FIGHTING MEASURES

**Flash point**

none

**Extinguishing media**

Recommended: Water, foam, dry chemical, carbon dioxide (CO<sub>2</sub>)

**Unusual fire and explosion hazards**

Minimize use of water to prevent environmental contamination.  
Environmental precautions: see section 6.

**Hazardous products of combustion**

Carbon monoxide (CO), phosphorus oxides (P<sub>x</sub>O<sub>y</sub>), nitrogen oxides (NO<sub>x</sub>)

**Fire fighting equipment**

Self-contained breathing apparatus.  
Equipment should be thoroughly decontaminated after use.

---

## 6. ACCIDENTAL RELEASE MEASURES

### Personal precautions

Use personal protection recommended in section 8.

### Environmental precautions

#### SMALL QUANTITIES:

Low environmental hazard.

#### LARGE QUANTITIES:

Minimize spread.

Keep out of drains, sewers, ditches and water ways.

Notify authorities.

### 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.

Minimize use of water to prevent environmental contamination.

Refer to section 13 for disposal of spilled material.

---

## 7. HANDLING AND STORAGE

Good industrial practice in housekeeping and personal hygiene should be followed.

### Handling

When using do not eat, drink or smoke.

Wash hands thoroughly after handling or contact.

Thoroughly clean equipment after use.

Do not contaminate drains, sewers and water ways when disposing of equipment rinse water.

Emptied containers retain vapour and product residue.

Refer to section 13 for disposal of rinse water.

Observe all labelled safeguards until container is cleaned, reconditioned or destroyed.

### Storage

Minimum storage temperature: -15 °C

Maximum storage temperature: 50 °C

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.

Minimum shelf life: 5 years.

---

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Airborne exposure limits**

Components	Exposure Guidelines
Isopropylamine salt of glyphosate	No specific occupational exposure limit has been established.
Surfactant	No specific occupational exposure limit has been established.
Water and minor formulating ingredients	No specific occupational exposure limit has been established.

**Engineering controls**

No special requirement when used as recommended.

**Eye protection**

No special requirement when used as recommended.

**Skin protection**

If repeated or prolonged contact:  
Wear chemical resistant gloves.

**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:	Clear - Amber
Form:	Liquid
Odour:	Sweet
Flash point:	none
Specific gravity:	1.169 @ 20 °C / 15.6 °C
Solubility:	Water: Completely miscible.
pH:	4.4 - 5.0
Partition coefficient (log Pow):	< 0.00 (active ingredient)

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**10. STABILITY AND REACTIVITY**

**Stability**

Stable under normal conditions of handling and storage.

**Hazardous decomposition**

Thermal decomposition: Hazardous products of combustion: see section 5.

**Materials to avoid/Reactivity**

Reacts with galvanised steel or unlined mild steel to produce hydrogen, a highly flammable gas that could explode.

---

**11. TOXICOLOGICAL INFORMATION**

This section is intended for use by toxicologists and other health professionals.

Data obtained on product and components are summarized below.

**Acute oral toxicity**

**Rat, LD50:** 5,108 mg/kg body weight

Practically non-toxic.

FIFRA category IV.

**Acute dermal toxicity**

**Rat, LD50 (limit test):** > 5,000 mg/kg body weight

Practically non-toxic.

FIFRA category IV.

No mortality.

**Acute inhalation toxicity**

**Rat, LC50, 4 hours, aerosol:** 2.9 mg/L

Other effects: weight loss, breathing difficulty

Practically non-toxic.

FIFRA category IV.

**Skin irritation**

**Rabbit, 6 animals, OECD 404 test:**

Days to heal: 3

Primary Irritation Index (PII): 0.5/8.0

Essentially non irritating.

FIFRA category IV.

**Eye irritation**

**Rabbit, 6 animals, OECD 405 test:**

Days to heal: 3

Slight irritation.

FIFRA category III.

**Skin sensitization**

**Guinea pig, Buehler test:**

Positive incidence: 0 %

**N-(phosphonomethyl)glycine: {glyphosate}**

**Mutagenicity**

**In vitro and in vivo mutagenicity test(s):**

Not mutagenic.

**Repeated dose toxicity**

**Rabbit, dermal, 21 days:**

NOAEL toxicity: > 5,000 mg/kg body weight/day

Target organs/systems : none

Other effects: none

**Rat, oral, 3 months:**

NOAEL toxicity: > 20,000 mg/kg diet

Target organs/systems : none

Other effects: none

**Carcinogenicity**

**Mouse, oral, 24 months:**

NOEL tumour: > 30,000 mg/kg diet

NOAEL toxicity: ~ 5,000 mg/kg diet

Tumours: none

Target organs/systems : liver

Other effects: decrease of body weight gain, histopathologic effects

**Rat, oral, 24 months:**

NOEL tumour: > 20,000 mg/kg diet

NOAEL toxicity: ~ 8,000 mg/kg diet

Tumours: none  
Target organs/systems: eyes  
Other effects: decrease of body weight gain, histopathologic effects

**Toxicity to reproduction/fertility**

**Rat, oral, 3 generations:**

NOAEL toxicity: > 30 mg/kg body weight  
NOAEL reproduction: > 30 mg/kg body weight  
Target organs/systems in parents: none  
Other effects in parents: none  
Target organs/systems in pups: none  
Other effects in pups: none

**Developmental toxicity/teratogenicity**

**Rat, oral, 6 - 19 days of gestation:**

NOAEL toxicity: 1,000 mg/kg body weight  
NOAEL development: 1,000 mg/kg body weight  
Other effects in mother animal: decrease of body weight gain, decrease of survival  
Developmental effects: weight loss, post-implantation loss, delayed ossification  
Effects on offspring only observed with maternal toxicity.

**Rabbit, oral, 6 - 27 days of gestation:**

NOAEL toxicity: 175 mg/kg body weight  
NOAEL development: 175 mg/kg body weight  
Target organs/systems in mother animal: none  
Other effects in mother animal: decrease of survival  
Developmental effects: none

---

## 12. ECOLOGICAL INFORMATION

This section is intended for use by ecotoxicologists and other environmental specialists.

Data obtained on product and components are summarized below.

**Aquatic toxicity, fish**

**Rainbow trout (*Oncorhynchus mykiss*):**

Acute toxicity, 96 hours, static, LC50: 5.4 mg/L  
moderately toxic

**Bluegill sunfish (*Lepomis macrochirus*):**

Acute toxicity, 96 hours, static, LC50: 7.3 mg/L  
moderately toxic

**Aquatic toxicity, invertebrates**

**Water flea (*Daphnia magna*):**

Acute toxicity, 48 hours, static, EC50: 11 mg/L  
slightly toxic

**Avian toxicity**

**Mallard duck (*Anas platyrhynchos*):**

Dietary toxicity, 5 days, LC50: > 5,620 mg/kg diet  
practically non-toxic

**Bobwhite quail (*Colinus virginianus*):**

Dietary toxicity, 5 days, LC50: > 5,620 mg/kg diet  
practically non-toxic

**Arthropod toxicity**

**Honey bee (*Apis mellifera*):**

Oral/contact, 48 hours, LD50: > 100 µg/bee  
practically non-toxic

**Soil organism toxicity, invertebrates**

**Earthworm (*Eisenia foetida*):**

Acute toxicity, 14 days, LC50: > 1,250 mg/kg soil  
practically non-toxic

**N-(phosphonomethyl)glycine; {glyphosate}**

**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

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### 13. DISPOSAL CONSIDERATIONS

**Product**

Recycle if appropriate facilities/equipment available.  
Burn in special, controlled high temperature incinerator.  
Dispose of as hazardous industrial waste.  
Keep out of drains, sewers, ditches and water ways.  
Follow all local/regional/national regulations.

**Container**

Triple rinse empty containers.  
Pour rinse water into spray tank.  
Store for collection by approved waste disposal service.  
Dispose of as non hazardous industrial waste.  
Do NOT re-use containers.  
Follow all local/regional/national regulations.

---

### 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.

Not hazardous under the applicable DOT, ICAO/LATA, IMO, TDG and Mexican regulations.

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### 15. REGULATORY INFORMATION

**TSCA Inventory**

All components are on the US EPA's TSCA Inventory

**OSHA Hazardous Components**

Surfactant

**SARA Title III Rules**

Section 311/312 Hazard Categories  
Immediate

Section 302 Extremely Hazardous Substances

Not applicable.

Section 313 Toxic Chemical(s)

Not applicable.

**CERCLA Reportable quantity**

Not applicable.

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**16. OTHER INFORMATION**

The information given here is not necessarily exhaustive but is representative of relevant, reliable data.

Follow all local/regional/national regulations.

Please consult supplier if further information is needed.

In this document the British spelling was applied.

All tests were conducted following OECD guidelines for Good Laboratory Practices (GLP).

The information given here is not necessarily exhaustive but is representative of relevant, reliable data.

For more information refer to product label.

Please consult Monsanto if further information is needed.

Follow all local/regional/national regulations.

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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 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 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.

## Bayer Environmental Science



MSDS Number: 00000000054

**DELTAGARD® GC 5SC INSECTICIDE**

MSDS Version 1.4

**SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION**

**Product Name** DELTAGARD® GC 5SC INSECTICIDE  
**Chemical Name** Mixture; active ingredient, deltamethrin: (s)-alpha-cyano-3-phenoxybenzyl-(1R,3R)-3-(2-2-dibromovinyl)-2,2-dimethyl-cyclopropanecar  
**Synonym**  
**MSDS Number** 54  
**Chemical Family**  
**Chemical Formulation**  
**EPA Registration No.** 432-835  
**Canadian Registrat. No.**

Bayer Environmental Science  
 95 Chestnut Ridge Road  
 Montvale, NJ 07645  
 USA

For Product Use Information: (800)331-2867 Monday through Friday  
 8:00AM-4:30PM

For Medical Emergency contact DART: (800) 334-7577 24 Hours/Day

For Transportation Emergency CHEMTREC: (800) 424-9300 24 Hours/Day

**Product Use Description** DeltaGard GC 5SC Insecticide is a pyrethroid product which controls a broad spectrum of insects on turfgrasses and ornamental plants grown for non-food or non-feed uses.

This is a RESTRICTED USE PESTICIDE due to acute fish and aquatic organism toxicity. 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.

**SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS**

<u>Component Name</u>	<u>CAS No.</u>	<u>Concentration % by Weight</u>	
		<u>Minimum</u>	<u>Maximum</u>
Deltamethrin	52918-63-5	4.7500	
Other ingredients		95.2500	

# Material Safety Data Sheet

## DELTAGARD® GC 5SC INSECTICIDE

MSDS Number: 00000000054

MSDS Version 1.4

### SECTION 3. HAZARDS IDENTIFICATION

*NOTE: Please refer to Section 11 for detailed toxicological information.*

#### Emergency Overview

Caution. Keep out of the reach of children. Hazard to humans and domestic animals. Harmful if inhaled. Avoid breathing vapors and spray mist. Contact with product may result in transient tingling and reddening of the skin. Wash thoroughly with soap and water after handling.

This product is extremely toxic to fish and aquatic invertebrates. This product is highly toxic to bees exposed to direct treatment of residues on blooming crops or weeds.

#### Physical State

liquid

#### Odor

odorless

#### Appearance

white

#### Routes of Exposure

Inhalation. Eye and skin contact.

#### Immediate Effects

##### Eye

May cause slight irritation.

##### Skin

Contact with product may result in transient tingling and reddening of the skin.

##### Inhalation

Harmful if inhaled. Avoid breathing vapors and spray mist.

##### Inhalation

Harmful if inhaled.

#### Signs and Symptoms

Acute overexposure may result in respiratory irritation and transient paresthesia. Chronic overexposure produced pale kidneys and discoloration of the lungs in rats.

### SECTION 4. FIRST AID MEASURES

#### Eye

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

Call a poison control center or doctor immediately for treatment advice. Have a 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.

#### 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

# Material Safety Data Sheet

## DELTAGARD® GC 5SC INSECTICIDE

MSDS Number: 000000000054

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poison control center or doctor for further treatment advice.

### Note to Physician

Have the product container or label with you when calling a poison control center or doctor or going for treatment.

## SECTION 5. FIRE FIGHTING MEASURES

<b>Flash Point</b>	Does not flash
<b>Suitable Extinguishing Media</b>	carbon dioxide (CO2), dry chemical, foam, water
<b>Fire Fighting Instructions</b>	As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH approved (or equivalent) and full protective gear.

## SECTION 6. ACCIDENTAL RELEASE MEASURES

<b>General and Disposal</b>	Soak up with an absorbent material such as sand, sawdust, earth, fuller's earth, etc. Sweep up and place in an appropriate closed container (see Section 7: Handling and Storage).
<b>Land Spill or Leaks</b>	If the container is leaking or material is spilled on floor or paved surfaces, absorb with sawdust or other commercially available absorbing material, sweep up and remove to chemical waste area for disposal.

## SECTION 7. HANDLING AND STORAGE

<b>Handling Procedures</b>	Avoid breathing vapors and spray mist. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.
<b>Storing Procedures</b>	Do not contaminate water, food, or feed by storage or disposal.  Avoid exposure to extreme temperatures. Mix as needed. Do not store diluted material. Store in original container in a secured, dry storage area. Prevent cross-contamination with other pesticides and fertilizers.
<b>Work/Hygienic Procedures</b>	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 Personal Protective Equipment (PPE). If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.  For any requirements specific to your State or Tribe, consult the agency

# Material Safety Data Sheet

## DELTAGARD® GC 5SC INSECTICIDE

MSDS Number: 000000000054  
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responsible for pesticide regulation.

### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

<b>Engineering Controls</b>	When handlers used 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.
<b>Body Protection</b>	Applicators and other handlers must wear: Long-sleeved shirt and long pants waterproof gloves shoes plus socks
<b>Respiratory Protection</b>	<p>A NIOSH-approved respirator should be worn in poorly ventilated application areas to avoid breathing vapors and spray mist.</p> <p><b>AGRICULTURAL USE REQUIREMENTS:</b> 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</p> <p><b>NON-AGRICULTURAL USE REQUIREMENTS:</b> Wear protective clothing when using or handling this product to help avoid exposure to eyes and skin. Eye protection, gloves, a long -sleeved shirt and long-legged pants or coveralls are recommended.</p> <p>Note: Refer to the product label for applicable details concerning the "User Safety Recommendations" and the use of PPE under the EPA Worker Protection Standards (40 CFR Part 170).</p>

#### Exposure Limits

None Established

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance</b>	white
<b>Physical State</b>	liquid
<b>Odor</b>	odorless
<b>pH</b>	6.6 in suspension
<b>Vapor Pressure</b>	N/A

# Material Safety Data Sheet

## DELTAGARD® GC 5SC INSECTICIDE

MSDS Number: 000000000054  
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Vapor Density (air = 1)	N/A
Specific Gravity	1.05 at 20 °C
Boiling Point	N/A
Melting/Freezing Point	N/A
Solubility (in water)	Suspends
Viscosity	165 mPa.s 20 °C
Other Information	EVAPORATION RATE: N/A

### SECTION 10. STABILITY AND REACTIVITY

Chemical Stability	Stable
Incompatibility	strong reducing agents strong oxidizing agents
Hazardous Products of Decomposition	Decomposition Type: thermal carbon monoxide carbon dioxide (CO <sub>2</sub> )
Hazardous Polymerization (Conditions to avoid)	Will not occur

### SECTION 11. TOXICOLOGICAL INFORMATION

Acute Oral Toxicity	Rat: LD50: > 15,000 mg/kg
Acute Dermal Toxicity	Rabbit: LD50: > 10,000 mg/kg
Acute Inhalation Toxicity	Rat: LC50: > 1.02 mg/l 4 h Rat: LC50: > 4.08 mg/l 1 h for DOT purposes
Skin Irritation	Rabbit: Slightly irritating
Eye Irritation	Rabbit: Very slightly irritating
Sensitization	Guinea pig: Negative

THE FOLLOWING DATA WERE DEVELOPED WITH: deltamethrin, the active ingredient

# Material Safety Data Sheet

## DELTAGARD® GC 5SC INSECTICIDE

MSDS Number: 000000000054  
MSDS Version 1.4

**Chronic Toxicity** Deltamethrin technical is not carcinogenic based on animal studies.

### Assessment Carcinogenicity

**ACGIH**

None

**NTP**

None

**IARC**

Deltamethrin

52918-63-5

3

**OSHA**

None

**Reproductive & Developmental Toxicity** Deltamethrin is not considered to be a reproductive toxin based on animal studies.

**Teratogenicity** Deltamethrin is not considered to be teratogenic based on animal studies.

## SECTION 12. ECOLOGICAL INFORMATION

### Environmental Precautions

This product is extremely toxic to fish and aquatic invertebrates. 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. Do not contaminate water by cleaning of equipment or disposal of equipment wastewaters.

This product is toxic to bees exposed to direct treatment. Do not apply it or allow it to drift to crops or weeds on which bees are actively foraging.

Notify state and/or Federal authorities and Bayer immediately if you observe any adverse environmental effects due to the use of this product.

### Ecological Information

This product is highly toxic to bees exposed to direct treatment. Do not apply it or allow it to drift to crops or weeds on which bees are actively foraging.

It is a Federal offense to use any pesticide in a manner that results in the death of a member of an endangered species.

## SECTION 13. DISPOSAL CONSIDERATIONS

### General Disposal Guidance

Pesticide Disposal: Wastes resulting from 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 incineration, or if allowed by State and Local authorities, by burning. If burned, stay out of smoke.

### RCRA Classification

Not Regulated under this Statute

# Material Safety Data Sheet

**DELTAGARD® GC 5SC INSECTICIDE**

MSDS Number: 000000000054  
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## SECTION 14. TRANSPORT INFORMATION

PROPER SHIPPING NAME: Not DOT Regulated

## SECTION 15. REGULATORY INFORMATION

### US Federal

EPA Registration No. 432-835

TSCA list

None

TSCA 12b export notification

None

SARA Title III - section 302 - notification and information

None

SARA Title III - section 313 - toxic chemical release reporting

None

### US States Regulatory

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 Registrat. No.

Canadian Domestic Substance List

None

### Environmental

CERCLA

None

Clean Water Section 307 Priority Pollutants

None

Safe Drinking Water Act Maximum Contaminant Levels

None

### International Regulations

EU Classification

Deltamethrin

52918-63-5

Toxic Dangerous for the environment

R Phrases

Also toxic by inhalation and if swallowed. Very toxic to

# Material Safety Data Sheet

## DELTAGARD® GC 5SC INSECTICIDE

MSDS Number: 000000000054  
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### S Phrases

aquatic organisms, may cause long-term adverse effects in the aquatic environment.  
Keep locked-up and out of the reach of children. Avoid contact with the skin. After contact with skin, wash immediately with plenty of water. Wear suitable protective clothing, gloves and eye/face protection. In case of insufficient ventilation, wear suitable respiratory equipment. In case of accident or if you feel unwell, seek medical advice immediately (show label where possible). This material and its container must be disposed of as hazardous waste. Avoid release to the environment. Refer to special instructions/safety data sheets.

**European Inventory of Existing Commercial Substances (EINECS)**  
Deltamethrin 52918-63-5

### SECTION 16. OTHER INFORMATION

	Health	Flammability	Reactivity	Others
HMS	1	0	0	C
NFPA	1	0	0	

\* Would recommend Protection Rating "H" for poorly ventilated areas.

#### REVISED SECTIONS:

MSDS REVISION INDICATOR: Company name change.

Print Date: 12/04/2002

Supersedes MSDS, which is older than: 12/04/2002

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 label instructions. The product names are registered trademarks of Bayer AG. Bayer Environmental Science

**MATERIAL SAFETY DATA SHEET**

**BISECT® 2 CG**

**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:** BISECT® 2 CG  
**CHEMICAL NAME:** Bifenthrin: [1 $\alpha$ ,3 $\alpha$ -(Z)]-(±)-(2-methyl[1,1'-biphenyl]-3-yl) methyl 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropanecarboxylate; Cis isomers 97% minimum, trans isomers 3% maximum  
**CHEMICAL FAMILY:** Pyrethroid Insecticide  
**EPA REG. NO.:** 34704-956  
**MSDS Number:** 000956-07-LPI      **MSDS Revisions:** New      **Date Of Issue:** 03/15/07      **Supersedes:** New

**2. HAZARDS IDENTIFICATION SUMMARY**

<u>Chemical Ingredients:</u>	<u>Percentage by Weight:</u>	<u>CAS No.</u>	<u>TLV (Units)</u>
Bifenthrin	0.20	82657-04-3	None Established
Inert Ingredients	99.80		

**3. COMPOSITION, INFORMATION ON INGREDIENTS**

**KEEP OUT OF REACH OF CHILDREN – CAUTION –** 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. Remove and wash contaminated clothing before reuse.

This product is a light tan solid granule with no odor.

**4. FIRST AID MEASURES**

**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:** This product is a pyrethroid. If large amounts have been ingested, milk, cream and other digestible fats and oils may increase absorption and so should be avoided.  
**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):** Not applicable  
**FLAMMABLE LIMITS (LFL & UFL):** Not applicable  
**EXTINGUISHING MEDIA:** Considered non-combustible, use medium appropriate to surrounding fire. Dry chemical, carbon dioxide, foam, water spray or fog.  
**HAZARDOUS COMBUSTION PRODUCTS:** May include but are not limited to oxides of carbon, hydrogen chloride, hydrogen fluoride, oxides of nitrogen, ammonia, oxides of phosphorus, oxides of sulfur, hydrogen sulfide.  
**SPECIAL FIRE FIGHTING PROCEDURES:** Use water spray to cool containers exposed to fire. Remain upwind. Avoid breathing smoke. Wear self-contained breathing apparatus and full protective gear.  
**UNUSUAL FIRE AND EXPLOSION HAZARDS:** Dusts or vapors can travel to a sources of ignition and flash back.

**6. ACCIDENTAL RELEASE MEASURES**

**STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:**  
Avoid breathing dusts. Sweep up dry spills immediately and transfer to suitable containers for possible land application according to label use or for disposal. Check local, state and federal regulations for proper disposal.  
**CAUTION:** Keep spills and cleaning runoff out of 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. As soon as possible after use, wash thoroughly and change into clean clothing.  
**STORAGE:** Keep out of reach of children and animals. Store in original containers only. Store in a cool, dry place and avoid excess heat. Carefully open containers. After partial use close tightly. Do not contaminate water, food or feed by storage or disposal.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**ENGINEERING CONTROLS:** Not normally required.  
**RESPIRATORY PROTECTION:** Not normally required, if vapors or dusts exceed acceptable levels, wear a MSHA/NIOSH approved pesticide respirator.  
**EYE PROTECTION:** Chemical goggles or shielded safety glasses.  
**SKIN PROTECTION:** Wear protective clothing: long-sleeved shirts and pants, shoes and socks. Wear waterproof gloves.

	<b>OSHA PEL 8 hr TWA</b>	<b>ACGIH TLV-TWA</b>
Nuisance particulates	15 mg/m <sup>3</sup>	none established

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<p><b>APPEARANCE AND ODOR:</b> Light tan, solid granule with no odor  <b>SPECIFIC GRAVITY (Water = 1):</b> 1.47 g/ml  <b>VAPOR PRESSURE:</b> Not applicable  <b>PERCENT VOLATILE (by volume):</b> Not applicable                  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.</p>	<p><b>BULK DENSITY:</b> 91.77 lbs/ft<sup>3</sup>  <b>BOILING POINT:</b> Not applicable  <b>EVAPORATION RATE:</b> Not applicable</p>	<p><b>SOLUBILITY:</b> Insoluble  <b>pH:</b> 5.29 (1% wt. in water)</p>
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**10. STABILITY AND REACTIVITY**

**STABILITY:** Stable  
**INCOMPATIBILITY:** None known.  
**HAZARDOUS DECOMPOSITION PRODUCTS:** None known.  
**HAZARDOUS POLYMERIZATION:** Will not occur.

**CONDITIONS TO AVOID:** Excessive heat, open flame, other ignition sources.

**11. TOXICOLOGICAL INFORMATION**

<p><b>Acute Oral LD<sub>50</sub> (rat):</b> &gt;5000 mg/kg  <b>Eye Irritation (rabbit):</b> Non-irritating  <b>Inhalation LC<sub>50</sub> (rat):</b> Not established  <b>Carcinogenic Potential:</b> None listed in OSHA, NTP, IARC or ACGIH</p>	<p><b>Acute Dermal LD<sub>50</sub> (rat):</b> &gt;2000 mg/kg  <b>Skin Irritation (rabbit):</b> Non-irritating  <b>Skin Sensitization (guinea pig):</b> Not established</p>
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**12. ECOLOGICAL INFORMATION**

This product is extremely 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. 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 or rinsate.

**13. DISPOSAL CONSIDERATIONS**

Do not reuse container. **Paper and plastic bags:** 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. Wastes resulting from the use of 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.

**14. TRANSPORT INFORMATION**

**DOT Shipping Description:** NOT REGULATED BY USDOT  
**U.S. Surface Freight Classification:** INSECTICIDES OR FUNGICIDES, INSECT OR ANIMAL REPELLENTS; NOI; OTHER THAN POISON (NMFC 102120; CLASS: 60)

**15. REGULATORY INFORMATION**

<b>NFPA &amp; HMIS Hazard Ratings:</b>	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">NFPA</td> <td style="width: 50%;">HMIS</td> </tr> <tr> <td>1 Health</td> <td>0 Least</td> </tr> <tr> <td>0 Flammability</td> <td>1 Slight</td> </tr> <tr> <td>0 Instability</td> <td>2 Moderate</td> </tr> <tr> <td></td> <td>3 High</td> </tr> <tr> <td></td> <td>4 Severe</td> </tr> </table>	NFPA	HMIS	1 Health	0 Least	0 Flammability	1 Slight	0 Instability	2 Moderate		3 High		4 Severe	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">1 Health</td> <td style="width: 50%;">0 Flammability</td> </tr> <tr> <td>0 Flammability</td> <td>0 Reactivity</td> </tr> <tr> <td>H PPE</td> <td></td> </tr> </table>	1 Health	0 Flammability	0 Flammability	0 Reactivity	H PPE	
NFPA	HMIS																			
1 Health	0 Least																			
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0 Flammability	0 Reactivity																			
H PPE																				

**MATERIAL SAFETY DATA SHEET**

**BISECT® 2 CG**

**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: Bifenthrin (CAS: 82657-04-3) 0.20%  
RCRA Waste Code: Not listed  
CA Proposition 65: Not listed

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**16. OTHER**

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**MSDS STATUS:** New

**PREPARED BY:** Registrations and Regulatory Affairs

**REVIEWED BY:** Environmental/ Regulatory Services

**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**

Syngenta Crop Protection, Inc.  
 Post Office Box 18300  
 Greensboro, NC 27419

In Case of Emergency, Call  
**1-800-888-8372**

**1. PRODUCT IDENTIFICATION**

Product Name: **SCIMITAR GC** Product No.: A12690A  
 EPA Signal Word: Caution  
 Active Ingredient(%): Lambda-Cyhalothrin Technical (9.7%) CAS No.: 91465-08-6  
 Chemical Name: [1a(S\*),3a(Z)]-cyano(3-phenoxyphenyl)methyl-3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropanecarboxylate  
 Chemical Class: A pyrethroid insecticide  
 EPA Registration Number(s): 100-1088 Section(s) Revised: 2, 3, 8, 12, 15

**2. COMPOSITION/INFORMATION ON INGREDIENTS**

Material	OSHA PEL	ACGIH TLV	Other	NTP/IARC/OSHA Carcinogen
Xylene (< 1%)	100 ppm TWA	100 ppm TWA; 150 ppm STEL	100 ppm TWA**	IARC Group 3
1,2,4-Trimethylbenzene (<= 2.2%)	Not Established	25 ppm TWA	25 ppm TWA**	No
Cumene (< 1%)	50 ppm TWA (skin)	50 ppm TWA	Not Established	No
Petroleum Solvent	Not Established	Not Established	100 mg/m <sup>3</sup> (19 ppm) TWA*	No
Lambda-Cyhalothrin Technical (9.7%)	Not Established	Not Established	0.04 mg/m <sup>3</sup> TWA (skin)***	No

\* recommended by manufacturer

\*\* recommended by NIOSH

\*\*\* Syngenta Occupational Exposure Limit (OEL)

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.

**3. HAZARDS IDENTIFICATION**
Symptoms of Acute Exposure

May cause eye and skin irritation. Allergic skin reactions are possible.

May cause temporary itching, tingling, burning or numbness of exposed skin, called paresthesia.

Exposure to high vapor levels may cause headache, dizziness, numbness, nausea, incoordination, or other central nervous system effects.

Hazardous Decomposition Products

Can decompose at high temperatures forming toxic gases.

Physical Properties

Appearance: Off-white liquid

Odor: Slight odor/typical aromatic petroleum

Unusual Fire, Explosion and Reactivity Hazards

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

#### 4. FIRST AID MEASURES

Have the product container, label or Material 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.

##### Notes to Physician

There is no specific antidote if this product is ingested.

Treat symptomatically.

Skin contact paresthesia effects (itching, tingling, burning or numbness) are transient, lasting up to 24 hours. Treat symptomatically.

##### Medical Condition Likely to be Aggravated by Exposure

None known.

#### 5. FIRE FIGHTING MEASURES

##### Fire and Explosion

- Flash Point (Test Method): > 212°F (Setaflash)
- Flammable Limits (% in Air): Lower: % Not Applicable Upper: % Not Applicable
- Autoignition Temperature: Not Available
- Flammability: Not Applicable

##### Unusual Fire, Explosion and Reactivity Hazards

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

##### In Case of Fire

Use dry chemical, foam or CO<sub>2</sub> extinguishing media. 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. Prevent use of contaminated buildings, area, and equipment until decontaminated. Water runoff can cause environmental damage. If water is used to fight fire, dike and collect runoff.

#### 6. ACCIDENTAL RELEASE MEASURES

##### In Case of Spill or Leak

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

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.

#### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION, PACKAGING AND USE OF THIS PRODUCT.**

**FOR COMMERCIAL APPLICATIONS AND/OR ON-FARM APPLICATIONS CONSULT THE PRODUCT LABEL.**

- 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 (such as nitrile or butyl) gloves, coveralls, socks and chemical-resistant footwear. For overhead exposure, wear chemical-resistant headgear. Stringent housekeeping measures are necessary to prevent translocation of the material from contaminated work surfaces to uncontaminated surfaces (railings, doors, etc.). Unprotected contact with such translocated material can result in paresthesia effects (see Section 11).
- Inhalation: Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below exposure limits. 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. 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: Off-white liquid
- Odor: Slight odor/typical aromatic petroleum
- Melting Point: Not Available
- Boiling Point: 212°F
- Specific Gravity/Density: 1.04 @ 68°F (20°C)
- pH: 7.3 (1% w/w dilution in deionized water)

### Solubility in H<sub>2</sub>O

Lambda-Cyhalothrin Technical: 0.004 mg/l

### Vapor Pressure

Lambda-Cyhalothrin Technical: 1.5 x 10<sup>(-9)</sup> mmHg @ 68°F (20°C)

## 10. STABILITY AND REACTIVITY

- Stability: Stable under normal use and storage conditions.
- Hazardous Polymerization: Will not occur.
- Conditions to Avoid: None known.
- Materials to Avoid: None known.
- Hazardous Decomposition Products: Can decompose at high temperatures forming toxic gases.

## 11. TOXICOLOGICAL INFORMATION

### Acute Toxicity/Irritation Studies (Finished Product)

- Ingestion: Practically Non-Toxic
- Oral (LD50 Rat) : > 5,000 mg/kg body weight
- Dermal: Slightly Toxic
- Dermal (LD50 Rat) : > 2,000 mg/kg body weight
- Inhalation: Practically Non-Toxic
- Inhalation (LC50 Rat) : > 4.62 mg/l air - 4 hours
- Eye Contact: Mildly Irritating (Rabbit)
- Skin Contact: Moderately Irritating (Rabbit)
- Skin Sensitization: A weak skin sensitizer in animal tests.

### Reproductive/Developmental Effects

Lambda-Cyhalothrin Not a developmental or reproductive toxicant.  
Technical:

### Chronic/Subchronic Toxicity Studies

Lambda-Cyhalothrin Reversible paresthesia (abnormal skin sensation).  
Technical: Reversible clinical signs of neurotoxicity in mammals.

### Carcinogenicity

Lambda-Cyhalothrin No treatment-related tumors in rats or mice.  
Technical:

### Other Toxicity Information

In humans, contact with exposed skin may result in temporary itching, tingling, burning or numbness, called paresthesia. The effect may result from splash, aerosol, or hot vapor contact, or transfer to the face from contaminated gloves and hands. The symptoms normally disappear within 24 hours. Face and genital areas are especially susceptible to this effect. Paresthesia involving the face is also known as "subjective facial sensation" or SFS.

### Toxicity of Other Components

1,2,4-Trimethylbenzene (<= 2.2%)

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.

Cumene (< 1%)

Exposure to cumene vapors may cause irritation to eyes, skin, and respiratory tract. Cumene may also cause headaches, dizziness, anesthesia, drowsiness, unconsciousness and other central nervous system effects. Prolonged exposure to high concentrations (>100 PPM) may result in liver, kidney or lung damage.

Petroleum Solvent

The supplier reports that high vapor/aerosol concentrations (> 1000 ppm) are irritating to the eyes and the respiratory tract, may cause headaches, dizziness, anesthesia, drowsiness, unconsciousness and other central nervous system effects.

Xylene (< 1%)

Inhalation of xylene at high concentrations can cause central nervous system depression, respiratory tract irritation, asphyxiation, cardiac stress and coma.

### Target Organs

#### Active Ingredients

Lambda-Cyhalothrin Technical: Liver, nervous system

#### Inert Ingredients

1,2,4-Trimethylbenzene: CNS, liver, kidney, blood, respiratory tract, skin, eye

Cumene: Skin, eye, liver, respiratory tract, kidney, CNS

Petroleum Solvent: Eye, respiratory tract, CNS

Xylene: CNS, respiratory tract, skin

## **12. ECOLOGICAL INFORMATION**

### Summary of Effects

Lambda-Cyhalothrin Technical:

Slightly toxic to birds. Highly toxic to fish, invertebrates and bees.

### Eco-Acute Toxicity

Lambda- Bees LC50/EC50 0.038 ug/bee

Cyhalothrin Invertebrates (Water Flea) LC50/EC50 0.00036 ppm

Technical: Fish (Trout) LC50/EC50 0.00024 ppm

Fish (Bluegill) LC50/EC50 0.00021 ppm

Birds (8-day dietary - Bobwhite Quail) LC50/EC50 > 5,300 ppm

Birds (8-day dietary - Mallard Duck) LC50/EC50 > 3,948 ppm

Eco-Chronic Toxicity

Lambda-Cyhalothrin Technical: Not available at this time.

Environmental Fate

Lambda-Cyhalothrin Technical:

No data available for the formulation. The information presented here is for the active ingredient, lambda-cyhalothrin. A thorough review of environmental information is not possible in this document.  
Not persistent in soil or 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

Not regulated by DOT.

B/L Freight Classification

Insecticides, NOIBN, o/t poison

Comments

None.

**15. REGULATORY INFORMATION**

EPCRA SARA Title III Classification

Section 311/312 Hazard Classes: Acute Health Hazard

Section 313 Toxic Chemicals: Xylene (< 1%) (CAS No. 1330-20-7)  
1,2,4-Trimethylbenzene (<= 2.2%) (CAS No. 95-63-6)  
Cumene (< 1%) (CAS No. 98-82-8)

California Proposition 65

Not Applicable

CERCLA/SARA 302 Reportable Quantity (RQ)

Report product spills > 520 gal. (based on xylene [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

Health: 2  
Flammability: 1  
Instability: 0

HMIS Hazard Ratings

Health: 2  
Flammability: 1  
Reactivity: 0

0	Minimal
1	Slight
2	Moderate
3	Serious
4	Extreme

For non-emergency questions about this product call:

1-800-334-9481

Original Issued Date: 09/20/1999

Revision Date: 06/13/2003

Replaces: 11/15/2001

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.

RSVP# : SCP-955-00301C

End of MSDS

# MATERIAL SAFETY DATA SHEET

UNITED HORTICULTURAL SUPPLY

## TURF TRAX™

### Spray Indicator For Turf

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300

#### SECTION I - IDENTIFICATION OF PRODUCT

**MANUFACTURER'S NAME:**

United Horticultural Supply  
150 South Main Street  
Fremont, NE 68025-5697

**EMERGENCY TELEPHONE NO.:**

CHEMTREC (800) 424-9300 (24 Hours)

**TRADE NAME AND SYNONYMS:** TURF TRAX™ Spray Indicator For Turf

**CHEMICAL NAME AND SYNONYMS:** Nonionic Polymeric Colorant

**CHEMICAL FAMILY:** Polymer Bound Aromatic Organic Colorant

#### SECTION II - PRODUCT COMPONENTS

COMPONENT:	%	THRESHOLD LIMIT VALUE (Units):
Proprietary	100	None established

#### SECTION III - PHYSICAL INFORMATION

**APPEARANCE AND ODOR:** Dark blue liquid with a very faint odor

**BOILING POINT (°F):** 215

**SOLUBILITY IN WATER:** Soluble

**EVAPORATION RATE (BUTYL ACETATE = 1):** 1

**SPECIFIC GRAVITY (WATER = 1):** 1.05 @ 77°F

**PERCENT VOLATILE (BY WEIGHT):** 80 @ 100°C

**VAPOR DENSITY (AIR = 1):** > 1

**VAPOR PRESSURE (MM OF MERCURY):** 18

#### SECTION IV - FIRE AND EXPLOSION HAZARD INFORMATION

**FLASH POINT (SPECIFY METHOD - °C):** 260 (COC)

**FLAMMABLE LIMITS (PERCENT BY VOLUME):** None established

**FIRE EXTINGUISHING MEDIA:** Use water, carbon dioxide, foam or dry powder. Do not use a direct water stream, use a water spray.

**SPECIAL FIRE FIGHTING PROCEDURES:** Use water spray to cool containers. Wear self-contained breathing apparatus.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** Avoid breathing smoke, fumes and decomposition products.

**NFPA HAZARD RATING:**

0 Least	1	Health
1 Slight	0	Flammability
2 Moderate	0	Reactivity
3 High		
4 Severe		

# MSDS: TURF TRAX™ Spray Indicator For Turf

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## SECTION V - REACTIVITY INFORMATION

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**STABILITY:** Stable    **CONDITIONS TO AVOID:** None

**INCOMPATIBILITY (Avoid contact with):** Strong acids, alkalies and oxidizing agents

**HAZARDOUS DECOMPOSITION PRODUCTS:** Thermal decomposition or burning may liberate oxidizing carbon and/or nitrogen and other unidentified organic compounds.

**HAZARDOUS POLYMERIZATION:** Will not occur.    **CONDITIONS TO AVOID:** None known.

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## SECTION VI - HEALTH INFORMATION

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**TOXICOLOGICAL TEST DATA: (Source of Information - Registry of Toxic Effects of Chemical Substances):**

Acute Oral LD<sub>50</sub> (rat): > 5000 mg/kg

### EFFECTS OF OVEREXPOSURE:

Contact with eyes may cause slight irritation.

Repeated or prolonged contact may be irritating or cause dermatitis.

No known risks due to inhalation.

**EMERGENCY AND FIRST AID PROCEDURES:** Call a physician immediately in all cases of suspected poisoning.

**Eyes:** Immediately flush eyes with large amounts of water for 15 minutes. If irritation persists, contact a physician.

**Skin:** Wash affected area immediately with large amounts of soap and water. Remove and wash contaminated clothing before reuse. Contact a physician if irritation occurs.

**Ingestion:** Give two glasses of water and contact a physician. Never give anything by mouth to an unconscious person.

**Inhalation:** Remove victim to fresh air and provide oxygen if breathing is difficult. Give artificial respiration if not breathing. Get medical attention.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** None known

**POTENTIAL CARCINOGEN STATUS (Source of Information - Registry of Toxic Effects of Chemical Substances):**

None listed

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## SECTION VII - SPILL OR LEAK PROCEDURES

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### STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Wear appropriate protective equipment as specified in Section VIII. Floors may be slippery. Contain spilled material. Transfer to secure containers. Where applicable, collect using absorbent material.

### WASTE DISPOSAL METHOD:

All material should be packaged, labeled, transported and disposed or reclaimed in conformance with all applicable local, state and federal regulations.

# MSDS: TURF TRAX™ Spray Indicator For Turf

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## SECTION VIII - SPECIAL PROTECTION INFORMATION

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### PROTECTIVE CLOTHING:

Eye Protection (Type):	Safety goggles or splash goggles
Gloves (Type):	Chemical resistant gloves
Respiratory Protection:	Not normally needed
Other Clothing:	Long-sleeved shirt and pants, socks and shoes

### VENTILATION:

Local Exhaust:	Not normally required
Mechanical (General):	If ventilation is not adequate provide mechanical ventilation
Special:	Not normally required
Other:	Work in well ventilated area

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## SECTION IX - SPECIAL PRECAUTIONS

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### HANDLING AND STORAGE:

Due to the highly concentrated color of this product, avoid washing even small quantities into a sewer system without proper equipment.

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## SECTION X - REGULATORY INFORMATION

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### SARA TITLE III HAZARD CATEGORY:

IMMEDIATE   N    
DELAYED   N  

FIRE   N    
REACTIVE   N  

SUDDEN RELEASE  
OF PRESSURE   N  

### SUBSTANCES REGULATED UNDER SARA, TITLE III, SECT. 313:

None

DATE OF ISSUE: 01/07/97  
SUPERSEDES: 02/27/96

All information contained in this Material Safety Data Sheet is furnished free of charge and is intended for your evaluation. In our opinion the information is, as of the date of this Material Safety Data Sheet, reliable, however, it is your responsibility to determine the suitability of the information for your use. You are advised not to construe the information as absolutely complete since additional information may be necessary or desirable when particular, exceptional or variable conditions or circumstances exist or because of applicable laws or government regulations. Therefore, you should use this information only as a supplement to other information gathered by you, and you must make independent determinations of the suitability and completeness of the information from all sources to assure both proper use of the material described herein and the safety and health of employees. Accordingly, no guarantee expressed or implied is made by United Horticultural Supply as to the results to be obtained based upon your use of the information, nor does United Horticultural Supply assume any liability arising out of your use of the information.

**MATERIAL SAFETY DATA SHEET**

**ACTIVATOR 90**

**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 Industries, Inc.  
P.O. Box 1289 • Greeley, CO 80632-1289

**24-Hour Emergency Phone:** 1-800-424-9300  
**Medical Emergencies:** 1-800-301-7976

**PRODUCT NAME:** ACTIVATOR 90  
**CHEMICAL NAME:** Mixture of Alkyl Polyoxyethylene Ether, free fatty acids and water  
**CHEMICAL FAMILY:** Surfactant  
**CALIF. REG. NO.:** 36208-50014  
**MSDS Number:** ACT90-03

**MSDS Revisions:** All sections reviewed and/or revised **Date Of Issue:** 09/17/03 **Supersedes:** 05/10/00

**2. COMPOSITION, INFORMATION ON INGREDIENTS**

<u>Chemical Ingredients:</u>	<u>Percentage by Weight:</u>	<u>CAS No.</u>	<u>TLV (Units)</u>
Alkyl Polyoxyethylene ether and free fatty acids	90.00	Mixture	none established
Other Ingredients	10.00		

**3. HAZARDS IDENTIFICATION SUMMARY**

**KEEP OUT OF REACH OF CHILDREN. CAUTION – Liquid causes eye injury**

This product is an amber colored liquid with a fatty odor. Avoid contact with eyes, skin, or clothing. Harmful if swallowed.

**4. FIRST AID MEASURES**

**If in Eyes:** Flush with plenty of water for at least 15 minutes, then get medical attention.  
**If on Skin:** Remove contaminated clothing. Wash with soap and water. Get medical attention if irritation persists.  
**If Swallowed:** Call a physician immediately. Induce vomiting promptly.  
**If Inhaled:** Move victim to fresh air; apply artificial respiration if necessary.

**5. FIRE FIGHTING MEASURES**

**FLASH POINT (°F/Test Method):** >230°F / >110°C  
**FLAMMABLE LIMITS (LEL & UEL):** Not established  
**EXTINGUISHING MEDIA:** Water fog, alcohol foam, dry chemical or carbon dioxide (CO<sub>2</sub>) to extinguish flames.  
**HAZARDOUS COMBUSTION PRODUCTS:** None known.  
**SPECIAL FIRE FIGHTING PROCEDURES:** Use water spray to cool containers exposed to fire. Spilled material creates extremely slippery conditions, use caution. Wear self-contained breathing apparatus and full protective gear.  
**UNUSUAL FIRE AND EXPLOSION HAZARDS:** Petroleum hydrocarbon component is combustible. Vapors or fumes will ignite and flashback.

**6. ACCIDENTAL RELEASE MEASURES**

**STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:**

Wear appropriate personal protective equipment (refer to Section 8) when responding to spills. Shut off source of leak if safe to do so. Dike and contain spill. Soak up residue with absorbent such as clay, sand or other suitable material and dispose of properly. Flush area with water to remove trace residue. Contain runoff from residue flush and dispose of properly. Place in container for proper disposal. Check local, state and federal regulations for proper disposal.

**CAUTION:** Keep spills and cleaning runoff out of municipal sewers and open bodies of water.

**7. HANDLING AND STORAGE**

**HANDLING:** Wear impervious gloves when handling. Keep away from heat, sparks, and flames while in use. Wash with soap and water before eating, drinking, smoking, applying cosmetics, or using toilet facilities. Keep away from children, feed and foodstuffs, fertilizers and seed.  
**STORAGE:** Store in a cool, dry place. Store in original container. Keep tightly closed. Do not reuse empty container. Keep out of reach of children.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**ENGINEERING CONTROLS:** Not required.  
**RESPIRATORY PROTECTION:** Wear a NIOSH approved respirator if necessary.  
**EYE PROTECTION:** Chemical goggles or shielded safety glasses.  
**SKIN PROTECTION:** Wear protective clothing. Wear impervious rubber or chemical-resistant gloves.

	<b>OSHA PEL 8 hr TWA</b>	<b>ACGIH TLV-TWA</b>
For product	not established	not established

MATERIAL SAFETY DATA SHEET

ACTIVATOR 90

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR: Amber colored liquid with a fatty odor
SPECIFIC GRAVITY (Water= 1): 1.001 g/ml
VAPOR PRESSURE: Not established
PERCENT VOLATILE (by volume): 65.0%
BULK DENSITY: 8.35 lbs/gal.
BOILING POINT: 101.2°C/215°F
EVAPORATION RATE: Not established
SOLUBILITY: Soluble
pH: 6.0 (neat)
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: Avoid contact with strong oxidizers, strong acids and bases at high temperatures.
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon Monoxide from burning.
HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION

Acute Oral LD50 (rat): 3870-5000 mg/kg
Eye Irritation (rabbit): Mild to moderate irritant
Inhalation LC50: 1.42 mg/L (4 HR)
Carcinogenic Potential: None listed by OSHA, NTP, IARC, and ACGIH as a carcinogen
Acute Dermal LD50 (rat): >2000 mg/kg
Skin Irritation (rabbit): Minor irritant
Skin Sensitization: Not a sensitizer.

12. ECOLOGICAL INFORMATION

Aquatic Acute Toxicity: Guppy: 96 HR LC50 12.7 mg/L - 96 HR No Effect: 5.8 mg/L - Daphnia Magna: 24 HR EC50 5.2 mg/L. - 24 HR No Effect 1 mg/L.

13. DISPOSAL CONSIDERATIONS

Do not reuse product containers. Plastic Jugs: Triple rinse (or equivalent), adding rinse water to spray tank, then offer for recycling at an ACRC site or by reconditioning, or puncture and dispose of in a sanitary landfill or by other procedures approved by local, state and federal regulations.

14. TRANSPORT INFORMATION

DOT Shipping Description: NOT REGULATED BY USDOT.
Freight Classification: ADHESIVES, ADJUVANTS, SPREADERS OR STICKERS (NMFC 4610; CLASS: LTL 60, TL 35)
Consult appropriate ICAO/IATA and IMDG regulations for shipment requirements in the Air and Maritime shipping modes.

15. REGULATORY INFORMATION

Table with NFPA & HMIS Hazard Ratings. Columns for NFPA (Health, Flammability, Instability) and HMIS (Health, Flammability, Reactivity, PPE).

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 listed

16. OTHER

MSDS STATUS: All sections reviewed and/or revised
PREPARED BY: Registrations and Regulatory Affairs
REVIEWED BY: Environmental/ Regulatory Services

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# T-Pac E-Pro MEC

Plant Growth Regulator

## MATERIAL SAFETY DATA SHEET

### 1. PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** T-Pac E-Pro MEC Plant Growth Regulator  
**EPA Reg. Number:** 79676-24  
**Chemical Name:** 4-(Cyclopropyl-a-hydroxymethylene)-3,5-dioxo-cyclohexanecarboxylic acid ethylester  
**Chemical Formula:** C<sub>13</sub>H<sub>16</sub>O<sub>5</sub>

**COMPANY IDENTIFICATION:**  
Etigra™  
501 Cascade Pointe Lane  
Suite 103  
Cary, NC 27513  
www.Etigra.com

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

Active Ingredients	CAS No.	% Composition
Trinexapac-ethyl	95266-40-3	11.3%

### 3. HAZARD IDENTIFICATION

**POTENTIAL HEALTH HAZARDS:**

**EYE** – May cause eye irritation.

**INHALATION** – Exposure to high vapor levels may cause dizziness, headache, nausea, numbness, incoordination or other central nervous system effects.

**MEDICAL CONDITIONS AGGRAVATED** – None known.

### 4. 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 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 and then give artificial respiration, preferably by mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

**NOTE TO PHYSICIAN:** If a large amount has been ingested, lavage stomach. An aqueous suspension of activated charcoal can be given to absorb remaining toxicant. Treat symptomatically.

### 5. FIRE-FIGHTING MEASURES

**Flashpoint (PMA-4):** >230°F

**Flammable Limits (LFL-UFL):** N/A

**Fire and Explosion 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.

**Means of Extinction:** Use appropriate extinguishing media for combustibles in the area.

**Fire Fighting Instructions:** Evacuate nonessential personnel from the area to prevent exposure to fire, smoke, fumes or products of combustion. Prevent use of contaminated buildings, area, and equipment until decontaminated. Water runoff may cause environmental damage and if water is used to fight a fire, dike and collect the runoff.

Manufactured for:  
Etigra  
501 Cascade Pointe Lane  
Suite 103  
Cary, NC 27513  
www.Etigra.com  
REV 0906

Etigra  
Emergency Phone: Chemtrec 800-424-9300  
Effective Date: September 20, 2006



**Firefighting Equipment:** Self-contained breathing apparatus with full face piece and full bunker gear.

**Hazardous Combustion Products:** Thermal decomposition or combustion may produce irritating and possibly toxic gasses in a fire.

## 6. ACCIDENTAL RELEASE MEASURES

Control the spill at its source and contain the spill to prevent it from spreading or contaminating soil or from entering sewer and drainage systems or any body of water. Clean up spills immediately, observing the precautions outlined in Section 8 below. Cover the entire spill with absorbing material and place into an appropriate disposal container. Scrub the area with hard water detergent such as Tide, Joy, Spic and Span, etc. and pick up the wash liquid with additional absorbent material and place into an appropriate disposal container. Once all material is cleaned up and placed in a disposal container, seal the container and arrange for disposal.

## 7. HANDLING AND STORAGE

**Keep out of reach of children and animals.** Store in a cool, dry location and avoid excessive heat. Do not store below 0°F. Do not contaminate other pesticides, fertilizers, water, food or feed by storage or disposal. Wash thoroughly after handling this product.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Applicators and other Handlers must wear:**

- Long-sleeved shirt and long pants
- Chemical-resistant gloves such as nitrile, butyl, neoprene or barrier laminate
- 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. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance:** Clear liquid

**pH:** 3.33

**Flashpoint (PMA-4):** >230°

**Density:** 1.075 g/ml at 20°C

**Viscosity:** 44.114 at 20°C; 19.114 at 40°C

## 10. STABILITY AND REACTIVITY

**CONDITIONS TO AVOID:** Protect from excessive heat.

**CHEMICAL STABILITY:** Product is normally stable.

**HAZARDOUS DECOMPOSITION PRODUCTS:** Can decompose at high temperatures forming toxic and explosive gasses.

**POLYMERIZATION:** Will not occur.

## 11. TOXICOLOGICAL INFORMATION

### ACUTE ORAL TOXICITY

Oral LD<sub>50</sub> (rat, female): 5000 mg/kg

### ACUTE DERMAL TOXICITY

Dermal LD<sub>50</sub> (rat): > 5000 mg/kg

### ACUTE INHALATION TOXICITY

Inhalation LC<sub>50</sub> (rat): > 2.06 mg/L

### EYE IRRITANT

Rabbit – Moderately irritating

### SKIN IRRITATION

Rabbit – Slightly irritating

### SENSITIZATION

Guinea pig – Not a Contact Sensitizer

### CARCINOGENICITY:

**ACGIH:** Not listed

**IARC:** Not listed

**NTP:** Not listed

**OSHA:** Not listed

## 12. ECOLOGICAL INFORMATION

**ENVIRONMENTAL DATA:** This pesticide has a low toxicity to wildlife and fish. 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.

## 13. DISPOSAL CONSIDERATIONS

**PESTICIDE DISPOSAL:** Wastes resulting from the use of this product may be disposed of onsite or at an approved waste disposal facility.

**CONTAINER DISPOSAL:** Triple rinse (or equivalent) and 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.

## 14. TRANSPORT INFORMATION

**DOT PROPER SHIPPING NAME:** Not Regulated by DOT

**DOT HAZARD CLASS OR DIVISION:** N/A

**DOT UN/NA NUMBER:** N/A

**DOT PACKING GROUP:** N/A

**REPORTABLE QUANTITY:** N/A

**MARINE POLLUTANT:** Not listed

## 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 –  
Not Regulated

SARA Title III – Section 302 Extremely Hazardous Substances  
Not listed

SARA Title III – Section 311/312 Hazard Categories  
Immediate

SARA Title III – Section 312 Threshold Planning Quantity  
The threshold planning quantity (TPQ) for this product treated as a mixture is 10,000 lbs. This product contains no ingredients with a TPQ of less than 10,000 lbs.

SARA Title III – Section 313 Reportable Ingredients  
None

CERCLA –  
Not listed

CALIFORNIA PROP 65 STATUS –  
Not listed

## 16. OTHER INFORMATION

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by CPR.

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AQUA-AID, INC.  
 5484 S. Old Carriage Road, Rocky Mount, NC 27803  
 TEL: (252) 937-4107 FAX: (252) 937-4107  
 www.aquaaid.com



## MATERIAL SAFETY DATA SHEET

### SECTION 1

### PRODUCT AND COMPANY INFORMATION

<b>Manufacturer:</b>	AQUA-AID, INC. 5484 S. Old Carriage Road Rocky Mount, NC 27803 Tel: 252-937-4107	<b>Product Name:</b>	VERDE-CAL G™
		<b>Chemical Type:</b>	Calcium Sulfate, Gypsum
		<b>Emergency Phone:</b>	Chemtrec 1-800-424-9300

### SECTION 2

### HAZARDOUS INGREDIENTS

Hazardous Component	C.A.S. No.	WT%	TLV	PEL
None				

### SECTION 3

### PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical State:</b>	Solid	<b>Appearance/ Odor:</b>	Brown granules, mild odor
<b>Specific Gravity:</b>	.85	<b>pH:</b>	N/A
<b>Boiling Point:</b>	N/A	<b>Freezing/Melting Point:</b>	N/A
<b>Vapor Pressure, mm Hg:</b>	N/A	<b>Vapor Density:</b>	N/A
<b>% Volatiles (by volume):</b>	N/A	<b>Melting Point Range:</b>	N/A
<b>Solubility in Water:</b>	80 - 90%	<b>Melting Point Range:</b>	N/A

### SECTION 4

### FIRE AND EXPLOSION

<b>Flash Point:</b>	Not Applicable	<b>Autoignition Temperature:</b>	Not Applicable
<b>Lower Explosion Limit %:</b>	Not Applicable	<b>Upper Explosion Limit %:</b>	Not Applicable
<b>Fire Extinguishing Media:</b>	Not Applicable		
<b>Fire Fighting Procedures:</b>	Not Applicable		
<b>Other Fire or Explosion Hazards:</b>	Not Applicable		

### SECTION 5

### REACTIVITY DATA

<b>Stability:</b>	Stable	<b>Hazardous Polymerization:</b>	Will Not Occur
<b>Conditions to Avoid:</b>	None.		
<b>Incompatibility (Materials to Avoid):</b>	None.		
<b>Hazardous Decomposition Products:</b>	Not Available.		

### SECTION 6

### HEALTH HAZARD DATA

<b>Acute Effects of Overexposure:</b>	Product Dust can be irritating to nose, throat and respiratory tract.
<b>Effects of Chronic Exposure:</b>	None.

### SECTION 7

### FIRST AID PROCEDURES

<b>Inhalation of Dust:</b>	Move victim to fresh air. Give artificial respiration ONLY if breathing has stopped. OBTAIN MEDICAL ADVICE if symptoms persist.
<b>Skin Contact:</b>	Wash skin thoroughly with soap and water. If irritation occurs seek medical attention.
<b>Ingestion:</b>	Give 1 to 2 glasses (200 to 500 ml) of water to dilute material. Do not induce vomiting. OBTAIN MEDICAL ADVICE if symptoms persist.
<b>Eye Contact:</b>	Flush eyes with running water for 20 minutes. Hold eyelids open during flushing. If irritation persists seek Medical Attention.

### SECTION 8

### PREVENTIVE MEASURES

<b>Respiratory Protection:</b>	NIOSH/MSHA approved respirator in dusty conditions.
<b>Eye Protection:</b>	Not required under normal conditions.
<b>Skin Protection:</b>	Not required under normal conditions.
<b>Other Personal Protective Equipment:</b>	None required.
<b>Engineering Controls:</b>	None required.
<b>Storage Requirements:</b>	Store in cool, dry area.
<b>Storage Temperature:</b>	Min: 0°C Max: 40°C

### SECTION 9

### ENVIRONMENTAL PROTECTION DATA

<b>Spill and Leak Procedures:</b>	Not required under normal conditions
<b>Waste Disposal:</b>	Dispose of empty container in household garbage.
<b>Environmental Effects:</b>	Not Applicable.

The information contained herein is considered accurate and offered only as a guide to the handling of this specific material. This information, does not relate to its use with any other material or product or in any process. No warranty, expressed or implied is made regarding the accuracy of the data or the performance of the material by AQUA-AID, INC. This Material Safety Data Sheet is valid for three years from Issue Date.

# Material Safety Data Sheet

Numerator Technologies Inc  
10206 Clubhouse Drive  
Bradenton, FL 34202

Phone: 941.807.5333 Fax: 941.727.7329

## 1. Chemical Product and Company Identification

<b>Product name:</b> pHacid Spray	<b>CAS Number:</b> Proprietary	<b>Emergency Contact #:</b> 941.807.5333	<b>Date of Issue:</b> 08/1/08	<b>Last Revision:</b> 08/20/08
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## 2. Composition / Information on Components

### Chemical Name:

Contents of chemical name and hazardous components are a trade secret as allowed by 29 CFR 1910.1200 (i) 1.

## 3. Hazards Identification

<b>Hazard Classification:</b> IRRITANT	<b>Hazardous Ingredients ( ingredient(value) ):</b>		
<b>Carcinogenicity IARC:</b> Unknown	<b>Carcinogenicity NTP:</b> Unknown	<b>Carcinogenicity OSHA:</b> Unknown	<b>Carcinogenicity ACGIH:</b> Unknown

## 4. First Aid Measures

### Routes of Exposure and Symptoms:

- Ingestion: Overexposure may cause gastrointestinal irritation, diarrhea, nausea and vomiting.
- Eyes: Overexposure causes excessive watering, redness and stinging.
- Skin: Overexposure may cause itching and redness similar to a rash.

### First Aid:

- Ingestion: Contact physician or poison control center. If victim is conscious and able to swallow, quickly give milk or water to dilute. Do not give sodium bicarbonate, vinegar, or fruit juices. Never give anything by mouth if victim is unconscious or having convulsions. Induce vomiting only upon advice of a physician.
- Eyes: Flush immediately with copious amounts of water. Continue flushing for at least 15 minutes. Seek medical attention.
- Skin: Wash exposed areas with soap and water. If itching and redness persist, seek medical attention.

## 5. Fire Fighting Measures

<b>Flash point, F, COC:</b> >200	<b>Flamable limits:</b> Not Established	<b>Auto ignition temperature:</b> Not Established
<b>Exstinguishing media:</b> Use water spray, dry chemical, foam or carbon dioxide.		<b>Special Procedures:</b> Use water spray to cool drums exposed to fire
<b>Unusual Fire and Exposion Hazards:</b> Firefighters should use self-contained breathing apparatus to avoid exposure to smoke and vapor		

## 6. Accidental Release Measures

### Spill:

Contain material by diking the area around the spill. If the product is in a solid form, shovel directly into recovery drums. If the product is a liquid, it should be picked up using a suitable absorbent material, then shoveled into recovery drums.

**Material  
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Sheet**

**7. Handling and Storage**

**Requirements:**

No special requirements

**8. Exposure Controls / Personal Protection**

**Respiratory Protection:**

Not required

**Ventilation:**

No special requirements

**Protective Gloves:**

Chemical resistant rubber gloves

**Eye Protection:**

Chemical goggles

**Other Equipment:**

Eye wash and safety shower in the work area.

**Work / Hygienic Practices:**

Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling

**9. Physical and Chemical Properties**

**Boiling Point:**

Not determined

**Vapor Pressure:**

Not determined

**Vapor Density:**

Not determined

**Solubility in water:**

SOLUBLE

**Specific Gravity:**

1

**Melting Point, F:**

NA

**Evaporation Rate:**

Not determined

**% Activity:**

NA

**Appearance:**

WATER WHITE LIQUID

**Odor:**

BLAND

**10. Stability and Reactivity**

**Stability:**

Product is stable

**Incompatibility:**

Avoid contact with strong Oxidizing agents

**Hazardous Polymerization:**

Will not occur

**11. Toxicological Information**

**Oral LD50:**

Not determined

**Dermal LD50:**

Not determined

**Inhalation LC50:**

Not determined

**Skin:**

Not determined

**Eye:**

Not determined

**Chronic Toxicity / Carcinogenicity:**

Not determined

**Other Toxicological Information:**

Not determined

**12. Ecological Information**

**Ecotoxicological Information:**

Not determined

**Bioaccumulation:**

Not determined

**Other Information:**

Not determined

**Material  
Safety  
Data  
Sheet**

**13. Disposal Consideration**

**Waste Disposal:**

Consult local, state and federal regulations before disposing of this material.

**Spill:**

If material is released into the environment, the user should determine whether the spill should be reported to the appropriate state and federal authorities.

**14. Transport Information**

**Shipping Description:**

NMFC 48580 SUB 3 CLEANING COMPOUND NOI LIQUID  
NMFC 48581 SUB 3 CLEANING COMPOUND NOI  
OTHER THAN LIQUID

**15. Regulatory Information**

**TSCA Registered:**

All Components of this product are registered in the TSCA Inventory.

**R&D Exemption:**

N/A

**SARA Title III Section 313:**

This product does not contain material regulated under SARA Title III Section 313

**16. Other Information**

**HMIS Health:**

0

**HMIS Flammability:**

0

**HMIS Reactivity:**

0

**HMIS Personal Protection:**

B

**Disclaimer:**

This information is supplied under the OSHA Hazard Communication Standard, 29 CFR 1910.1200, and is offered in good faith based on data available to us that we believe to be true and accurate.