

MATERIAL SAFETY DATA SHEET



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

LAREDO* EW FUNGICIDE

Effective Date: 05-May-08
Product Code: 67417
MSDS: 007706

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT: Laredo* EW Fungicide

COMPANY IDENTIFICATION:

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

2. HAZARDOUS IDENTIFICATIONS:

EMERGENCY OVERVIEW

White liquid with an aromatic odor. May cause eye and skin irritation. Toxic to fish, aquatic organisms and birds.
EMERGENCY PHONE NUMBER: 800-992-5994

3. COMPOSITION/INFORMATION ON INGREDIENTS:

Component	CAS Number	W/W%
Myclobutanil	88671-89-0	19.7
Heavy aromatic naphtha	64742-94-5	25.0
Cyclohexanone	108-94-1	10.0
Propylene Glycol	57-55-6	6.0
Solvent naphtha (petroleum), light arom.	64742-95-6	1.0
Naphthalene	91-20-3	0.2
Balance		38.1

4. FIRST AID:

EYE: Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, and then continue rinsing eyes. 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: Immediately call a poison control center or doctor. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give any liquid to the person. Do not give anything by mouth to an unconscious person.

INHALATION: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, and then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice. If breathing is difficult, oxygen should be administered by qualified personnel.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. The decision of whether to induce vomiting or not should be made by a physician. Due to irritant properties, swallowing may result in burns/ulceration of mouth, stomach and lower GI tract with subsequent stricture. Aspiration of vomitus may cause lung injury. Suggest endotracheal/esophageal control if lavage is done. Respiratory symptoms, including pulmonary edema, may be delayed. Persons receiving significant exposure should be observed 24-48 hours for signs of respiratory distress. 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: 203°F (95°C) A.S.T.M. D-93 (solvent, naphtha)

AUTO-IGNITION TEMPERATURE: 903°F (484°C) (solvent, naphtha)

FLAMMABLE LIMITS

LFL: 0.6% (solvent, naphtha)

UFL: 7.0% (solvent, naphtha)

EXTINGUISHING MEDIA: Water fog or fine spray, dry chemical, carbon dioxide, or foam. Alcohol resistant foams (ATC types) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective. Water fog, applied gently may be used as a blanket for fire extinguishment.

FIRE AND EXPLOSION HAZARDS: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: nitrogen oxides, hydrogen cyanide, hydrogen chloride, carbon monoxide, and carbon dioxide. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

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FIRE-FIGHTING EQUIPMENT: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, pants, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with SCBA. If this is not available, wear full chemical resistant clothing with SCBA and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

SPECIAL PROCEDURES: Keep people away. Isolate fire area and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of re-ignition has passed. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Water fog, applied gently may be used as a blanket for fire extinguishment. Contain fire water run-off if possible. Fire water run-off, if not contained may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this MSDS.

6. ACCIDENTAL RELEASE MEASURES:

ACTION TO TAKE FOR SPILLS: Dike area and absorb small spills with materials such as sand, sawdust, Zorball, or dirt and place in suitable containers for recovery or disposal. Keep spills and cleaning run-off out of municipal sewers and open bodies of water. Spills on porous surfaces can contaminate groundwater. Remove all contaminated clothing promptly and wash exposed body areas thoroughly with soap and water immediately after handling. Thoroughly launder clothing before reuse. Do not take clothing home to be laundered. Report large spills to Dow AgroSciences at 800-992-5994.

7. HANDLING AND STORAGE:

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

HANDLING: Keep out of reach of children. Do not swallow. Avoid contact with eyes, skin, and clothing. Avoid breathing vapors and spray mist. Handle concentrate in ventilated area. Wash thoroughly with soap and water after handling and before eating, chewing gum, using tobacco, using the toilet or smoking. Keep away from food, feedstuffs, and water supplies.

STORAGE: The maximum recommended storage temperature for this material is 120°F (49°C). Do not store this material near food, feed or drinking water. Store away from excessive heat (e.g. steam pipes, radiators), from sources of ignition and from reactive material. Store in original container in a well-ventilated area with the lid tightly closed.

OTHER: Triple rinse (or equivalent) and puncture empty container. Dispose empty container in a sanitary landfill or by incineration as allowed by state and local authorities. Avoid inhalation of smoke if incinerated.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION:

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

EXPOSURE GUIDELINES:

Cyclohexanone: ACGIH TLV is 20 ppm, 50 ppm STEL; Skin; A3. OSHA PEL is 50 ppm TWA.

Propylene Glycol: AIHA WEEL is 10 mg/M³ TWA for total vapor and aerosol.

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

Propylene glycol: AIHA WEEL is 50 ppm total, 10 mg/M³ aerosol only.

Myclobutanil: Dow AgroSciences Industrial Hygiene Guide is 1 mg/M³ TWA and 3 mg/M³ STEL.

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 exposures 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:

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

SKIN PROTECTION: Use gloves chemically resistant to this material.

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RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use an approved air-purifying respirator. The following should be effective types of air-purifying respirators: organic vapor cartridge with a particulate pre-filter.

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

9. PHYSICAL AND CHEMICAL PROPERTIES:

COLOR: White

APPEARANCE: liquid

ODOR: Aromatic

pH: 8 to 9

VISCOSITY: Similar to water 500 to 1000 CPS

SPECIFIC GRAVITY (WATER = 1): 1.03

VAPOR DENSITY (AIR = 1): 5.2 (solvent, naphtha)

VAPOR PRESSURE: <2 mmHg @ 77°F (25°C) (solvent, naphtha)

MELTING POINT: Similar to water

BOILING POINT: Similar to water

SOLUBILITY IN WATER: Dispersible

PERCENT VOLATILITY: 74 to 76%

EVAPORATION RATE (BAc = 1): <1

10. STABILITY AND REACTIVITY:

STABILITY: (CONDITIONS TO AVOID) Stable under normal storage conditions. Active ingredient decomposes at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID)

Avoid contact with strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS:

Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to carbon monoxide, carbon dioxide, hydrogen chloride, hydrogen cyanide, and nitrogen oxides. Toxic gases are released during decomposition.

HAZARDOUS POLYMERIZATION: Will not 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 irritation.

SKIN: Brief contact may cause slight skin irritation with local redness. The LD₅₀ for skin absorption in rats is >2000 mg/kg. Prolonged skin contact is unlikely to result in absorption of harmful amounts. Did not cause allergic skin reactions when tested in guinea pigs.

INGESTION: Low toxicity if swallowed. Small amounts swallowed incidental to normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. Swallowing may result in gastrointestinal irritation or ulceration. Aspiration into the lungs may occur during ingestion or vomiting, causing lung damage, even death due to chemical pneumonia. The oral LD₅₀ for rats is 3749 mg/kg (females) and >5000 mg/kg (males). Excessive exposure may cause neurologic signs and symptoms. Observations in animals include: convulsions. Symptom: muscle spasms or twitches.

INHALATION: Prolonged excessive exposure to mist may cause adverse effects. Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs. May cause central nervous system effects. Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed. Signs and symptoms of excessive exposure may include: sweating, nausea and/or vomiting.

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS: For myclobutanil, in animals, effects have been reported on the following organs: liver, testes, adrenal gland, kidney, and thyroid. For the solvent, in animals, effects have been reported on the following organs: gastrointestinal tract, lungs, thyroid, and urinary tract. Dose levels producing these effects were many times higher than any dose levels expected from exposure due to use. Hypothermia has occurred in animals following skin or inhalation exposures to cyclohexanone. Cataracts and other eye effects have been reported in humans repeatedly exposed to naphthalene vapor or dust. In rare cases, repeated excessive exposure to propylene glycol may cause central nervous system effects.

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CANCER INFORMATION: Myclobutanil did not cause cancer in laboratory animals. Contains naphthalene, which has caused cancer in some laboratory animals.

TERATOLOGY (BIRTH DEFECTS): Myclobutanil did not cause birth defects in laboratory animals. Has been toxic to the fetus in laboratory animals at doses non-toxic to the mother. For cyclohexanone, has been toxic to the fetus in laboratory animals only at doses toxic to the mother.

REPRODUCTIVE EFFECTS: For myclobutanil, in laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals. Cyclohexanone caused reduced growth and survival of offspring in an animal reproduction study. Dose levels producing this effect also caused central nervous system effects in parental animals.

MUTAGENICITY: For myclobutanil, in-vitro and animal genetic toxicity studies were negative. For cyclohexanone: animal genetic toxicity studies were inconclusive. In-vitro genetic toxicity studies were negative in some cases and positive in other cases. The petroleum solvent was negative in genetic toxicity tests.

12. ECOLOGICAL INFORMATION:

ENVIRONMENTAL FATE:

DEGRADATION & PERSISTENCE:

Based largely or completely on information for this formulation.

Inhibitory concentration (IC₅₀) in OECD Activated Sludge Respiration Inhibition Test (OECD Test No. 209) is 71 mg ai/L.

ECOTOXICOLOGY:

Based largely or completely on information for this formulation.

Material is slightly toxic to fish on an acute bases (LC₅₀ between 10 and 100 mg/L).

Based largely or completely on information for myclobutanil. Material is highly toxic to aquatic organisms on an acute basis (LC₅₀ or EC₅₀ is between 0.1 and 1 mg/L in the most sensitive species tested).

Material is practically non-toxic to birds on a dietary basis (LC₅₀ is >5000 ppm).

Material is slightly toxic to birds on an acute basis (LD₅₀ is between 501 and 2000 mg/kg).

Based largely or completely on information for this formulation.

Acute LC₅₀ in rainbow trout (*Oncorhynchus mykiss*) is 10.3 mg/L.

Acute immobilization EC₅₀ in water flea (*Daphnia magna*) is 7.1 mg/L.

Growth inhibition EC₅₀ in green alga (*Selenastrum capricornutum*) is 8.6 mg/L.

Acute contact LD₅₀ in honeybee (*Apis mellifera*) is >200 µg/bee.

Acute oral LD₅₀ in honeybee (*Apis mellifera*) is >171 µg/bee.

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:

DOT Non-Bulk
NOT REGULATED

DOT Bulk
NOT REGULATED

IMDG
NOT REGULATED

ICAO/IATA
NOT REGULATED

Additional Information
Reportable quantity: 50,000 lb - CYCLOHEXANONE

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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
MYCLOBUTANIL	088671-89-0	19.7%
NAPHTHALENE	000091-20-3	3.68%

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:

WARNING: This product contains a chemical(s) known to the State of California to cause birth defects or other reproductive harm. The chemical is Myclobutanil CAS # 088671-89-0.

WARNING: This product contains a chemical(s) known to the State of California to cause cancer. The chemical is Naphthalene CAS # 000091-20-3.

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	000091-20-3	PA1 PA3
CYCLOHEXANONE	000108-94-1	PA1 PA3
PROPYLENE GLYCOL	000057-55-6	PA1

PA1=Pennsylvania Hazardous Substance (present at greater than or equal to 1.0%).

PA3=Pennsylvania Environmental 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	1
Reactivity	0

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#	RQ	% in Product
Naphthalene	000091-20-3	100 lb.	3.68%
Cyclohexanone	000108-94-1	5000 lb.	10%

16. OTHER INFORMATION:

MSDS STATUS: Revised Sections: 2, 3, 4, 5, 8, 10, 11, 12, 14, & 15
Reference: DR-0378-7448
Replaces MSDS Dated: 27-Aug-04
Document Code: D03-196-002
Replaces Document Code: D03-196-001

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