

MATERIAL SAFETY DATA SHEET



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

EAGLE* 20EW FUNGICIDE

Effective Date: 10/9/03
Product Code: 88970
MSDS: 007706

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT: Eagle * 20EW Fungicide

COMPANY IDENTIFICATION:

Dow AgroSciences
9330 Zionsville Road
Indianapolis, IN 46268-1189

2. COMPOSITION/INFORMATION ON INGREDIENTS:

Myclobutanil:	CAS # 088671-89-0	19.7%
alpha-butyl-alpha-(4-chloro-phenyl)-1H-1,2,4-triazole-1-propanenitrile		
Other Ingredients, Total, Including		80.3%
Cyclohexanone	CAS # 000108-94-1	
Petroleum Solvent	CAS # 064742-94-5	
(contains naphthalene	CAS # 000091-20-3)	
Propylene Glycol	CAS # 000057-55-6	

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.

3. HAZARDOUS IDENTIFICATIONS:

EMERGENCY OVERVIEW

Hazardous Chemical. White liquid with an aromatic odor. May cause eye irritation with corneal injury. May cause skin irritation. LD₅₀ for skin absorption is >2000 mg/kg. Oral LD₅₀ is 3749 - >5000 mg/kg. Toxic to aquatic organisms and birds.

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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 with corneal injury. Vapor may cause severe eye irritation and corneal injury. Vapor may cause lacrimation (tears).

SKIN: Brief contact may cause moderate 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. The oral LD₅₀ for rats is 3749 mg/kg (females) and >5000 mg/kg (males)

INHALATION: 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.

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: central nervous system, kidney, liver, lungs, thyroid and urinary tract. Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed. 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.

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.

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, then continue rinsing eyes. Call a poison control center or doctor for treatment advice.

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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 911 or an ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice. If breathing is difficult, oxygen should be administered by qualified personnel.

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: Use the following extinguishing media when fighting fires involving this material: carbon dioxide, dry chemical, or water spray.

FIRE AND EXPLOSION HAZARDS: Pesticide particulates can become airborne. Combustion generates toxic fumes of the following: hydrogen chloride and/or hydrogen cyanide.

FIRE-FIGHTING EQUIPMENT: Use positive-pressure, self-contained breathing apparatus and full protective equipment.

SPECIAL PROCEDURES: Use water spray to cool containers exposed to fire. Contain run-off. Remain upwind. Avoid breathing smoke.

6. ACCIDENTAL RELEASE MEASURES:

ACTION TO TAKE FOR SPILLS: Dike area and absorb small spills with materials such as sand, sawdust, Zorbball, 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.

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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.

Petroleum solvent: None established. Supplier recommends a guideline of 100 ppm for the total product, which is a mixture of aromatic hydrocarbons.

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.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use a NIOSH approved air-purifying respirator.

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. Avoid contact with ignition sources (e.g. sparks, open flame, and heated surfaces).

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Avoid contact with strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition may yield hydrogen chloride gas.

HAZARDOUS POLYMERIZATION: Not known to occur.

11. TOXICOLOGICAL INFORMATION:

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.

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ECOTOXICOLOGY:

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: Do not contaminate water, food, or feed by storage or disposal. Excess wastes resulting from the use of this product may be disposed of on site according to label directions or at an approved waste disposal facility. Follow all local, state, and federal requirements for disposal.

14. TRANSPORT INFORMATION:

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

This material is not regulated for transportation.

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.

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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
MYCLOBUTANIL	088671-89-0	NJ2
NAPHTHALENE	000091-20-3	NJ2 NJ3 PA1 PA3
CYCLOHEXANONE	000108-94-1	NJ3 PA1 PA3
PROPYLENE GLYCOL	000057-55-6	PA1

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

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%).

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%

RCRA Categorization Hazardous Code:

Naphthalene CAS # 000091-20-3 = U165
Cyclohexanone CAS # 000108-94-1 = U057

16. OTHER INFORMATION:

MSDS STATUS: Moved to DAS Format
Reference: DR-0378-7448
Replaces MSDS Dated: 6/1/01
Document Code: D03-195-001

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