

MATERIAL SAFETY DATA SHEET



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

MACH* 2 2SC INSECTICIDE

Effective Date: 10/16/03
Product Code: 55564
MSDS: 007721

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT: Mach* 2 2SC Insecticide

COMPANY IDENTIFICATION:

Dow AgroSciences
9330 Zionsville Road
Indianapolis, IN 46268-1189

2. COMPOSITION/INFORMATION ON INGREDIENTS:

Halofenozide:	CAS # 112226-61-6	22.3%
4-chlorobenzoate		
2-benzoyl-2-(1,1-dimethyl-ethyl) hydrazide		
Other Ingredients, Total, Including		77.7%
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. Tan liquid with no odor. LD₅₀ for skin absorption is >2000 mg/kg. The oral LD₅₀ is >5000 mg/kg. The aerosol LC₅₀ is >1.09 mg/L for 4 hours. 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: Essentially non-irritating to the eyes.

SKIN: Brief contact is essentially non-irritating to skin. Did not cause allergic skin reactions when tested in guinea pigs. Prolonged skin contact is unlikely to result in absorption of harmful amounts. The LD₅₀ for skin absorption in rabbits is >2000 mg/kg.

INGESTION: Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts. The oral LD₅₀ for rats is >5000 mg/kg.

INHALATION: Mist may cause irritation of upper respiratory tract (nose and throat) and lungs. The aerosol LC₅₀ for rats is >1.09 mg/L for 4 hours.

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS: For halofenozide, excessive exposure may cause methemoglobinemia, thereby impairing the blood's ability to transport oxygen. In animals, effects have been reported on the following organs: blood, blood-forming organs (bone marrow & spleen) liver and nervous system.

CANCER INFORMATION: Propylene glycol did not cause cancer in laboratory animals. No relevant information found on the other component(s).

TERATOLOGY (BIRTH DEFECTS): Halofenozide did not cause birth defects in laboratory animals. Has been toxic to the fetus in laboratory animals only at doses toxic to the mother.

REPRODUCTIVE EFFECTS: For propylene glycol, in animal studies, did not interfere with reproduction and fertility. No relevant information found on the other component(s).

4. FIRST AID:

EYE: Flush eyes thoroughly with water for several minutes. Remove contact lenses after initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.

SKIN: Wash skin with plenty of water.

INGESTION: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Never give anything by mouth to an unconscious person.

INHALATION: Move person to fresh air; if effects occur, consult a physician.

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NOTE TO PHYSICIAN: Administer 100% oxygen to relieve headache and a general sense of weakness. Determine methemoglobin concentration of blood every 3 to 6 hours for first 24 hours. It should return to normal within 24 hours. The treatment of toxic methemoglobinemia may include the intravenous administration of methylene blue. If methemoglobin >10-20% consider methylene blue 1-2 mg/kg body weight as 1% solution IV over 5 minutes followed by 15-30 cc flush (Price D, Methemoglobinemia, Goldfrank Toxicologic Emergencies, 5th ed., 1994). Also provide 100% oxygen. Methemoglobinemia may aggravate any preexisting condition sensitive to a decrease in available oxygen, such as chronic lung disease, coronary artery disease or anemias. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE FIGHTING MEASURES:

FLASH POINT: 212°F (100°C) (propylene glycol)
METHOD USED: TCC

FLAMMABLE LIMITS

LFL: Not applicable
UFL: Not applicable

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

UNUSUAL HAZARDS: Pesticide particulates can become airborne. Combustion generates toxic fumes of the following: Hydrogen chloride and nitrogen oxides.

FIREFIGHTING EQUIPMENT: Wear self-contained breathing apparatus (pressure demand NIOSH approved or equivalent) and full protective gear.

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

6. ACCIDENTAL RELEASE MEASURES:

ACTION TO TAKE FOR SPILLS/LEAKS: Contain and absorb small spills with inert materials with sand or earth. Transfer liquids and solid diking material to separate suitable containers for recovery or disposal. Avoid breathing vapor. Keep spills and cleaning run-off out of municipal sewers and open bodies of water. Report large spills to Dow AgroSciences at 800-992-5994. If exposed to material during clean-up operations, remove all contaminated clothing promptly. Wash all exposed skin areas with soap and water immediately after exposure. Thoroughly launder clothing before reuse. Do not take clothing home to be laundered.

7. HANDLING AND STORAGE:

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

HANDLING: Do not handle material near food, feed or drinking water.

STORAGE: Store in well-ventilated area. Store in a dry area. Store out of direct sunlight in a cool place. Do not store this material near food, feed or drinking water. Keep container tightly closed when not in use. The minimum recommended storage temperature for this material is 32°F (0°C). The maximum recommended storage temperature for this material is 110°F (43°C).

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 GUIDELINE: Halofenozide: Dow AgroSciences Industrial Hygiene Guide is 1.3 mg/M³ TWA and 3.9 mg/M³ STEL (skin).
Propylene glycol: AIHA WEEL is 50 ppm total, 10 mg/M³ aerosol only.

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 safety glasses.

SKIN PROTECTION: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. If respiratory irritation is experienced, 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: Tan
STATE: Liquid
ODOR: None
pH: 5 to 7
VISCOSITY: 300 to 1100 CPS
SPECIFIC GRAVITY (WATER = 1): 1.0 - 1.2 (approximate)
VAPOR DENSITY (Air = 1): <1.0 Water
VAPOR PRESSURE: 17 mmHg @ 68°F (20°C) (Water)
MELTING POINT: 32°F (0°C) (Water)
BOILING POINT: 212°F (100°C) (Water)
SOLUBILITY IN WATER: Dispersible
PERCENT VOLATILITY: 70 to 72% (Water and solvents)
EVAPORATION RATE (BAc = 1): <1.0 (Water)

10. STABILITY AND REACTIVITY:

STABILITY: This material is stable under normal storage conditions.

INCOMPATIBILITY: Avoid contact with strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition may yield the following: isobutylene, oxides of nitrogen, and/or hydrogen chloride.

HAZARDOUS POLYMERIZATION: Not known to occur.

11. TOXICOLOGICAL INFORMATION:

MUTAGENICITY: For halofenozide and propylene glycol, in-vitro and animal genetic toxicity studies were negative.

12. ECOLOGICAL INFORMATION:

ENVIRONMENTAL FATE:

MOVEMENT & PARTITIONING:

Based on information for halofenozide.
Bioconcentration potential is moderate (BCF is between 100 and 3000 or Log Pow between 3 and 5).
Measured log octanol/water partition coefficient (Log Pow) is 3.42.
Expected to be relatively immobile in soil (Koc is >5000).
Soil organic carbon/water partition coefficient (Koc) is estimated to be 6800.
Henry's Law Constant (H) is estimated to be 3.58E⁻¹¹ atm/M³/mole.

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DEGRADATION & PERSISTENCE:

Based on information for halofenozide.
Inhibitory concentration (IC₅₀) in OECD Activated Sludge Respiration Inhibition Test (OECD Test No. 209) is >100 mg/L.
Theoretical Oxygen Demand (ThOD) is calculated to be 2.32 p/p with N taken to HNO₃.
The rate constant for the vapor phase reaction with photochemically produced hydroxyl radicals at 25°C is estimated to be 2.40E-11 cm³/molecule-sec.
The photolysis half-life in water is 10 days.

ECOTOXICOLOGY:

Based on information for halofenozide.
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).
Acute LC₅₀ in water flea (*Daphnia magna*) is >12 mg/L.
Acute immobilization EC₅₀ in water flea (*Daphnia magna*) is 3.6 mg/L.
Acute LC₅₀ in rainbow trout (*Oncorhynchus mykiss*) is >8.6 mg/L.
Acute LC₅₀ in bluegill (*Lepomis macrochirus*) is >8.4 mg/L.
Growth inhibition EC₅₀ in green alga (*Selenastrum capricornutum*) is 0.67 mg/L.
Maximum acceptable toxicant concentration (MATC) in fish early life-stage study is 0.66 mg/L.
Maximum acceptable toxicant concentration (MATC) in water flea (*Daphnia magna*) is 0.076 mg/L.
Acute LC₅₀ in sheepshead minnow (*Cyprinodon variegatus*) is >8.8 mg/L.
Acute EC₅₀ for shell deposition inhibition in Eastern oyster (*Crassostrea virginica*) is 1.2 mg/L.
Acute LC₅₀ in saltwater mysid (*Mysidopsis bahia*) is 3.7 mg/L.
Material is practically non-toxic to birds on an acute basis (LD₅₀ is >2000 mg/kg).
Acute oral LD₅₀ in bobwhite (*Colinus virginianus*) is >2250 mg/kg.
Material is slightly toxic to birds on a dietary basis (LC₅₀ is between 1001 and 5000 ppm).
Dietary LC₅₀ in bobwhite (*Colinus virginianus*) is 4522 ppm.
Dietary LC₅₀ in mallard (*Anas platyrhynchos*) is >5000 ppm.
Acute contact LD₅₀ in honeybee (*Apis mellifera*) is >100 µg/bee.
The LC₅₀ in earthworm (*Eisenia foetida*) is >980 mg/kg.

13. DISPOSAL CONSIDERATIONS:

DISPOSAL METHOD: Do not contaminate food, feed, or water by storage or disposal. Wastes are toxic. Improper disposal of excess waste, spray mixture, or rinsate is a violation of federal law. Spray mixture or rinse water that cannot be used according to label instructions must be disposed of in accordance with applicable local, state or federal requirements. Contact your state pesticide or environmental control agency, or the hazardous waste representative at the nearest EPA regional office for guidance.

14. TRANSPORT INFORMATION:

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

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: 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:

A delayed health hazard

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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
1,2-PROPANEDIOL (Propylene Glycol)	000057-55-6	PA1

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	1
Flammability	1
Reactivity	0

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: Moved to DAS Format
Reference: DR-0387-6004
Replaces MSDS Dated: 6/1/01
Document Code: D03-157-002
Replaces Document Code: D03-157-001

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