

MATERIAL SAFETY DATA SHEET

Sipcam Agro USA, Inc.
300 Colonial Center Parkway, Suite 230
Roswell, GA 30076

In Case of Emergency, Call
Sipcam Agro USA, Inc.: 770-587-1032
CHEMTREC: 800-424-9300

GENERAL INFORMATION

1-Slight Health Hazard 0-Noncombustible 0-Nonreactive

Above: Ratings based on NIOSH "Identification System for Occupationally Hazardous Materials" (1974).

TRANSPORTATION INFORMATION

This product is regulated for transportation purposes as follows:

<i>MODE</i>	<i>BULK (> 119 GALLONS)</i>	<i>NON-BULK (< 119 GALLONS)</i>
IATA (Air):	Yes	No
IMO (Water):	Yes	No
DOT (Land):	Yes	No

Proper Shipping Name: Environmentally hazardous substance, liquid, N.O.S.(chlorothalonil), 9, UN3082, PG III, ERG # 171

Special Provisions: Marine pollutant

Freight class: NMFC Item #102100

SARA TITLE III INFORMATION

313 Inventory Ingredients: Chlorothalonil (54% wt/wt)

312 Hazards Classification: Acute and Chronic Health (See Section V for Health Hazard Information)

PRODUCT IDENTIFICATION

Product Names: Echo 720 Turf and Ornamental Fungicide

Synonyms (active ingredient): Tetrachloroisophthalonitrile, Chlorothalonil

HAZARDOUS INGREDIENTS

The substances listed below are those identified as hazardous chemicals under the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200).

<u>Component</u>	<u>CAS No.</u>
Tetrachloroisophthalonitrile	1897-45-6

Exposure Limits for Echo 720 Turf and Ornamental Fungicide:

ACGIH-TLV: Not Established

OSHA-PEL: Not Established

PHYSICAL DATA (*denotes data developed from technical active ingredient)

Boiling Point (760 mm Hg):	100°C (lowest boiling component)
Melting Point:	Not Applicable
Freezing Point:	-5°C
Specific Gravity (H2O=1):	1.34
Vapor Pressure:	*5.72 x 10 ⁻⁷ torr @ 25°C
Vapor Density (Air = 1):	Not Determined
Solubility in H2O, % by Wt.:	*0.6 - 0.9 ppm. Formulation: dispersible in water
% Volatiles by Vol.:	45
Evaporation Rate (Butyl Acetate = 1):	Not Determined
Appearance and Odor:	Liquid, white, slight odor
Density at 20°C:	11.15 #/gal
pH:	6 to 9

FIRE AND EXPLOSION DATA

Flash Point:	Nonflammable
Autoignition Temperature:	Not Applicable
Flammable Limits in Air, % by Volume:	Noncombustible Lower: Not Applicable Upper: Not Applicable
Extinguishing Media:	Carbon dioxide, foam, dry chemical or water.
Special Fire Fighting Procedures:	Self-contained breathing apparatus should be provided for firefighters.
Unusual Fire and Explosion Hazards:	May decompose under fire conditions emitting toxic and irritant gases (i.e. hydrogen chloride) to the respiratory tract.

HEALTH HAZARD INFORMATION¹

Oral LD50 (rat):	3,260 mg/kg (U.S. EPA Category III)
Dermal LD50 (rabbit):	>2,020 mg/kg (U.S. EPA Category III)
Inhalation (4-hour) LC50 (rat):	0.11 mg/liter of air (U.S. EPA Category II)
Primary Dermal Irritation Index (rabbit):	Non-irritating (Draize 0.0 / 8.0) (U.S. EPA Category IV)
Primary Eye Irritation (rabbit)	Eye irritant; reversible corneal, iridal and conjunctival effects in unwashed eyes; minimal irritation in washed eyes (U.S. EPA Category III)
Dermal Sensitization:	Non-sensitizer

Emergency and First Aid Procedures

IF INHALED: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth to mouth if possible. Call a poison control center or doctor for further treatment advice.

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

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 affected person sip a glass of water if able to swallow. Do not induce vomiting unless told by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

Have the product container or label with you when calling a poison control center or doctor or going for treatment.

NOTES TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage. Persons having a temporary allergic reaction respond to treatment with antihistamines or steroid creams and/or systemic steroids.

Effects of Chronic Overexposure

Repeated excessive dermal exposure may cause marked skin irritation and may increase the possibility of allergic reactions. Studies on rats and mice have suggested that technical chlorothalonil, when fed at high levels in the diet, may have oncogenic potential to these laboratory animals. However, neither chlorothalonil nor its metabolites interact with DNA and thus are not mutagenic. Tumor formation has been related to a non-genotoxic mechanism of action from which threshold levels have been established on rats and mice. Comprehensive dietary and worker exposure studies have shown exposure levels for humans to be well below these threshold levels - in addition,

¹ For transportation purposes, refer to 49 CFR 173.132 (b) (3)

EPA Reg. No. 60063-7

surveillance of chlorothalonil plant workers for many years has not demonstrated any increase in oncogenic potential to humans.

REACTIVITY DATA

Conditions Contributing to Instability: Under normal use conditions, this product is stable.

Incompatibility: Not known.

Hazardous Decomposition Products: May decompose under fire conditions emitting gases and vapors (i.e. hydrogen chloride) which may be toxic and irritating to the respiratory tract.

Conditions Contributing To Hazardous Polymerization: Material not known to polymerize.

SPILL OR LEAK PROCEDURES

Steps To Be Taken If Material Is Released Or Spilled:

This product is toxic to fish. Keep out of lakes, streams or ponds. Contain spills. Remove as much as possible by shoveling and sweeping. Place contaminated materials in closed, labeled containers and store in a safe place to await proper disposal. Do not contaminate water while cleaning equipment or disposing of wastes. Persons performing this work should wear adequate personal protective equipment and clothing.

Waste Disposal Method:

Waste portions of this product and contaminated absorbent materials may be disposed of by incineration provided the following conditions are observed:

Incinerate in a suitable oven fed by a mixture of air and methane, at 1100-1200° C temperature;

The HCl which may form in the incinerator exhaust gas must be conveyed into an aqueous absorption system containing 18-20% of Ca(OH)₂.

INDUSTRIAL HYGIENE CONTROL MEASURES

Ventilation Requirements

Good industrial hygiene practice dictates that indoor work areas be isolated and provided with adequate local exhaust ventilation. Work upwind in out-of-doors batch operations.

SPECIFIC PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY: NIOSH - approved dust respirators or pesticide respirators

EYE: Chemical goggles or face shields.

GLOVES: Wear protective chemical-resistant gloves to minimize skin contact. Special precautions should be taken so product cannot get inside gloves.

OTHER CLOTHING AND EQUIPMENT

Protective clothing consisting of long sleeve shirt and long pants, should be worn when handling this product. The clothing should be changed at least daily. Persons exposed routinely to this active material should shower prior to leaving work each day. Safety shower and eye-wash stations should be provided in all areas in which this product is stored and/or handled. Contaminated clothing should be removed and washed thoroughly before re-using.

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

Effective Date: 3/22/01
Product Code: 94615
MSDS: 007121

PROPICONAZOLE EC FUNGICIDE (T&O)

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT: Propiconazole EC Fungicide (T&O)

COMPANY IDENTIFICATION:

Dow AgroSciences
9330 Zionsville Road
Indianapolis, IN 46268-1189

2. COMPOSITION/INFORMATION ON INGREDIENTS:

Propiconazole:	CAS # 060207-90-1	41.8%
1-((2-(2,4-dichlorophenyl)-4-propyl-1,3-dioxolan-2-yl)-methyl)-1H-1,2,4-triazole		
Other Ingredients, Total, Including		58.2%
Propylene Glycol	CAS # 000057-55-6	
Aromatic 150 (Naphthalene)	CAS # 064742-94-5	

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. Clear yellow liquid with an aromatic odor. May cause eye irritation and/or corneal injury. May cause skin irritation. Toxic to aquatic organisms.

EMERGENCY PHONE NUMBER: 800-992-5994

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 eye irritation and/or slight corneal injury. Vapors may irritate the eyes. For the solvent Aromatic 150, cataracts and other eye effects have been reported in humans repeatedly exposed to naphthalene vapor or dust.

SKIN: Prolonged or repeated exposure may cause skin irritation. A single prolonged exposure is not likely to result in the material being absorbed through the skin in harmful amounts. The dermal LD₅₀ has not been determined. Propiconazole did not cause allergic skin reactions when tested in guinea pigs.

INGESTION: Single dose oral toxicity is low. Small amounts swallowed incidental to normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. If aspirated (liquid enters the lung), may cause lung damage or even death due to chemical pneumonia. Single dose oral LD₅₀ has not been determined.

INHALATION: Excessive exposure may cause irritation to upper respiratory tract (nose and throat). Signs and symptoms of excessive exposure may be central nervous system effects.

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS: Excessive exposure may cause respiratory irritation and central nervous system depression.

CANCER INFORMATION: Aromatic 150 contains naphthalene, which has caused cancer in some laboratory animals. An increase in lung tumors was observed in female, but not male, mice exposed to naphthalene by inhalation for two years. In humans, there is limited evidence of cancer in workers involved in naphthalene production. Limited oral studies in rats were negative.

TERATOLOGY (BIRTH DEFECTS): Birth defects are unlikely. Exposures having no effects on the mother should have no effect on the fetus.

REPRODUCTIVE EFFECTS: Available data are inadequate to determine effects on reproduction.

4. FIRST AID:

EYE: Flush eyes with plenty of water.

SKIN: Wash off in flowing water or shower.

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

INHALATION: Remove 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.

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NOTE TO PHYSICIAN: The decision of whether to induce vomiting or not should be made by an attending 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. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

5. FIRE FIGHTING MEASURES:

FLASH POINT: 151.7°F (66.5°C)

FLAMMABLE LIMITS

LFL: Not determined
UFL: Not determined

EXTINGUISHING MEDIA: Water fog or fine spray, foam, CO₂, or dry chemical

FIRE AND EXPLOSION HAZARDS: During a fire, smoke may contain the original material in addition to unidentified toxic and/or irritating compounds. Keep containers cool by spraying with water. Contain runoff to prevent entry into water or drainage systems.

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

6. ACCIDENTAL RELEASE MEASURES:

ACTION TO TAKE FOR SPILLS: Absorb small spills with material such as sand, sawdust, Zorbball, dirt or other non-combustible absorbent material and place into containers for disposal. Wash exposed body areas thoroughly after handling. Barricade the area of large spills and report them 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 toilet or smoking.

Storage: Product should be stored in compliance with local regulations. Store in a cool, dry, well-ventilated place in the original container. Protect from excessive heat and cold. Keep away from food, feedstuffs, and water supplies.

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: Naphthalene: ACGIH TLV and OSHA PEL are 10 ppm TWA, 15 ppm STEL. ACGIH classification is A4, skin. PELs are in accord with those recommended by OSHA, as in the 1989 revision of PELs. 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. 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 vapor exposure causes eye discomfort, use a NIOSH approved full-face respirator.

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

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.

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

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9. PHYSICAL AND CHEMICAL PROPERTIES:

APPEARANCE: Clear yellow liquid
ODOR: Aromatic
DENSITY: 1.0441 g/mL @ 20°C
VISCOSITY: 10.9 mPa-s @ 25C 5.74 mPa-s @45°C
pH: 5.36 @ 23.1°C

10. STABILITY AND REACTIVITY:

STABILITY: (conditions to avoid) Stable under normal storage conditions. Avoid high temperatures (at or near flash point), open flame, sparks and direct sunlight.

INCOMPATIBILITY: (specific materials to avoid) Strong bases, acids, or oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS: Not determined.

HAZARDOUS POLYMERIZATION: Not known to occur.

11. TOXICOLOGICAL INFORMATION:

MUTAGENICITY: For some of the components, in-vitro mutagenicity studies were negative in some cases and positive in other cases.

12. ECOLOGICAL INFORMATION:

ENVIRONMENTAL DATA:

MOVEMENT & PARTITIONING:

Based largely or completely on information for Aromatic 150.
Bioconcentration potential is high (BCF is >3000 or Log Pow is between 5 and 7).
Based largely or completely on information for propiconazole.
Bioconcentration potential is moderate (BCF is between 100 and 3000 or Log Pow is between 3 and 5).
Expected to be relatively immobile in soil (Koc is >5000 mg/kg).

DEGRADATION & PERSISTENCE:

Based largely or completely on information for Aromatic 150.
Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.
Based largely or completely on information for propiconazole.
Degradation is expected in the soil environment within months to years.

ECOTOXICOLOGY:

Based largely or completely on information for propiconazole.
Material is highly toxic to aquatic organisms on an acute basis (LC₅₀/EC₅₀ is between 0.1 and 1 mg/L in most sensitive species).
Based largely or completely on information for Aromatic 150.
Material is slightly toxic to aquatic organisms on an acute basis (LC₅₀/EC₅₀ is between 10 and 100 mg/L in most sensitive species).

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:

For DOT regulatory information, if required, consult transportation regulations, product-shipping papers, or contact your Dow AgroSciences representative.

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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
Propiconazole	060207-90-1	41.8%

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

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
Propylene Glycol	000057-55-6	PA1
Propiconazole	060207-90-1	NJ2

NJ2=New Jersey Environmental 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.

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: New
Reference: DR-0365-8820

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