

# MATERIAL SAFETY DATA SHEET



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

## INDAR\* 2F FUNGICIDE

Effective Date: 8-4-04  
Product Code: 90868  
MSDS: 007714

### 1. PRODUCT AND COMPANY IDENTIFICATION:

**PRODUCT:** Indar\* 2F Fungicide

#### COMPANY IDENTIFICATION:

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

### 2. COMPOSITION/INFORMATION ON INGREDIENTS:

Fenbuconazole:	CAS # 114369-43-6	22.86%
alpha-[2-(4-chlorophenyl) ethyl]-alpha-phenyl-1H-1,2,4- triazole-1-propanenitrile		
Balance, Total, Including		77.13%
Propylene Glycol	CAS # 000057-55-6	

### 3. HAZARDOUS IDENTIFICATIONS:

#### EMERGENCY OVERVIEW

White to off-white liquid with a mild odor.

**EMERGENCY PHONE NUMBER:** 800-992-5994

### 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.

**NOTE TO PHYSICIAN:** 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:** >199°F (>93°C)

**METHOD USED:** SCC

#### FLAMMABILITY LIMITS

UFL: Not applicable

LFL: Not applicable

**EXTINGUISHING MEDIA:** When product is involved in a fire use carbon dioxide, dry chemical, or water spray.

**FIRE & EXPLOSION HAZARDS:** Pesticide particulates can become airborne.

**FIRE-FIGHTING EQUIPMENT:** Remain upwind. Avoid breathing smoke. Use water spray to cool containers exposed to fire. Contain run-off. Wear self-contained breathing apparatus (pressure-demand MSHA/NIOSH approved or equivalent) and full protective gear.

### 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.

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**OTHER:** Triple rinse (or equivalent) and puncture empty container. Dispose empty container in a sanitary landfill as allowed by state and local authorities.

### 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:

Fenbuconazole: Dow AgroSciences Industrial Hygiene Guide is 1 mg/M<sup>3</sup> TWA and 3 mg/M<sup>3</sup> STEL.  
Propylene glycol: AIHA WEEL is 10 mg/M<sup>3</sup> for total vapor and aerosol.

**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:** Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use a NIOSH approved air-purifying respirator. For misty or dusty atmospheres, use a NIOSH approved particulate respirator.

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

### 9. PHYSICAL AND CHEMICAL PROPERTIES:

**COLOR:** White to off-white  
**STATE:** Liquid  
**ODOR:** Mild  
**VISCOSITY:** 500 to 1200 CPS (Brookfield LVT No. 3 spindle @ 30 rpm)  
**SPECIFIC GRAVITY (WATER = 1):** 1.05  
**VAPOR DENSITY (AIR = 1):** Not applicable  
**VAPOR PRESSURE:** 17 mgHg @ 68°F (20°C)  
**MELTING POINT:** Not applicable  
**BOILING POINT:** 212°F (100°C) (Water)  
**SOLUBILITY IN WATER:** Dispersible  
**PERCENT VOLATILITY:** 72 to 75%  
**EVAPORATION RATE (Bac = 1):** <1 (Water)  
**pH:** 9.0 (5% dilution in deionized water)

### 10. STABILITY AND REACTIVITY:

**STABILITY: (CONDITIONS TO AVOID)** Stable under normal storage conditions.

**INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID)** Avoid contact with the following: oxidizing agents and acids.

**HAZARDOUS DECOMPOSITION PRODUCTS:** None known.

**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:** Essentially non-irritating to 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 LD<sub>50</sub> for skin absorption in rats is >5000 mg/kg.

**INGESTION:** Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts. The oral LD<sub>50</sub> for rats is >5000 mg/kg.

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**INHALATION:** Mist may cause irritation of upper respiratory tract (nose and throat). The aerosol LC<sub>50</sub> for rats is >2.1 mg/L for 4 hours.

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

**CANCER INFORMATION:** For fenbuconazole, available data are inadequate to evaluate carcinogenicity.

**TERATOLOGY (BIRTH DEFECTS):** Fenbuconazole 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:** Fenbuconazole, in animal studies, has been shown to interfere with reproduction in females.

**MUTAGENICITY:** For fenbuconazole, in-vitro and animal genetic toxicity studies were negative.

### 12. ECOLOGICAL INFORMATION:

#### ENVIRONMENTAL FATE:

#### MOVEMENT & PARTITIONING:

No relevant information found.

#### DEGRADATION & PERSISTENCE:

No relevant information found.

#### ECOTOXICOLOGY:

Based on information for fenbuconazole.

Acute oral LC<sub>50</sub> in honeybee (*Apis mellifera*) is >292 µg/L.

Acute oral LD<sub>50</sub> in bobwhite quail (*Colinus virginianus*) is >2150 mg/kg.

Acute LC<sub>50</sub> in rainbow trout (*Salmo gairdneri*) is 1.5 mg/L.

Acute immobilization EC<sub>50</sub> in water flea (*Daphnia magna*) is >2.2 mg/L.

Dietary LC<sub>50</sub> in bobwhite quail (*Colinus virginianus*) is >4050 ppm.

Dietary LC<sub>50</sub> in mallard duck (*Anas platyrhynchos*) is >2110 ppm.

Growth inhibition EC<sub>50</sub> in algae (*Selenastrum subspicatus*) is 0.29 mg/L.

Acute LC<sub>50</sub> in blue gill (*Lepomis macrochirus*) is 0.68 mg/L.

Growth inhibition EC<sub>50</sub> in green alga (*Selenastrum capricornutum*) is 0.47 mg/L.

### 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 all package sizes shipped by all modes of transportation:

This material is not regulated for transport.

### 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.

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**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

**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	0
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:** Revised Sections: 3, 8, 11 & 13  
Reference: DR-0388-4057  
Replaces MSDS Dated: 10/8/03  
Document Code: D03-349-001

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