

MATERIAL SAFETY DATA SHEET



TREFLAN* HFP HERBICIDE

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

Effective Date: 01/01/98
Product Code: 48048
MSDS: 005301

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT: TREFLAN* HFP HERBICIDE

COMPANY IDENTIFICATION:

Dow AgroSciences
P.O. Box 681428
9330 Zionsville Road
Indianapolis, IN 46268-1189
www.dowagro.com

2. COMPOSITION/INFORMATION ON INGREDIENTS:

**alpha, alpha, alpha-Trifluoro-2,6-dinitro- N,N-dipropyl-
p-toluidine {Trifluralin}** CAS# 001582-09-8 43.0%
Other Proprietary Ingredients, Total: 57.0%

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, orange liquid. Aromatic odor. Flash point 210°F. May cause eye irritation. Harmful if swallowed, inhaled or absorbed through skin. May cause skin sensitization in certain individuals. Closed containers may explode due to pressure build-up when subjected to excessive heat or fire. Toxic fumes are released in fire situations. Product is toxic to fish, wildlife, and avian.

EMERGENCY PHONE NUMBER: (U.S.) 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 moderate eye irritation. Corneal injury is unlikely.

SKIN: Short single exposure may cause skin irritation. May cause drying or flaking of skin. A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts. The LD50 for skin absorption in rabbits is >5000 mg/kg. Has caused allergic skin reactions when tested in guinea pigs.

INGESTION: Single dose oral toxicity is considered to be low. Small amounts that might be swallowed incidental to normal handling operations are not likely to cause injury; swallowing larger amounts may cause injury. The oral LD50 for rats is 3700 mg/kg.

INHALATION: Single exposure to vapors is not likely to be hazardous. The LC50 is 5.59 mg/L for male rats and >6.05 mg/L for female rats for 4 hours.

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS: For trifluralin, in animals, has been shown to cause kidney, blood, and slight liver effects. Cataracts and other eye effects have been reported in humans repeatedly exposed to naphthalene vapor or dust.

CANCER INFORMATION: Contains naphthalene which has caused cancer in some laboratory animals. A low incidence of urinary tract tumors were seen in one strain of rat in one chronic study of five 2-year studies on trifluralin conducted in rats; trifluralin is not anticipated to be a carcinogenic risk to man.

TERATOLOGY (BIRTH DEFECTS): Trifluralin did not cause birth defects; other fetal effects occurred only at doses toxic to the mother.

REPRODUCTIVE EFFECTS: Trifluralin did not interfere with reproduction in animal studies.

4. FIRST AID:

EYES: Irrigate with flowing water immediately and continuously for 15 minutes. Consult medical personnel.

SKIN: Wash off in flowing water or shower.

INGESTION: If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

INHALATION: Remove to fresh air if effects occur. Consult a physician.

NOTE TO PHYSICIAN: 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: 210°F, 99°C

METHOD USED: PMCC

FLAMMABLE LIMITS (data based on solvent, 77°F, 25°C)

LFL: 1.8% approximately **UFL:** 11.8% approximately

HAZARDOUS COMBUSTION PRODUCTS: Hazardous combustion products may include but are not limited to: nitrogen oxides, carbon monoxide, carbon dioxide and flourinated hydrocarbons.

EXTINGUISHING MEDIA: Use water, CO2, or dry chemicals.

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FIRE-FIGHTING INSTRUCTIONS: Dense smoke emitted when burned without sufficient oxygen. Keep people away. Isolate fire area and deny unnecessary entry. Closed containers may explode due to pressure build-up when subjected to excessive heat or intense fire. Containers exposed to intense heat from fires should be kept cool with water to prevent container weakening or rupture. Move container from fire area if this is possible without hazard. Contain fire water run-off if possible. Fire water run-off if not contained may cause environmental damage.

PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, pants, boots and gloves).

6. ACCIDENTAL RELEASE MEASURES: (See Section 15 for Regulatory Information)

PROTECT PEOPLE: Clear non-emergency personnel from area.

ENVIRONMENTAL PRECAUTIONS: This pesticide is toxic to fish. Prevent product from entering sewers and natural waters.

METHODS OF CLEANUP: Use nonreactive absorbent material to contain and clean-up small spills. Large spills report to CHEMTREC and contact Dow AgroSciences for guidance. Prohibit use of hot or sparking equipment in immediate area. Prevent runoff.

7. HANDLING AND STORAGE:

HANDLING: Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Use only as directed on the label.

STORAGE: Store in original container only. Avoid freezing. Store above 40°F. If frozen, poor weed control may result. Do not store near heat or open flame.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION:

These precautions are suggested for conditions with a high potential for exposure. If handling procedures are such that there is only a low potential for exposure, less protection may be needed. Emergency conditions may require additional precautions.

EXPOSURE GUIDELINES: Aromatic 200 (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 and OSHA PEL are 10 ppm TWA, 15 ppm STEL

(Note: naphthalene is a component of the solvent). PELs are in accord with those recommended by OSHA, as in the 1989 revision of PELs.

ENGINEERING CONTROLS: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.

EYE/FACE PROTECTION: Use chemical goggles.

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.

SKIN PROTECTION: Use glove impervious to this material.

9. PHYSICAL AND CHEMICAL PROPERTIES:

BOILING POINT (solvent): 450 to 527 F, 232 to 275°C
VAPOR PRESSURE (solvent): < 1 mm Hg @ 68°F, 20°C
VAPOR DENSITY (solvent): 4.7 (relative to air)
SOLUBILITY IN WATER: Emulsifies in water
SPECIFIC GRAVITY: 1.12 approximately
APPEARANCE: Clear deep orange liquid
ODOR: Aromatic odor pH: (aqueous 50/50) 5.0 to 8.0

10. STABILITY AND REACTIVITY:

CHEMICAL STABILITY: Stable under recommended storage conditions.

CONDITIONS TO AVOID: Avoid freezing

INCOMPATIBILITY WITH OTHER MATERIALS: Avoid contact with strong oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: Hazardous decomposition products depend upon temperature, air supply, and the presence of other materials. Hazardous decomposition products may include but are not limited to: carbon dioxide and monoxide, nitrogen oxides, and fluorinated hydrocarbons.

HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION:

(See section 3 for potential health effects. For detailed toxicological data, write the address shown in Section 1 or call the emergency number)

MUTAGENICITY: For trifluralin, in-vitro mutagenicity studies were negative. Animal mutagenicity studies were predominantly negative.

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12. ECOLOGICAL INFORMATION:

(For detailed ecological data, write the address shown in Section 1 or call the emergency number)

ENVIRONMENTAL FATE:

MOVEMENT & PARTITIONING: Based largely or completely on information for trifluralin. Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5). Potential for mobility in soil is slight (Koc between 2000 and 5000).

DEGRADATION & PERSISTENCE: Based largely or completely on information for trifluralin. Based on the stringent 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.

ECOTOXICOLOGY: Based largely or completely on information for trifluralin. Material is very highly toxic to aquatic organisms on an acute basis (LC50/EC50 <0.1 mg/L in most sensitive species).

13. DISPOSAL CONSIDERATIONS:

DISPOSAL METHOD: Do not contaminate food, feed, or water by storage or disposal. Pesticide wastes are toxic. Improper disposal or excess pesticide, spray mixture, or rinsate is a violation of federal law. If wastes resulting from the use of this product cannot be disposed of according to label instructions, dispose of these wastes at an approved facility. Contact your state pesticide or environmental control agency, or the hazardous waste representative at the nearest EPA regional office for guidance.

14. TRANSPORT INFORMATION:

Environmentally Hazardous Substance, Liquid.
N.O.S./(Trifluralin)/9/ UN3082/PG III/RQ (Trifluralin).

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
TRIFLURALIN (BENZENEAMINE, 2,6-DINITRO-N)	001582-09-8	43 %

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
TRIFLURALIN (BENZENEAMINE, 2,6-DINITRO-N,N-DIP	001582-09-8	NJ2 NJ3 PA1 PA3

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.

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NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

RATINGS:

Health 2
Flammability 2
Reactivity 1

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:

Category:

Chemical	CAS Number	RQ % in Product
Trifluralin	001582-09-8 10	43%

16. OTHER INFORMATION:

MSDS STATUS: Revised Sections 3, 8, 11, 12
Replaces MSDS dated: 2/12/97

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