

MATERIAL SAFETY DATA SHEET



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

Effective Date: 6/28/01
Product Code: 48048
MSDS: 005301

TREFLAN* HFP HERBICIDE

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT: Treflan* HFP Herbicide

COMPANY IDENTIFICATION:

Dow AgroSciences
9330 Zionsville Road
Indianapolis, IN 46268-1189

2. COMPOSITION/INFORMATION ON INGREDIENTS:

Trifluralin: alpha,alpha,alpha- Trifluoro-2,6-dinitro-N,N- dipropyl-p-toluidine	CAS# 001582-09-8	43.0%
Inert Ingredients, Total, Including:		57.0%
Aromatic 200	CAS# 064742-94-5	
Contains Naphthalene	CAS# 000091-20-3	

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 with an aromatic odor. May cause eye and skin irritation. LD₅₀ for skin absorption in rabbits is >5000 mg/kg. May cause allergic skin reaction. Oral LD₅₀ for rats is 3738 mg/kg. Inhalation LC₅₀ for rats is 5.59 mg/L (males) and >6.05 mg/L (females) for 4 hours. Toxic to aquatic organisms.
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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 eye irritation. Corneal injury is unlikely.

SKIN: Short single exposure may cause slight 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 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. The oral LD₅₀ for rats is 3738 mg/kg.

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

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS: For trifluralin, in animals, effects have been reported on the following organs: blood, kidney and liver. For the solvent, in animals, effects have been reported on the following organs: lungs, stomach, thyroid gland and urinary tract. 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 was 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: Flush eyes with plenty of water.

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.

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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: 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 fluorinated hydrocarbons.

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

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 firewater run-off if possible. Firewater 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

ACTION TO TAKE FOR SPILLS/LEAKS: Use non-reactive absorbent material to contain and clean-up small spills. Report large spills to Dow AgroSciences at 800-992-5594. Prohibit use of hot or sparking equipment in immediate area. Prevent runoff.

7. HANDLING AND STORAGE:

PRECAUTIONS TO BE TAKEN IN 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 where a potential for exposure exists. 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. 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:

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.

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EYE/FACE PROTECTION: Use chemical goggles.

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

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:

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

INCOMPATIBILITY (SPECIFIC MATERIALS TO AVOID): Avoid contact with strong oxidizers. Avoid freezing.

HAZARDOUS DECOMPOSITION PRODUCTS: May include but are not limited to carbon dioxide, carbon monoxide, nitrogen oxides, and fluorinated hydrocarbons.

HAZARDOUS POLYMERIZATION: Not known to occur.

11. TOXICOLOGICAL INFORMATION:

MUTAGENICITY: For the major component(s), in-vitro mutagenicity studies were negative. For the active ingredient, animal mutagenicity studies were predominantly negative. For the solvent, animal mutagenicity studies were negative.

12. ECOLOGICAL INFORMATION:

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).

Based largely or completely on information for Aromatic 200. Bioconcentration potential is high (BCF is >3000 or Log Pow between 5 and 7).

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

Based on the 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 Aromatic 200.

Biodegradation may occur slowly under aerobic conditions (in the presence of oxygen).

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). Based largely or completely on information for Aromatic 200.

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).

Material is practically non-toxic to birds on a dietary basis (LC₅₀ is >5000 ppm).

Material is practically non-toxic to birds on an acute basis (LC₅₀ is >2000 mg/kg).

13. DISPOSAL CONSIDERATIONS:

DISPOSAL METHOD: Do not contaminate food, feed, or water by storage or disposal. Wastes are toxic. Improper disposal or excess waste, 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).

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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
Trifluralin	001582-09-8	43%
Naphthalene	000091-20-3	7%

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.

<u>CHEMICAL NAME</u>	<u>CAS NUMBER</u>	<u>LIST</u>
Trifluralin	001582-09-8	NJ2 NJ3 PA1 PA3
Naphthalene	000091-20-3	NJ2 NJ3 PA1 PA3

NJ2=New Jersey Environmental Hazardous Substance (present \geq 1.0%).
NJ3=New Jersey Workplace Hazardous Substance (present \geq 1.0%).
PA1=Pennsylvania Hazardous Substance (present at \geq 1.0%).
PA3=Pennsylvania Environmental Hazardous Substance (present at \geq 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:

Category	Rating
Health	2
Flammability	1
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:

CHEMICAL NAME	CAS NUMBER	RQ	% in PRODUCT
Trifluralin	001582-09-8	10	43%
Naphthalene	000091-20-3	100	7%

16. OTHER INFORMATION:

MSDS STATUS: Revised sections: 2, 3, 4, 8, 11, 12 & 15
Reference: DR-0347-2568
Replaces MSDS dated: 3/30/99
Document Code: D03-047-681
Replaces Document Code: D03-047-680

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