

MATERIAL SAFETY DATA SHEET



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

Effective Date: 4/28/99
Product Code: 31312
MSDS: 004417

SONALAN* HFP HERBICIDE

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT: Sonalan* HFP Herbicide

COMPANY IDENTIFICATION:

Dow AgroSciences
9330 Zionsville Road
Indianapolis, IN 46268-1189

2. COMPOSITION/INFORMATION ON INGREDIENTS:

Ethalfuralin: N-Ethyl-N -(2-methyl-2-propenyl)-2,6- dinitro-4-(trifluoromethyl) benzenamine	CAS# 055283-68-6	31.5%
Inert Ingredients, total, including: Monochlorotoluene (1)	CAS# 025168-05-2	68.5%

(1)NOTE: Listed as chloromethylbenzene under the Pennsylvania and New Jersey Right-to-Know Law

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. Light orange liquid with aromatic odor. May cause moderate eye irritation with corneal injury and drying of the skin. Prolonged exposure may cause severe skin irritation. Excessive exposure may cause narcotic or anesthetic effects. The LD₅₀ for skin absorption in rabbits is >5 ml/kg; oral LD₅₀ for rats is 3300 mg/kg; the LC₅₀ for inhalation in rats is 5.0 mg/l for 4 hours. Product is combustible. Do not use or store near open flame. Do not reuse tanks containing phenoxy-type herbicides for Sonalan products. Avoid freezing. Toxic to fish.

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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 with corneal injury. The solvent vapors may irritate eyes.

SKIN: May cause drying or flaking of skin. Prolonged exposure may cause severe skin irritation. Prolonged or frequently repeated skin contact may cause allergic skin reactions in some individuals. 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 > 5 ml/kg.

INGESTION: Single dose oral toxicity is considered to be low. The oral LD₅₀ for rats is approximately 3300 mg/kg. Small amounts swallowed incidental to normal handling operations are not likely to cause injury; swallowing amounts larger than that may cause injury. If aspirated (liquid enters the lung), may be rapidly absorbed through the lungs and result in injury to other body systems.

INHALATION: A single prolonged (hours) inhalation exposure is not likely to cause adverse effects. The LC₅₀ for rats was 5.0 mg/l for 4 hours.

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS: Contains ethalfuralin, which in animals, has been shown to cause liver, kidney, thyroid and blood effects. For the solvent, signs and symptoms of excessive exposure may be anesthetic or narcotic effects.

CANCER INFORMATION: Ethalfuralin did not cause tumors in long term studies; however, an increase in benign mammary fibroadenomas was seen in female rats.

TERATOLOGY (BIRTH DEFECTS): Ethalfuralin and chlorotoluene have caused birth defects in lab animals only at doses toxic to the mother.

REPRODUCTIVE EFFECTS: Ethalfuralin 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: Do not induce vomiting. Call a physician and/or transport to medical facility immediately.

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

NOTE TO PHYSICIAN: Because rapid absorption may occur through lungs if aspirated and cause systemic effects, the decision of whether to induce vomiting or not should be made by a 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: 119°F, 48°C
METHOD USED: SCC

FLAMMABLE LIMITS

LFL: 1.5 +/- 0.1 volume % at 100°C, in air
UFL: 8.5 +/- 0.5 volume % at 120°C, in air

EXTINGUISHING MEDIA: Use water, CO₂ or dry chemicals.

FIRE AND EXPLOSION HAZARDS: Combustible liquid. Emits toxic fumes when heated to decomposition. Closed containers may explode due to pressure buildup when subjected to excessive heat or fire. Ethalfluralin itself may generate significant pressures when exposed to elevated temperature. Although ethalfluralin in solution is not likely to exhibit this property, caution should be exercised in situations which result in loss of solvent.

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

6. ACCIDENTAL RELEASE MEASURES:

ACTION TO TAKE FOR SPILLS: Use compatible absorbent material to contain and cleanup small spills and dispose as waste. Report large spills to Dow AgroSciences at 800-992-5994. 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: Keep out of reach of children. Sonalan HFP formulation is irritating to the eyes, and skin. Avoid breathing vapors. Avoid contact with skin, eyes, or clothing. Do not contaminate foodstuffs and feed. Harmful if swallowed or absorbed through the skin. Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Read product label for personal protective equipment which may be required by the Worker Protection Standard for early entry to treated areas.

Storage: Store in original container.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION:

These precautions are suggested for conditions where a potential for exposure exists. Emergency conditions may require additional precautions.

EXPOSURE GUIDELINE(S):

Ethalfluralin: Dow AgroSciences Industrial Hygiene Guide is 3 mg/M³.

o-Chlorotoluene: American Conference of Governmental Industrial Hygienists (ACGIH) threshold limit value (TLV) and the Occupational Safety and Health Administration (OSHA) permissible exposure limit (PEL) are 50 ppm. 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.

RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guidelines.

SKIN PROTECTION: When prolonged or frequently repeated contact could occur, use protective clothing impervious to this material. Selection of specific items, such as, gloves, boots, apron, or full-body suit will depend on operation.

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EYE/FACE PROTECTION: Use chemical goggles. If vapor exposure causes eye discomfort, use a NIOSH approved full-face respirator.

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

9. PHYSICAL AND CHEMICAL PROPERTIES:

BOILING POINT: (@ 1 atmosphere) 251°F, 122°C
VAPOR PRESSURE: Based on solvent, estimated to be approximately 10 mmHg @ 43°C, 109°F
VAPOR DENSITY: 1.030 relative to air at 25°C
SOLUBILITY IN WATER: Emulsifies in water
SPECIFIC GRAVITY: 1.15 @ 20°C, 68°F
APPEARANCE: Light orange liquid
ODOR: Aromatic odor
pH: (aqueous 50/50) 5.5

10. STABILITY AND REACTIVITY:

STABILITY: (CONDITIONS TO AVOID) Combustible liquid. Do not use or store near open flame. Tanks that have been used for phenoxy-type herbicides should not be used for Sonalan products. Heating ethalfluralin technical to temperatures above 70°C (158°F) can lead to violent reaction with rapid pressure buildup.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID)
Avoid freezing.

HAZARDOUS DECOMPOSITION PRODUCTS: Hydrogen chloride, hydrogen fluoride, and nitrogen oxides may be formed.

HAZARDOUS POLYMERIZATION: Not known to occur.

11. TOXICOLOGICAL INFORMATION:

MUTAGENICITY: For ethalfluralin, in vitro mutagenicity studies were predominantly negative and animal mutagenicity studies were negative. Animal mutagenicity studies were negative for monochlorotoluene.

12. ECOLOGICAL INFORMATION:

ENVIRONMENTAL FATE:

MOVEMENT & PARTITIONING:

Based largely or completely on data for major components. Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

DEGRADATION & PERSISTENCE:

Based largely or completely on information for ethalfluralin. Degradation is expected in the soil environment within months to years.

Based on information for monochlorotoluene.

Material is expected to biodegrade only very slowly (in the environment).

Fails to pass OECD/EEC tests for ready biodegradability.

Biodegradation under aerobic laboratory conditions is below detectable limits.

ECOTOXICOLOGY:

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

Based on information for monochlorotoluene.

Material is slightly toxic to aquatic organisms on an acute basis (LC₅₀/EC₅₀ between 10 and 100 mg/L in most sensitive species).

13. DISPOSAL CONSIDERATIONS:

DISPOSAL METHOD: Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of federal law. If these wastes cannot be disposed of according to label instructions, contact your state pesticide or environmental control agency, or the hazardous waste representative at the nearest EPA regional office for guidance.

14. TRANSPORT INFORMATION:

For DOT regulatory information, if required, consult transportation regulations, product shipping papers, or consult 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: 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:

An immediate health hazard
A delayed health hazard
A fire 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
Chloromethylbenzene	025168-05-2	NJ1 NJ3 PA1

NJ1=New Jersey Special Health Hazard Substance (present at greater than or equal to 0.1%).

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%).

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	2
Reactivity	1

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: Changed company name and telephone number
Revised sections: 3, 6, 8, 10, 14
Reference: DR-0333-1611
Replaces MSDS dated: 9/11/97
Document Code: D03-042-766
Replaces Document Code: D03-031-312

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