

# MATERIAL SAFETY DATA SHEET



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

## STARANE\* HERBICIDE

Effective Date: 1/29/04  
Product Code: 20982  
MSDS: 006301

### 1. PRODUCT AND COMPANY IDENTIFICATION:

**PRODUCT:** Starane\* Herbicide

#### COMPANY IDENTIFICATION:

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

### 2. COMPOSITION/INFORMATION ON INGREDIENTS:

Fluroxypyr	CAS # 081406-37-3	26.2%
1-Methylheptyl Ester		
Inert ingredients, total, including:		73.8%
1-Methyl-2-pyrrolidinone	CAS # 000872-50-4	
Petroleum Solvent	CAS # 064742-94-5	
(Contains Naphthalene)	CAS # 000091-20-3	

### 3. HAZARDOUS IDENTIFICATIONS:

#### EMERGENCY OVERVIEW

Brown liquid with no odor. May cause eye irritation and corneal injury. May cause skin irritation, even a burn. Repeated contact may cause drying or flaking of the skin. LD<sub>50</sub> for skin absorption >2000 mg/kg. Oral LD<sub>50</sub> is 3162 & 3738 mg/kg. Inhalation LC<sub>50</sub> is >6.2 mg/L for 4 hours.  
**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 moderate eye irritation. May cause slight corneal injury. Vapor may cause eye irritation experienced as mild discomfort and redness.

**SKIN:** Brief contact is essentially non-irritating to skin. Prolonged or repeated exposure may cause skin irritation, even a burn. Repeated contact may cause drying or flaking of skin. Prolonged skin contact is unlikely to result in absorption of harmful amounts. The LD<sub>50</sub> for skin absorption is >2000 mg/kg. Did not cause allergic skin reactions when tested in guinea pigs.

**INGESTION:** Low toxicity if swallowed. The oral LD<sub>50</sub> for rats is 3738 mg/kg (males) and 3162 mg/kg (females). Small amounts swallowed incidental to normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. Aspiration into the lungs may occur during ingestion or vomiting, causing lung damage or even death due to chemical pneumonia.

**INHALATION:** No adverse effects are anticipated from single exposure to vapor. The LC<sub>50</sub> for rats is >6.2 mg/L for 4 hours. Excessive exposure to solvent may cause respiratory irritation and central nervous system depression. May cause nausea or vomiting.

#### SYSTEMIC (OTHER TARGET ORGAN) EFFECTS:

Effects have been reported on the following organs: bone marrow, kidney, liver and respiratory tract.

**CANCER INFORMATION:** Fluroxypyr did not cause cancer in laboratory animals.

**TERATOLOGY (BIRTH DEFECTS):** 1-Methyl-2-pyrrolidinone caused toxic effects to the fetus in laboratory animals at high dose levels with either mild or undetectable maternal toxicity. Fluroxypyr did not cause birth defects; however, in laboratory animals, other toxic effects to the fetus have been seen.

**REPRODUCTIVE EFFECTS:** Fluroxypyr did not interfere with reproduction in laboratory animal studies.

### 4. FIRST AID:

**EYES:** Immediately flush eyes with water; remove contact lenses, if present, after the first 5 minutes, then continue flushing eyes for at least 15 minutes. Obtain medical attention without delay, preferably from an ophthalmologist.

**SKIN:** Wash skin with plenty of water.

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

**INHALATION:** Move person 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 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. If burn is present, treat as any thermal burn, after decontamination. 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:** 145°F (63°C)

**METHOD USED:** PMCC

#### FLAMMABLE LIMITS

LFL: Not determined

UFL: Not determined

**EXTINGUISHING MEDIA:** Foam, CO<sub>2</sub>, or dry chemical.

**FIRE & EXPLOSION HAZARDS:** Foam fire-extinguishing system is preferred because uncontrolled water can spread possible contamination. Toxic irritating gases and fumes will be formed.

**FIRE-FIGHTING EQUIPMENT:** Wear positive pressure self-contained breathing apparatus.

### 6. ACCIDENTAL RELEASE MEASURES:

**ACTION TO TAKE FOR SPILLS/LEAKS:** Absorb small spills with dry material such as sand, ZORBALL, or dirt. Wash thoroughly after handling. Contain large spills by diking to keep out of sewers. Report large spills to Dow AgroSciences at 800-992-5994.

### 7. HANDLING AND STORAGE:

**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:** See product label. Keep out of reach of children. Do not swallow. Avoid skin and eye contact. Avoid breathing mist or vapors. Store in original container with the lid tightly closed. Handle concentrate in ventilated area. Keep away from food, feedstuffs, and domestic water supplies. Wash thoroughly after handling.

### 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(S):

1-Methyl-2-pyrrolidinone: AIHA WEEL is 10 ppm, Skin. Interim Dow AgroSciences Industrial Hygiene Guide is 500 ppm.

Naphthalene: ACGIH TLV is 10 ppm TWA, 15 ppm STEL, Skin, A4. OSHA PEL is 10 ppm TWA.

Fluroxypyr 1-methylheptyl ester: Dow AgroSciences Industrial Hygiene Guide is 10 mg/M<sup>3</sup>.

A 'skin' notation following the exposure guideline refers to the potential for dermal absorption of the material including mucous membranes and the eyes either by contact with vapors or by direct skin contact. It is intended to alert the reader that inhalation may not be the only route of exposure and that measures to minimize dermal exposure 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, use a NIOSH approved air-purifying or positive-pressure supplied-air respirator depending on the potential airborne concentration.

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

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

**BOILING POINT:** 182°F (202°C)  
**VAPOR PRESSURE:** Not determined  
**DENSITY:** 0.984-0.995 @ 20°C  
**SOLUBILITY IN WATER:** Not determined  
**SPECIFIC GRAVITY:** 0.99 @ 25°C  
**APPEARANCE:** Dark brown liquid  
**ODOR:** None  
**FREEZE POINT:** -10°C  
**pH:** 5.5 (as 1% aqueous sol)

### 10. STABILITY AND REACTIVITY:

**STABILITY:** (CONDITIONS TO AVOID) This product is stable under normal use and storage conditions.

**INCOMPATIBILITY:** (SPECIFIC MATERIALS TO AVOID)  
Avoid acids, oxidizing and base materials.

**HAZARDOUS DECOMPOSITION PRODUCTS:** Under fire conditions, oxides of nitrogen, hydrogen chloride, and hydrogen fluoride may be produced.

**HAZARDOUS POLYMERIZATION:** Not known to occur.

### 11. TOXICOLOGICAL INFORMATION:

**MUTAGENICITY:** For the solvent, in-vitro genetic toxicity studies were negative in some cases and positive in other cases. For fluroxypyr, in-vitro and animal genetic toxicity studies were negative.

### 12. ECOLOGICAL INFORMATION:

#### ENVIRONMENTAL FATE:

#### ECOTOXICOLOGY:

Material is practically non-toxic to birds on an acute basis (LD<sub>50</sub> is >2000 mg/kg in most sensitive species tested). Acute oral LD<sub>50</sub> for bobwhite (*Colinus virginianus*) is >2250 mg/kg.

### 13. DISPOSAL CONSIDERATIONS:

**DISPOSAL METHOD:** Do not contaminate food, feed, or water by storage or disposal. Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of federal law. Pesticide, spray mixture, or rinse water that cannot be used according to label instructions must be disposed of in accordance with applicable local, state or federal requirements. Contact your state pesticide or environmental control agency, or the hazardous waste representative at the nearest EPA regional office for guidance.

### 14. TRANSPORT INFORMATION:

#### U.S. DEPARTMENT OF TRANSPORTATION (DOT) INFORMATION:

For non-bulk shipments by all modes of transportation:  
This material is not regulated for transport.

For bulk shipments by all land, rail and vessel:  
COMBUSTIBLE LIQUID, N.O.S./(CONTAINS NAPHTHALENE)/COMBUSTIBLE LIQUID/NA1993/PG III/RQ(NAPHTHALENE)

### 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
Naphthalene	000091-20-3	8.35%
1-methyl-2-Pyrrolidinone	000872-50-4	5%

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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:

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
Naphthalene	000091-20-3	NJ2 NJ3 PA1 PA3
1-methyl-2-Pyrrolidinone	000872-50-4	NJ2 PA1
Proprietary Ingredient	Proprietary	NJ3 PA1

NJ2=New Jersey Environmental Hazardous Substance (present at > or = to 1.0%).  
NJ3=New Jersey Workplace Hazardous Substance (present at > or = or equal to 1.0%).  
PA1=Pennsylvania Hazardous Substance (present at > or = to 1.0%).  
PA3=Pennsylvania Environmental Hazardous Substance (present at > or = 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):** 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
Proprietary Ingredient	Proprietary	1000	5.5%
Naphthalene	000091-20-3	100	8.35%

**RCRA Categorization:** USEPA Hazardous Waste # Naphthalene = U165

### 16. OTHER INFORMATION:

**MSDS STATUS:** Revised Sections: 14  
Reference: DR-0360-6620  
Replaces MSDS Dated 7/23/03  
Document Code: D03-075-003  
Replaces Document Code: D03-075-002

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

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