

# MATERIAL SAFETY DATA SHEET



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

## STARANE\* + SWORD® HERBICIDE

Effective Date: 2/28/01  
Product Code: 96669  
MSDS: 006408

### 1. PRODUCT AND COMPANY IDENTIFICATION:

**PRODUCT:** Starane\* + Sword® Herbicide

#### COMPANY IDENTIFICATION:

Dow AgroSciences  
9330 Zionsville Road  
Indianapolis, IN 46268-1189

### 2. COMPOSITION/INFORMATION ON INGREDIENTS:

Fluroxypyr 1-Methyl- heptyl Ester	CAS # 081406-37-3	12%
MCPA 2-Ethylhexyl Ester	CAS # 026544-29-7	52%
Inert Ingredients, Total		36%

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. Amber liquid with an aromatic odor. May cause moderate eye irritation. Short single exposure may cause slight skin irritation, or drying or flaking of the skin. The LD<sub>50</sub> for skin absorption in rabbits is >5000 mg/kg. The oral LD<sub>50</sub> for rats is 1605 mg/kg (males) and 1829 (females). The LC<sub>50</sub> for rats is >6.17 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. Corneal injury is unlikely.

**SKIN:** Short single exposure may cause slight skin irritation. May cause drying or flaking of the skin. A single prolonged exposure is not likely to result in the material being absorbed through the skin in harmful amounts. The LD<sub>50</sub> 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. The oral LD<sub>50</sub> for rats is 1605 mg/kg (males) and 1829 mg/kg (females). Small amounts swallowed incidental to normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

**INHALATION:** Single exposure to vapors is not likely to be hazardous. The LC<sub>50</sub> for rats is >6.17 mg/L for 4 hours.

**SYSTEMIC (OTHER TARGET ORGAN) EFFECTS:** In animals, effects have been reported on the following organs: blood, central nervous system, kidney, liver, and testes. Excessive exposure to solvent(s) may cause respiratory irritation and central nervous system depression.

**CANCER INFORMATION:** Available data are inadequate to evaluate carcinogenicity. Contains component(s), which have been shown to cause cancer in some laboratory animals.

**TERATOLOGY (BIRTH DEFECTS):** Contains component(s), which caused birth defects in laboratory animals only at doses toxic to the mother.

**REPRODUCTIVE EFFECTS:** Contains component(s), which have been shown to interfere with fertility in animal studies (males).

### 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.

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### 5. FIRE FIGHTING MEASURES:

**FLASH POINT:** 71.5°C  
**METHOD USED:** TCC

#### FLAMMABLE LIMITS

LFL: Not determined  
UFL: Not determined

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

**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 clay, 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):

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

**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 respirator for organic vapors.

**SKIN PROTECTION:** Use gloves impervious to this material.

**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:** Not determined  
**VAPOR PRESSURE:** Not determined  
**DENSITY:** 1.03 g/mL  
**SOLUBILITY IN WATER:** Not determined  
**SPECIFIC GRAVITY:** Not determined  
**APPEARANCE:** Amber liquid  
**ODOR:** Aromatic  
**pH:** 3.7 @ 1% w/v in purified water

### 10. STABILITY AND REACTIVITY:

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

**INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID)** None known.

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

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

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### 11. TOXICOLOGICAL INFORMATION:

**MUTAGENICITY:** For the components tested in-vitro and animal mutagenicity studies were negative in some cases and positive in other cases.

### 12. ECOLOGICAL INFORMATION:

#### ENVIRONMENTAL FATE

#### MOVEMENT & PARTITIONING:

Based on information for fluroxypyr methylheptyl ester. Bioconcentration potential is low (BCF is <100 or Log Pow <3).

#### DEGRADATION & PERSISTENCE:

Based on information for MCPA Acid. Biodegradation under aerobic laboratory conditions is below detectable limits (<2.5%)

Biodegradation rate may increase in soil and/or water with acclimation.

Based on information for fluroxypyr methylheptyl ester.

Under aerobic soil conditions the half-life is 7 days.

The hydrolysis half-life is 12.8-16.5 hours.

#### ECOTOXICOLOGY:

Based on information for MCPA acid.

Material is practically non-toxic to aquatic organisms on an acute basis (LC<sub>50</sub>/EC<sub>50</sub> is >100 mg/L in most sensitive species).

Based on information for fluroxypyr methylheptyl ester.

The EC<sub>50</sub> is above the water solubility.

### 13. DISPOSAL CONSIDERATIONS:

**DISPOSAL METHOD:** Do not contaminate food, feed, or water by storage or disposal. Wastes are toxic. Improper disposal of excess waste is a violation of federal law. If wastes cannot be used according to the label directions, dispose of in accordance with all 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:

For DOT regulatory information, if required, consult transportation regulations, product-shipping papers or contact your Dow AgroSciences representative.

### 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

**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:** This product is not known to contain any substances subject to the disclosure requirements of New Jersey and Pennsylvania.

**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.

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### OSHA HAZARD COMMUNICATION STANDARD:

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

### 16. OTHER INFORMATION:

**MSDS STATUS:** Revised Sections: 3, 8, & 12  
Reference: DR-0359-0349  
Replaces MSDS Dated: 3/10/99  
Document Code: D03-051-945  
Replaces Document Code: D03-051-944

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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