

# SAFETY DATA SHEET

DOW AGROSCIENCES LIMITED

Safety Data Sheet according to Reg. (EU) No 453/2010

**Product name:** STARANE™ 2 Herbicide

**Revision Date:** 27.11.2014

**Version:** 4.2

**Print Date:** 27.11.2014

DOW AGROSCIENCES LIMITED encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

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## SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

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### 1.1 Product identifiers

**Product name:** STARANE™ 2 Herbicide

### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Identified uses:** Plant Protection Product

### 1.3 Details of the supplier of the safety data sheet

#### COMPANY IDENTIFICATION

DOW AGROSCIENCES LIMITED

LATCHMORE COURT

BRAND STREET

HITCHIN

England

SG5 1NH

UNITED KINGDOM

**Customer Information Number:**

[SDSQuestion@dow.com](mailto:SDSQuestion@dow.com)

### 1.4 EMERGENCY TELEPHONE NUMBER

**24-Hour Emergency Contact:** 0031 115 694 982

**Local Emergency Contact:** 00 31 115 69 4982

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## SECTION 2. HAZARDS IDENTIFICATION

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### 2.1 Classification of the substance or mixture

#### Classification according to Regulation (EC) No 1272/2008:

Flammable liquids - Category 3 - H226

Skin irritation - Category 2 - H315

Eye irritation - Category 2 - H319

Skin sensitisation - Category 1 - H317

Aspiration hazard - Category 1 - H304

Specific target organ toxicity - single exposure - Category 3 - Respiratory tract irritant. - H335

Specific target organ toxicity - single exposure - Category 3 - Narcotic effects. - H336

Acute aquatic toxicity - Category 1 - H400

Chronic aquatic toxicity - Category 1 - H410

For the full text of the H-Statements mentioned in this Section, see Section 16.

**Classification according to EU Directives 67/548/EEC or 1999/45/EC:**

R10

Harmful - R65

Irritant - R36/37/38

R43

R67

Dangerous for the environment - R51/53

For the full text of the R-phrases mentioned in this Section, see Section 16.

**2.2 Label elements**

**Labelling according to Regulation (EC) No 1272/2008:**

**Hazard pictograms**



**Signal word: DANGER**

**Hazard statements**

H226 Flammable liquid and vapour.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H317 May cause an allergic skin reaction.

H304 May be fatal if swallowed and enters airways.

H335 May cause respiratory irritation.

H336 May cause drowsiness or dizziness.

H410 Very toxic to aquatic life with long lasting effects.

**Supplemental Hazard Statements**

EUH401 To avoid risks to human health and the environment, comply with the instructions for use.

**Precautionary statements**

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P280 Wear protective gloves/ eye protection/ face protection.

P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P331 Do NOT induce vomiting.

P501 Dispose of contents/container to a licensed hazardous-waste disposal contractor or collection site except for empty clean containers which can be disposed of as non-hazardous waste.

**Contains** Hydrocarbons, C9, aromatics; Hydrocarbons, C10, aromatics, <1% naphthalene

### 2.3 Other hazards

no data available

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

### 3.2 Mixture

This product is a mixture.

CASRN / EC-No. / Index-No.	REACH Registration Number	Concentration	Component	Classification: REGULATION (EC) No 1272/2008
<b>CASRN</b> 81406-37-3 <b>EC-No.</b> 279-752-9 <b>Index-No.</b> 607-272-00-5	–	29.7%	fluroxypyr-meptyl (ISO)	Aquatic Acute - 1 - H400 Aquatic Chronic - 1 - H410
<b>CASRN</b> Not available <b>EC-No.</b> 918-668-5 <b>Index-No.</b> –	01-2119455851-35	> 60.0 - < 70.0 %	Hydrocarbons, C9, aromatics	Flam. Liq. - 3 - H226 STOT SE - 3 - H336 STOT SE - 3 - H335 Asp. Tox. - 1 - H304 Aquatic Chronic - 2 - H411
<b>CASRN</b> 68953-96-8 <b>EC-No.</b> 273-234-6 <b>Index-No.</b> –	01-2119964467-24	< 5.0 %	Benzenesulfonic acid, mono-C11-13- branched alkyl derivs., calcium salts	Skin Irrit. - 2 - H315 Eye Dam. - 1 - H318 Aquatic Chronic - 2 - H411
<b>CASRN</b> 111-27-3 <b>EC-No.</b> 203-852-3 <b>Index-No.</b> 603-059-00-6	01-2119487967-12	< 5.0 %	hexan-1-ol	Flam. Liq. - 3 - H226 Acute Tox. - 4 - H302 Eye Irrit. - 2 - H319 STOT SE - 3 - H336
<b>CASRN</b> Not Available <b>EC-No.</b> 918-811-1 <b>Index-No.</b> –	01-2119463583-34	< 1.0 %	Hydrocarbons, C10, aromatics, <1% naphthalene	STOT SE - 3 - H336 Asp. Tox. - 1 - H304 Aquatic Chronic - 2 - H411

For the full text of the H-Statements mentioned in this Section, see Section 16.

CASRN / EC-No. / Index-No.	Concentration	Component	Classification: 67/548/EEC
<b>CASRN</b> 81406-37-3 <b>EC-No.</b> 279-752-9 <b>Index-No.</b> 607-272-00-5	29.7%	fluroxypyr-meptyl (ISO)	N - R50 - R53
<b>CASRN</b> Not available <b>EC-No.</b> 918-668-5 <b>Index-No.</b> -	> 60.0 - < 70.0 %	Hydrocarbons, C9, aromatics	R10 Xn - R65 Xi - R37 R66 R67 N - R51/53
<b>CASRN</b> 68953-96-8 <b>EC-No.</b> 273-234-6 <b>Index-No.</b> -	< 5.0 %	Benzenesulfonic acid, mono-C11-13- branched alkyl derivs., calcium salts	Xi - R38 - R41 N - R51/53
<b>CASRN</b> 111-27-3 <b>EC-No.</b> 203-852-3 <b>Index-No.</b> 603-059-00-6	< 5.0 %	hexan-1-ol	Xn - R22 R10 Xi - R36
<b>CASRN</b> Not Available <b>EC-No.</b> 918-811-1 <b>Index-No.</b> -	< 1.0 %	Hydrocarbons, C10, aromatics, <1% naphthalene	Xn - R65 N - R51/53 R66 R67

For the full text of the R-phrases mentioned in this Section, see Section 16.

## SECTION 4. FIRST AID MEASURES

### 4.1 Description of first aid measures

**General advice:** First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

**Inhalation:** Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice. If breathing is difficult, oxygen should be administered by qualified personnel.

**Skin contact:** Take off contaminated clothing. Wash skin with soap and plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. Wash clothing before reuse. Shoes and other leather items which cannot be decontaminated should be disposed of properly.

**Eye contact:** Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice. Suitable emergency eye wash facility should be available in work area.

**Ingestion:** Immediately call a poison control center or doctor. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give any liquid to the person. Do not give anything by mouth to an unconscious person.

**4.2 Most important symptoms and effects, both acute and delayed:** Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

**4.3 Indication of any immediate medical attention and special treatment needed**

**Notes to physician:** Skin contact may aggravate preexisting dermatitis. Maintain adequate ventilation and oxygenation of the patient. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. The decision of whether to induce vomiting or not should be made by a physician. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

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## SECTION 5. FIREFIGHTING MEASURES

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### 5.1 Extinguishing media

**Suitable extinguishing media:** Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

**Unsuitable extinguishing media:** no data available

### 5.2 Special hazards arising from the substance or mixture

**Hazardous combustion products:** During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Carbon monoxide. Carbon dioxide. Hydrogen fluoride.

**Unusual Fire and Explosion Hazards:** Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Dense smoke is produced when product burns.

### 5.3 Advice for firefighters

**Fire Fighting Procedures:** Keep people away. Isolate fire and deny unnecessary entry. Consider feasibility of a controlled burn to minimize environment damage. Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Burning liquids may be extinguished by dilution with water.

Do not use direct water stream. May spread fire. Eliminate ignition sources. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

**Special protective equipment for firefighters:** Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

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## SECTION 6. ACCIDENTAL RELEASE MEASURES

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**6.1 Personal precautions, protective equipment and emergency procedures:** Isolate area. Keep unnecessary and unprotected personnel from entering the area. Keep upwind of spill. Ventilate area of leak or spill. No smoking in area. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Vapor explosion hazard. Keep out of sewers. Refer to section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

**6.2 Environmental precautions:** Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

**6.3 Methods and materials for containment and cleaning up:** Contain spilled material if possible. Pump with explosion-proof equipment. If available, use foam to smother or suppress. Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

**6.4 Reference to other sections:** References to other sections, if applicable, have been provided in the previous sub-sections.

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## SECTION 7. HANDLING AND STORAGE

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**7.1 Precautions for safe handling:** Keep out of reach of children. Keep away from heat, sparks and flame. Do not swallow. Avoid contact with eyes, skin, and clothing. Avoid breathing vapor or mist. Avoid prolonged or repeated contact with skin. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. No smoking, open flames or sources of ignition in handling and storage area. Electrically ground and bond all equipment. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Use of non-sparking or explosion-proof equipment may be necessary, depending upon the type of operation. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

**7.2 Conditions for safe storage, including any incompatibilities:** Store in a dry place. Store in original container. Keep container tightly closed when not in use. Do not store near food, foodstuffs, drugs or potable water supplies. Minimize sources of ignition, such as static build-up, heat, spark or flame.

#### Storage stability

To maintain product quality, recommended storage temperature is > 0 °C

**7.3 Specific end use(s):** Refer to product label.

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## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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### 8.1 Control parameters

Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
fluroxypyr-meptyl (ISO)	Dow IHG	TWA	10 mg/m <sup>3</sup>
hexan-1-ol	US WEEL	TWA	40 ppm

RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.

### 8.2 Exposure controls

**Engineering controls:** Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

#### Individual protection measures

**Eye/face protection:** Use chemical goggles. Chemical goggles should be consistent with EN 166 or equivalent.

#### Skin protection

**Hand protection:** Use chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Styrene/butadiene rubber. Viton. Examples of acceptable glove barrier materials include: Butyl rubber. Chlorinated polyethylene. Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

**Other protection:** Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

**Respiratory protection:** Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use an approved respirator. Selection of air-purifying or positive-pressure supplied-air will depend on the specific operation and the potential airborne

concentration of the material. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus. If vapors are strong enough to be irritating to the nose, or eyes, the OEL is probably being exceeded. Special ventilation or respiratory protection may be required.

Use the following CE approved air-purifying respirator: Organic vapor cartridge with a particulate pre-filter, type AP2.

#### Environmental exposure controls

See SECTION 7: Handling and storage and SECTION 13: Disposal considerations for measures to prevent excessive environmental exposure during use and waste disposal.

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## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

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### 9.1 Information on basic physical and chemical properties

#### Appearance

Physical state	Liquid.
Color	Brown
Odor	Aromatic
Odor Threshold	No test data available
pH	5.3 1% CIPAC MT 75.2 (1% aqueous suspension)
Melting point/range	Not applicable
Freezing point	No test data available
Boiling point (760 mmHg)	No test data available
Flash point	<b>closed cup</b> 55 °C CIPAC MT 12
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammability (solid, gas)	Not Applicable
Lower explosion limit	No test data available
Upper explosion limit	No test data available
Vapor Pressure	No test data available
Relative Vapor Density (air = 1)	No test data available
Relative Density (water = 1)	0.9698 at 20 °C <i>Pyknometer</i>
Water solubility	emulsifiable
Partition coefficient: n-octanol/water	no data available
Auto-ignition temperature	442 °C <i>EC Method A15</i>
Decomposition temperature	No test data available
Dynamic Viscosity	No test data available
Kinematic Viscosity	2.96 mm <sup>2</sup> /s at 20 °C <i>ASTM D455</i>
Explosive properties	No No <i>EEC A14</i>
Oxidizing properties	No test data available

### 9.2 Other information

Liquid Density	0.9698 g/cm <sup>3</sup> at 20 °C <i>Pyknometer</i>
Molecular weight	no data available
Surface tension	27.0 mN/m at 25 °C <i>EC Method A5</i>



NOTE: The physical data presented above are typical values and should not be construed as a specification.

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## SECTION 10. STABILITY AND REACTIVITY

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**10.1 Reactivity:** No dangerous reaction known under conditions of normal use.

**10.2 Chemical stability:** Thermally stable at typical use temperatures.

**10.3 Possibility of hazardous reactions:** Polymerization will not occur.

**10.4 Conditions to avoid:** Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems. Avoid direct sunlight.

**10.5 Incompatible materials:** Avoid contact with: Strong acids. Strong bases. Strong oxidizers.

**10.6 Hazardous decomposition products:** Decomposition products depend upon temperature, air supply and the presence of other materials. Toxic gases are released during decomposition.

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## SECTION 11. TOXICOLOGICAL INFORMATION

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*Toxicological information on this product or its components appear in this section when such data is available.*

### 11.1 Information on toxicological effects

#### Acute toxicity

##### Acute oral toxicity

Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

As product:

LD50, rat, male, > 2,000 - 3,500 mg/kg

##### Acute dermal toxicity

Prolonged skin contact is unlikely to result in absorption of harmful amounts.

As product:

LD50, rat, male and female, > 5,000 mg/kg

##### Acute inhalation toxicity

Vapor concentrations are attainable which could be hazardous on single exposure. May cause respiratory irritation and central nervous system depression. Symptoms may include headache, dizziness and drowsiness, progressing to incoordination and unconsciousness.

As product: The LC50 has not been determined.

#### Skin corrosion/irritation

Brief contact may cause severe skin irritation with pain and local redness.

May cause drying and flaking of the skin.

**Serious eye damage/eye irritation**

May cause pain disproportionate to the level of irritation to eye tissues.

May cause moderate eye irritation.

May cause slight corneal injury.

**Sensitization**

Has caused allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:

No relevant data found.

**Specific Target Organ Systemic Toxicity (Single Exposure)**

May cause respiratory irritation.

May cause drowsiness or dizziness.

**Specific Target Organ Systemic Toxicity (Repeated Exposure)**

For the active ingredient(s):

Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

Based on information for component(s):

In animals, effects have been reported on the following organs:

Kidney.

Liver.

Blood.

Eye.

Gastrointestinal tract.

Respiratory tract.

For the active ingredient(s):

Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

**Carcinogenicity**

For the active ingredient(s): Did not cause cancer in laboratory animals.

For the minor component(s): Has caused cancer in laboratory animals. However, the relevance of this to humans is unknown.

**Teratogenicity**

For the active ingredient(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.

For the solvent(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Has caused birth defects in lab animals only at doses producing severe toxicity in the mother.

**Reproductive toxicity**

For the solvent(s): In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals. In animal studies, active ingredient did not interfere with reproduction.

**Mutagenicity**

For the active ingredient(s): In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

**Aspiration Hazard**

May be fatal if swallowed and enters airways.

**COMPONENTS INFLUENCING TOXICOLOGY:**

**fluroxypyr-meptyl (ISO)**

**Acute inhalation toxicity**

Prolonged exposure is not expected to cause adverse effects. Dust may cause irritation to upper respiratory tract (nose and throat).

Maximum attainable concentration. LC50, rat, male and female, 4 Hour, dust/mist, > 1.16 mg/l No deaths occurred at this concentration.

**Hydrocarbons, C9, aromatics**

**Acute inhalation toxicity**

Vapor concentrations are attainable which could be hazardous on single exposure. May cause respiratory irritation and central nervous system depression. Symptoms may include headache, dizziness and drowsiness, progressing to incoordination and unconsciousness.

LC50, rat, 4 Hour, > 10.2 mg/l

**Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., calcium salts**

**Acute inhalation toxicity**

The LC50 has not been determined.

**hexan-1-ol**

**Acute inhalation toxicity**

No adverse effects are anticipated from single exposure to vapor. Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs.

LC50, rat, male and female, 1 Hour, vapour, > 21 mg/l No deaths occurred at this concentration.

**Hydrocarbons, C10, aromatics, <1% naphthalene**

**Acute inhalation toxicity**

Prolonged excessive exposure may cause adverse effects. May cause central nervous system effects. Symptoms may include headache, dizziness and drowsiness, progressing to incoordination and unconsciousness. Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs.

As product: The LC50 has not been determined.

For similar material(s): LC50, rat, 4 Hour, vapour, > 4.688 mg/l

Maximum attainable concentration.

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**SECTION 12. ECOLOGICAL INFORMATION**

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*Ecotoxicological information on this product or its components appear in this section when such data is available.*

## 12.1 Toxicity

### Acute toxicity to fish

Material is very toxic to aquatic organisms (LC50/EC50/IC50 below 1 mg/L in the most sensitive species).

LC50, *Oncorhynchus mykiss* (rainbow trout), flow-through test, 96 Hour, 8.5 mg/l, OECD Test Guideline 203

### Acute toxicity to aquatic invertebrates

EC50, *Daphnia magna* (Water flea), flow-through test, 48 Hour, 6.2 mg/l, OECD Test Guideline 202

### Acute toxicity to algae/aquatic plants

ErC50, *Pseudokirchneriella subcapitata* (green algae), static test, 72 Hour, > 40 mg/l, OECD Test Guideline 201

ErC50, diatom *Navicula* sp., Static, 72 Hour, 0.684 mg/l, OECD Test Guideline 201

## Toxicity to Above Ground Organisms

Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).

oral LD50, *Colinus virginianus* (Bobwhite quail), mortality, > 2250mg/kg bodyweight.

contact LD50, *Apis mellifera* (bees), 48 Hour, mortality, > 100µg/bee

oral LD50, *Apis mellifera* (bees), 48 Hour, mortality, > 130µg/bee

## Toxicity to soil-dwelling organisms

LC50, *Eisenia fetida* (earthworms), 14 d, survival, 270 mg/kg

## 12.2 Persistence and degradability

### fluroxypyr-meptyl (ISO)

**Biodegradability:** Material is not readily biodegradable according to OECD/EEC guidelines. 10-day Window: Fail

**Biodegradation:** 32 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 301D or Equivalent

**Theoretical Oxygen Demand:** 2.2 mg/mg

### **Stability in Water (1/2-life)**

, half-life, 454 d

### Hydrocarbons, C9, aromatics

**Biodegradability:** For the major component(s): Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability. For some component(s): Based on 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.

### Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., calcium salts

**Biodegradability:** No relevant data found.

**hexan-1-ol**

**Biodegradability:** Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

10-day Window: Pass

**Biodegradation:** 61 %

**Exposure time:** 30 d

**Method:** OECD Test Guideline 301D or Equivalent

10-day Window: Pass

**Biodegradation:** 77 %

**Exposure time:** 30 d

**Method:** OECD Test Guideline 301D or Equivalent

**Hydrocarbons, C10, aromatics, <1% naphthalene**

**Biodegradability:** Material is inherently biodegradable (reaches > 20% biodegradation in OECD test(s) for inherent biodegradability).

**12.3 Bioaccumulative potential**

**fluroxypyr-meptyl (ISO)**

**Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

**Partition coefficient: n-octanol/water(log Pow):** 5.04 Measured

**Bioconcentration factor (BCF):** 26 Oncorhynchus mykiss (rainbow trout) Measured

**Hydrocarbons, C9, aromatics**

**Bioaccumulation:** For the major component(s): Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5). For the minor component(s): Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

**Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., calcium salts**

**Bioaccumulation:** No relevant data found.

**hexan-1-ol**

**Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

**Partition coefficient: n-octanol/water(log Pow):** 1.8 Measured

**Hydrocarbons, C10, aromatics, <1% naphthalene**

**Bioaccumulation:** No data available for this product. For similar material(s): Bioconcentration potential is high (BCF > 3000 or Log Pow between 5 and 7).

**12.4 Mobility in soil**

**fluroxypyr-meptyl (ISO)**

Expected to be relatively immobile in soil (Koc > 5000).

**Partition coefficient(Koc):** 6200 - 43000

**Hydrocarbons, C9, aromatics**

No relevant data found.

**Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., calcium salts**

No relevant data found.

**hexan-1-ol**

Potential for mobility in soil is very high (Koc between 0 and 50).

**Partition coefficient(Koc):** 8.3

**Hydrocarbons, C10, aromatics, <1% naphthalene**

No relevant data found.

**12.5 Results of PBT and vPvB assessment**

**fluroxypyr-meptyl (ISO)**

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

**Hydrocarbons, C9, aromatics**

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

**Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., calcium salts**

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

**hexan-1-ol**

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

**Hydrocarbons, C10, aromatics, <1% naphthalene**

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT). This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

**12.6 Other adverse effects**

**fluroxypyr-meptyl (ISO)**

This substance is not in Annex I of Regulation (EC) No 1005/2009 on substances that deplete the ozone layer.

**Hydrocarbons, C9, aromatics**

This substance is not in Annex I of Regulation (EC) No 1005/2009 on substances that deplete the ozone layer.

**Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., calcium salts**

This substance is not in Annex I of Regulation (EC) No 1005/2009 on substances that deplete the ozone layer.

**hexan-1-ol**

This substance is not in Annex I of Regulation (EC) No 1005/2009 on substances that deplete the ozone layer.

**Hydrocarbons, C10, aromatics, <1% naphthalene**

This substance is not in Annex I of Regulation (EC) No 1005/2009 on substances that deplete the ozone layer.

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## SECTION 13. DISPOSAL CONSIDERATIONS

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**13.1 Waste treatment methods**

If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information

presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

The definitive assignment of this material to the appropriate EWC group and thus its proper EWC code will depend on the use that is made of this material. Contact the authorized waste disposal services.

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## SECTION 14. TRANSPORT INFORMATION

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### Classification for ROAD and Rail transport (ADR/RID):

14.1 UN number	UN 1993
14.2 Proper shipping name	FLAMMABLE LIQUID, N.O.S.(Aromatic hydrocarbon)
14.3 Class	3
14.4 Packing group	III
14.5 Environmental hazards	Fluroxypyr 1-methylheptyl ester
14.6 Special precautions for user	Special Provision 640E Hazard identification No: 30

### Classification for SEA transport (IMO-IMDG):

14.1 UN number	UN 1993
14.2 Proper shipping name	FLAMMABLE LIQUID, N.O.S.(Aromatic hydrocarbon)
14.3 Class	3
14.4 Packing group	III
14.5 Environmental hazards	Fluroxypyr 1-methylheptyl ester
14.6 Special precautions for user	EmS: F-E, S-E
14.7 Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

### Classification for AIR transport (IATA/ICAO):

14.1 UN number	UN 1993
14.2 Proper shipping name	Flammable liquid, n.o.s.(Aromatic hydrocarbon)
14.3 Class	3
14.4 Packing group	III
14.5 Environmental hazards	Not applicable
14.6 Special precautions for user	No data available.

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container

volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

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## SECTION 15. REGULATORY INFORMATION

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### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

#### Other regulations

Registration Number: MAPP 12018

This product contains only components that have been either pre-registered, registered, are exempt from registration or are regarded as registered according to Regulation (EC) No. 1907/2006 (REACH). The aforementioned indications of the REACH registration status are provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. It is the buyer's/user's responsibility to ensure that his/her understanding of the regulatory status of this product is correct.

### 15.2 Chemical Safety Assessment

For proper and safe use of this product, please refer to the approval conditions laid down on the product label.

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## SECTION 16. OTHER INFORMATION

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### Full text of H-Statements referred to under sections 2 and 3.

H226	Flammable liquid and vapour.
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.

### Full text of R-phrases referred to under sections 2 and 3

R10	Flammable.
R22	Harmful if swallowed.
R36	Irritating to eyes.
R36/37/38	Irritating to eyes, respiratory system and skin.
R37	Irritating to respiratory system.
R38	Irritating to skin.



R41	Risk of serious damage to eyes.
R43	May cause sensitisation by skin contact.
R50	Very toxic to aquatic organisms.
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R53	May cause long-term adverse effects in the aquatic environment.
R65	Harmful: may cause lung damage if swallowed.
R66	Repeated exposure may cause skin dryness or cracking.
R67	Vapours may cause drowsiness and dizziness.

**Classification and procedure used to derive the classification for mixtures according to Regulation (EC) No 1272/2008**

Flam. Liq. - 3 - H226 - On basis of test data.  
Skin Irrit. - 2 - H315 - On basis of test data.  
Eye Irrit. - 2 - H319 - On basis of test data.  
Skin Sens. - 1 - H317 - On basis of test data.  
Asp. Tox. - 1 - H304 - On basis of test data.  
STOT SE - 3 - H335 - Calculation method  
STOT SE - 3 - H336 - Calculation method  
Aquatic Acute - 1 - H400 - On basis of test data.  
Aquatic Chronic - 1 - H410 - Calculation method

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Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

**Legend**

Dow IHG	Dow Industrial Hygiene Guideline
TWA	8-hr TWA
US WEEL	USA. Workplace Environmental Exposure Levels (WEEL)

**Information Source and References**

This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

DOW AGROSCIENCES LIMITED urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided 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 between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.