

# SAFETY DATA SHEET



Dow AgroSciences

Emergency Phone: 1800-033-882 (24 hrs)  
+61 3 9663 2130 (24 hrs)  
Dow AgroSciences Australia Ltd.  
Frenchs Forest NSW 2086

## Starane™ Advanced Herbicide

Effective Date: 1 March 2013  
Product Code: 108760

### 1. PRODUCT AND COMPANY IDENTIFICATION:

**PRODUCT:** Starane™ Advanced Herbicide

**PURPOSE:** Herbicide

#### COMPANY IDENTIFICATION:

Dow AgroSciences Australia Ltd.  
ABN 24 003 771 659  
Level 5, 20 Rodborough Road,  
Frenchs Forest NSW 2086

Customer Service Toll Free Number:  
1800 700 096  
(Mon-Fri, 8am–5pm EST)  
[www.dowagrosciences.com.au](http://www.dowagrosciences.com.au)

Emergency Telephone Number:  
Australia: 1800 033 882  
Global: +61 3 9663 2130  
(24 hours) (EMERGENCIES ONLY)

Transport Emergency Only Dial 000

### 2. HAZARDOUS IDENTIFICATIONS:

#### EMERGENCY OVERVIEW

**Classified as hazardous according to the criteria of NOHSC**

**Not Classified as Dangerous Goods for Land Transport in receptacles not exceeding 500L or IBCs (see Section 14)**

**Potential Health Effects:** May irritate eyes and skin. May cause allergic disorders.

#### RISK PHRASES:

R36/38: Irritating to eyes and skin.  
R43: May cause sensitisation by skin contact.  
R50: Very toxic to aquatic organisms.

#### SAFETY PHRASES:

S2: Keep out of the reach of children.  
S20/21: When using do not eat, drink or smoke.  
S36/37/39: Wear suitable protective clothing, gloves and eye/face protection.

S62: If swallowed, do not induce vomiting; seek medical advice immediately and show the container or label.  
S29/56: Do not empty into drains; dispose of this material and its container at hazardous or special waste collection point.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS:

Ingredient	CAS #	Content
Fluroxypyr-meptyl	81406-37-3	45.5%
Balance not individually contributing to the hazard classification		54.5%

### 4. FIRST AID:

**Consult the Poisons Information Centre (131126) or a doctor in every case of suspected chemical poisoning. Never give fluids or induce vomiting if a patient is unconscious or convulsing regardless of cause of injury. If breathing difficulties occur seek medical attention immediately.**

**EYE:** Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes and then continue rinsing eyes. Call the Poisons Information Centre or doctor for treatment advice.

**SKIN:** Take off contaminated clothing. Wash skin with soap and plenty of water for 15-20 minutes. Call the Poisons Information Centre or doctor for treatment advice. Items which cannot be decontaminated, including leather articles such as shoes, belts, and watchbands should be disposed of properly.

**INGESTION:** Immediately call the Poisons Information Centre or doctor for treatment advice. Do not induce vomiting unless told to do so by the Poisons Information Centre or doctor. Do not give any liquid to the person. Do not give anything by mouth to an unconscious person.

**INHALATION:** Move person to fresh air. If person is not breathing, call 000 or an ambulance and then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). If breathing is difficult, oxygen should be administered by qualified personnel.

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**NOTE TO DOCTOR:** Maintain adequate ventilation and oxygenation of the patient. If lavage is performed, suggest endotracheal and/or oesophageal 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. Skin contact may aggravate preexisting dermatitis. 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:

#### 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.

**Extinguishing Media to Avoid:** Do not use direct water stream. May spread fire.

#### 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: Nitrogen oxides. Hydrogen fluoride. Hydrogen chloride. Carbon monoxide. Carbon dioxide.

**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.

#### 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. 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.

**FLASH POINT:** >100°C (Closed Cup)

**COMBUSTIBLE:** C1

#### FLAMMABLE LIMITS

LFL: Not determined  
UFL: Not determined

**HAZCHEM:** •2X

### 6. ACCIDENTAL RELEASE MEASURES:

**ACTION TO TAKE FOR SPILLS/LEAKS:** Do not touch or walk through spilled material. Wear a face-shield or goggles, overalls buttoned to neck and wrist, chemical resistant gloves and footwear. Stop leak when safe to do so. Dam the area and prevent entry into waterways, and drains. **Small spills/leaks:** Absorb with material such as sand, soil or clay. Collect spilled product and place in sealable container for disposal. Spill residues may be cleaned using water and detergent. Contain and absorb wash water for disposal. Absorb and collect washings and place in the same sealable container for disposal. Dam the area of **large spills/leaks** and call Dow AgroSciences Emergency Services at 1800-033-882 for advice.

### 7. HANDLING AND STORAGE:

#### PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Keep out of reach of children. Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.

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**HANDLING:** Do not swallow. Avoid contact with eyes, skin, and clothing. Avoid breathing vapours and spray mist. Handle concentrate in ventilated area. Wash thoroughly with soap and water after handling and before eating, chewing gum, using tobacco, using the toilet or smoking. Store in tightly closed original container in a cool, dry well-ventilated area out of direct sunlight when not in use. Do not store with food, feedstuffs, fertilizers and seeds. See product label for further handling/storage precautions relative to the end use of this product. Reduce stacking height where local conditions can affect packaging strength.

### 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:

Fluroxypyr-meptyl: 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:

**Skin 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.

**Hand protection:** Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Butyl rubber. Chlorinated polyethylene. Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). Viton. 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.

**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, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

**Ingestion:** Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

#### Engineering Controls

**Ventilation:** Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

### 9. PHYSICAL AND CHEMICAL PROPERTIES:

#### Appearance

<b>Physical State</b>	Liquid.
<b>Color</b>	Yellow
<b>Odour</b>	Aromatic
<b>Odor Threshold</b>	No test data available
<b>pH</b>	4.58 (@ 1 %) <i>ASTM E70</i>
<b>Melting Point</b>	Not applicable
<b>Freezing Point</b>	No test data available
<b>Boiling Point (760 mmHg)</b>	No test data available.
<b>Flash Point - Closed Cup</b>	> 100 °C (> 212 °F) <i>ASTM D3278</i>
<b>Evaporation Rate (Butyl Acetate = 1)</b>	No test data available
<b>Flammability (solid, gas)</b>	Not applicable to liquids

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<b>Flammable Limits In Air</b>	Lower: No test data available; Upper: No test data available
<b>Vapor Pressure</b>	135 x 10 <sup>-3</sup> mPa @ 20°C for fluroxypr-meptyl
<b>Vapor Density (air = 1)</b>	No test data available
<b>Specific Gravity (H<sub>2</sub>O = 1)</b>	1.05
<b>Solubility in water (by weight)</b>	emulsifiable
<b>Partition coefficient, n-octanol/water (log Pow)</b>	No data available for this product. See Section 12 for individual component data.
<b>Autoignition Temperature</b>	358 °C (676 °F) EC Method A15
<b>Decomposition Temperature</b>	No test data available
<b>Dynamic Viscosity</b>	28.2 mPa.s @ 40 °C OECD 114
<b>Kinematic Viscosity</b>	No test data available
<b>Explosive properties</b>	No EEC A14
<b>Liquid Density</b>	1.05 g/ml @ 20 °C OECD 109
<b>Molecular Weight</b>	No test data available
<b>Surface tension</b>	32 mN/m @ 25 °C EC Method A5

**EYE:** May cause moderate irritation with corneal injury.

**SKIN:** Brief contact may cause slight skin irritation with local redness. May cause drying or flaking of the skin. Prolonged contact may cause skin irritation with local redness. Prolonged exposure to not expected to cause toxic effects. Dermal LD<sub>50</sub> > 5000 mg/kg.

**INGESTION:** Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts. Prolonged exposure to not expected to cause toxic effects. The oral LD<sub>50</sub> >5000 mg/kg (rat).

**INHALATION:** Prolonged exposure is not expected to cause adverse effects. The aerosol 4 hour LC<sub>50</sub> was > 5.5 mg/L in rats.

**SYSTEMIC (OTHER TARGET ORGAN) EFFECTS:** For fluroxypr, based on available data, repeated exposures are not anticipated to cause significant adverse effects. For the major component(s): For similar material(s): In animals, effects have been reported on the following organs: Kidney. Dose levels producing these effects were many times higher than any dose levels expected from exposure due to use.

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

**TERATOLOGY (BIRTH DEFECTS):** Fluroxypr did not cause birth defects in laboratory animals. Has been toxic to the foetus in laboratory animals at doses toxic to the mother.

**REPRODUCTIVE EFFECTS:** Fluroxypr, in animal studies, did not interfere with reproduction.

**MUTAGENICITY:** For the active ingredient, in-vitro and animal genetic toxicity studies were negative.

### 10. STABILITY AND REACTIVITY:

#### Reactivity

No dangerous reaction known under conditions of normal use.

#### Chemical stability

Unstable at elevated temperatures.

#### Possibility of hazardous reactions

Polymerization will not occur.

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

**Incompatible Materials:** None known.

#### Hazardous decomposition products

Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Hydrogen chloride. Hydrogen fluoride. Nitrogen oxides. Toxic gases are released during decomposition.

### 11. TOXICOLOGICAL INFORMATION:

#### POTENTIAL HEALTH EFFECTS:

### 12. ECOLOGICAL INFORMATION:

#### ENVIRONMENTAL DATA:

#### MOVEMENT & PARTITIONING:

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

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

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

### DEGRADATION & PERSISTENCE:

Data for Component: Fluroxypyr 1-methylheptyl ester

Material is not readily biodegradable according to OECD/EEC guidelines.

**Stability in Water (1/2-life):** ~ 2 days

### OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
32 %	28 d	OECD 301D Test	fail

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

### Mobility in soil

Data for Component: Fluroxypyr 1-methylheptyl ester

**Mobility in soil:** Expected to be relatively immobile in soil ( $K_{oc} > 5000$ ).

**Partition coefficient, soil organic carbon/water ( $K_{oc}$ ):** 6,200 - 43,000  
**Henry's Law Constant (H):** 5.42E-08 atm\*m<sup>3</sup>/mole; 25 °C Measured

**ECOTOXICOLOGY:** Based largely or completely on information for fluroxypyr.

Material is highly toxic to aquatic invertebrates on an acute basis ( $LC_{50}$  or  $EC_{50}$  is between 0.1 and 1 mg/L).

Material is practically non-toxic to birds on an acute basis ( $LD_{50}$  is >2000 mg/kg).

Material is practically non-toxic to birds on a dietary basis ( $LC_{50}$  is >5000 ppm).

### 13. DISPOSAL CONSIDERATIONS:

**DISPOSAL METHOD:** 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 and regulations.

### 14. TRANSPORT INFORMATION:

#### DANGEROUS GOODS CLASSIFICATION

**ROAD AND RAIL TRANSPORT:** Not classified as dangerous goods according to the criteria of the Australian Dangerous Goods Code (ADG 7) when transported in packagings, other receptacles not exceeding 500L or IBCs.

**SEA AND AIR TRANSPORT:** Classified as dangerous goods for transport by sea and air in accordance with the International Maritime Dangerous Goods Code (IMDG) and the International Air Transport Association (IATA) Dangerous Goods Regulation.

**UN No:** 3082

**Class:** 9

**Packing group:** III

**SHIPPING NAME:** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S (FLUROXYPYR MEPTYL)

**Marine pollutant:** Yes

### 15. REGULATORY INFORMATION:

**APVMA APPROVAL NUMBER:** 62287

**POISON SCHEDULE:** The active constituent is listed in Appendix B of the SUSDP (Substances Considered Not To Require Control By Scheduling)

### 16. OTHER INFORMATION:

#### Glossary

**AIHA WEEL:** American Industrial Hygiene Association's Workplace Environmental Exposure Level.

**ASCC:** Australian Safety and Compensation Council

**BCF: Bioconcentration Factor** - a measure for the characterization of the accumulation of a chemical in an organism. It is defined as the concentration of a chemical in an organism (plants, microorganisms, animals) divided by the concentration in a reference compartment (e.g. food, surrounding water).

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**EC<sub>50</sub>**: median effective concentration. Statistically derived concentration of a substance in an environmental medium expected to produce a certain effect in 50% of test organisms in a given population under a defined set of conditions.

**Explosive Limits** - The range of concentrations (% by volume in air) of a flammable gas or vapour that can result in an explosion for ignition in a confined space.

**K<sub>oc</sub>** - the organic carbon partition coefficient (mL soil water /g organic carbon).

**LC<sub>50</sub>** - Lethal Concentration 50%. A concentration of chemical in air or water that will kill 50% of the test organisms.

**LD<sub>50</sub>** - Lethal Dose-50%. The dose of a chemical that will kill 50% of the test animals receiving it.

**pH** - Measure of how acidic or alkaline a material is using a 1 - 14 scale. pH 1 is strongly acidic and pH 14 strongly alkaline.

**Polymerisation** - a chemical reaction in which small molecules (monomers) combine to form much larger molecules (polymers). A hazardous polymerisation reaction is one that occurs at a fast rate and releases large amounts of energy.

**P<sub>ow</sub>** - The octanol-water partition coefficient is the ratio of the concentration of a chemical in octanol and in water at equilibrium and at a specified temperature. Octanol is an organic solvent that is used as a surrogate for natural organic matter. This parameter is used in many environmental studies to help determine the fate of chemicals in the environment.

**TWA** - Time Weighted Average. The average concentration of a chemical in air over the total exposure time - usually an 8 hour work day.

### References

AS/NZS 1715-1994 Selection Use and Maintenance of Respiratory Protective Devices.  
ASNZS 1716 - 1994 Respiratory protective devices. Australian Dangerous Goods Code  
NOHSC Hazardous Substances Information System.

### VERSION CONTROL

**Replaces version dated:** 1 February 2013

**Sections amended:** 5,6,8 and 11

**Product Number:** GF-1784

**FOR FURTHER PRODUCT INFORMATION CALL DOW AGROSCIENCES CUSTOMER SERVICE REPRESENTATIVES TOLL FREE 1800 700 096 DURING BUSINESS HOURS.**

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