

# **MATERIAL SAFETY DATA SHEETS**

**FOR ALTITUDE FX:**

**AC 299,263 120 AS  
HERBICIDE SOLUTION**

**PLUS**

**STARANE HERBICIDE**

**PLUS**

**MCPA ESTER 600**

# Safety data sheet

## AC 299,263 120 AS

Revision date : 2009/01/12  
Version: 1.0

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(30275999/MDS\_CPA\_CA/EN)

### 1. Substance/preparation and company identification

#### Company

BASF CANADA  
100 Milverton Drive  
Mississauga, ON L5R 4H1, CANADA

#### 24 Hour Emergency Response Information

CANUTEC (reverse charges): (613) 996-6666  
BASF HOTLINE: (800) 454-COPE (2673)

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Substance number:	000000136003
Molecular formula:	C15 H18 N3 O4 . N H(4)
Molecular weight:	322.4 g/mol
Synonyms:	ammonium salt of imazamox
PCP# 26705	

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### 2. Hazardous ingredients

Not WHMIS controlled.

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### 3. Hazard identification

#### Emergency overview

NO PARTICULAR HAZARDS KNOWN.

#### Potential health effects

See Product Label for additional precautionary statements.

#### **Acute toxicity:**

Relatively nontoxic after single ingestion. Slightly toxic after short-term skin contact. Relatively nontoxic after short-term inhalation.

#### **Irritation:**

Not irritating to eyes and skin.

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### 4. First-aid measures

#### **General advice:**

First aid providers should wear personal protective equipment to prevent exposure. Remove contaminated clothing. Move person to fresh air. If person is not breathing, call 911 or ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or physician for treatment advice. Have the product container or label with you when calling a poison control center or doctor or going for treatment.

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### **If inhaled:**

Remove the affected individual into fresh air and keep the person calm. Assist in breathing if necessary.

### **If on skin:**

Rinse skin immediately with plenty of water for 15 - 20 minutes.

### **If in eyes:**

Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after first 5 minutes, then continue rinsing.

### **If swallowed:**

Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to by a poison control center or doctor. Never induce vomiting or give anything by mouth if the victim is unconscious or having convulsions.

### **Note to physician**

Antidote: No known specific antidote.

Treatment: Treat symptomatically.

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## 5. Fire-fighting measures

Flash point:

Based on the high water content the determination of the flash point seems not to be necessary.

Self-ignition temperature:

Based on the water content the product does not ignite.

### **Suitable extinguishing media:**

foam, dry extinguishing media, carbon dioxide, water spray

### **Hazards during fire-fighting:**

carbon monoxide, carbon dioxide, nitrogen oxide, nitrogen dioxide, Ammonium, Hydrocarbons, If product is heated above decomposition temperature, toxic vapours will be released. The substances/groups of substances mentioned can be released if the product is involved in a fire.

### **Protective equipment for fire-fighting:**

Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

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## 6. Accidental release measures

### **Personal precautions:**

Take appropriate protective measures. Clear area. Shut off source of leak only under safe conditions. Extinguish sources of ignition nearby and downwind. Ensure adequate ventilation. Wear suitable personal protective clothing and equipment.

### **Environmental precautions:**

Do not discharge into the subsoil/soil. Do not discharge into drains/surface waters/groundwater. Contain contaminated water/firefighting water.

### **Cleanup:**

Dike spillage. Pick up with suitable absorbent material. Place into suitable containers for reuse or disposal in a licensed facility. Spilled substance/product should be recovered and applied according to label rates whenever possible. If application of spilled substance/product is not possible, then spills should be contained, solidified, and placed in suitable containers for disposal. After decontamination, spill area can be washed with water. Collect wash water for approved disposal.

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### 7. Handling and storage

#### Handling

##### **General advice:**

Ensure adequate ventilation. Keep away from sources of ignition - No smoking. Keep container tightly sealed. Protect contents from the effects of light. Protect against heat. Protect from air. Handle and open container with care. Do not open until ready to use. Avoid aerosol formation. Avoid dust formation. Provide means for controlling leaks and spills. Do not return residues to the storage containers. Follow label warnings even after container is emptied. The substance/ product may be handled only by appropriately trained personnel. Avoid contact with the skin, eyes and clothing. Avoid inhalation of dusts/mists/vapours. Wear suitable personal protective clothing and equipment.

#### Storage

##### **General advice:**

Keep only in the original container in a cool, dry, well-ventilated place away from ignition sources, heat or flame. Protect containers from physical damage. Protect against contamination. The authority permits and storage regulations must be observed.

### 8. Exposure controls and personal protection

**Users of a pesticidal product should refer to the product label for personal protective equipment requirements.**

#### **Advice on system design:**

Whenever possible, engineering controls should be used to minimize the need for personal protective equipment.

#### Personal protective equipment

##### **RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:**

##### **Respiratory protection:**

Wear respiratory protection if ventilation is inadequate. Wear a NIOSH-certified (or equivalent) TC23C Chemical/Mechanical type filter system to remove a combination of particles, gas and vapours.

##### **Hand protection:**

Chemical resistant protective gloves, Protective glove selection must be based on the user's assessment of the workplace hazards.

##### **Eye protection:**

Safety glasses with side-shields. Tightly fitting safety goggles (chemical goggles). Wear face shield if splashing hazard exists.

##### **Body protection:**

Body protection must be chosen depending on activity and possible exposure, e.g. head protection, apron, protective boots, chemical-protection suit.

### 9. Physical and chemical properties

Form:	liquid
Odour:	acidic, mild
Odour threshold:	No data available.
Colour:	pale yellow, clear
pH value:	6.0 - 6.1

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Freezing point:	approx. 0 °C	( 1,013.3 hPa) Information applies to the solvent.
Boiling point:	approx. 100 °C	( 1,013.3 hPa) Information applies to the solvent.
Vapour pressure:	approx. 23.3 hPa	( 20 °C) Information applies to the solvent.
Density:	1.486 g/cm <sup>3</sup>	( 20 °C)
Bulk density:		not applicable
Partitioning coefficient n-octanol/water (log Pow):		not applicable
Viscosity, dynamic:	3.7 mPa.s	

## 10. Stability and reactivity

### Substances to avoid:

oxidizing agents

### Hazardous reactions:

The product is chemically stable.

Hazardous polymerization will not occur. No hazardous reactions if stored and handled as prescribed/indicated.

### Decomposition products:

Hazardous decomposition products: No hazardous decomposition products if stored and handled as prescribed/indicated., Prolonged thermal loading can result in products of degradation being given off.

### Thermal decomposition:

Possible thermal decomposition products:

carbon monoxide, carbon dioxide, nitrogen oxide, nitrogen dioxide, Ammonium, Hydrocarbons

Stable at ambient temperature. If product is heated above decomposition temperature toxic vapours may be released. If product is heated above decomposition temperature hazardous fumes may be released.

### Corrosion to metals:

Corrosive effects to metal are not anticipated.

### Oxidizing properties:

not fire-propagating

Not an oxidizer.

## 11. Toxicological information

### Acute toxicity

#### Oral:

LD50/rat: > 5,000 mg/kg

#### Inhalation:

LC50/rat: > 5 mg/l / 4 h

#### Dermal:

LD50/rat: > 4,000 mg/kg

#### Skin irritation:

rabbit: non-irritant

#### eye irritation :

rabbit: non-irritant

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### Sensitization:

modified Buehler test/guinea pig: Skin sensitizing effects were not observed in animal studies.

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## 12. Ecological information

### Environmental fate and transport

#### Biodegradation:

Evaluation: Not readily biodegradable (by OECD criteria).

*Information on: imazamox*

*Acute and prolonged toxicity to fish:*

*Rainbow trout/LC50 (96 h): = > 122 ppm*  
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*Information on: imazamox*

*Acute toxicity to aquatic invertebrates:*

*Daphnia magna/EC50: >122 ppm*  
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*Information on: imazamox*

*Toxicity to aquatic plants:*

*algae/EC50 (120 h): > 0.037 mg/l*  
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## 13. Disposal considerations

### Waste disposal of substance:

See product label for disposal and recycling instructions.

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## 14. Transport information

Reference Bill of Lading

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## 15. Regulatory information

### Federal Regulations

#### Registration status:

DSL, CA

released / exempt

WHMIS does not apply to this product.

**THIS PRODUCT HAS BEEN CLASSIFIED IN ACCORDANCE WITH THE HAZARD CRITERIA OF THE CPR AND THE MSDS CONTAINS ALL THE INFORMATION REQUIRED BY THE CPR.**

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## 16. Other information

Refer to product label for EPA registration number.

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### Local contact information

BASF Canada Product Safety  
prod\_reg@basf.com

END OF DATA SHEET

**Product Name:** STARANE\* Herbicide**Issue Date:** 2009.07.16

Dow AgroSciences Canada Inc. 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.

**1. Product and Company Identification****Product Name**

STARANE\* Herbicide

**COMPANY IDENTIFICATION**

Dow AgroSciences Canada Inc.  
A Subsidiary of The Dow Chemical Company  
Suite 2100, 450 1st Street SW,  
Calgary, AB T2P 5H1  
Canada

**For MSDS updates and Product Information:** 800-667-3852**Prepared By:** Prepared for use in Canada by EH&S, Product Regulatory  
Management Department.  
450-652-1029**Revision** 2009.07.16

Customer Information Number: 800-667-3852

**EMERGENCY TELEPHONE NUMBER****24-Hour Emergency Contact:** 613-996-6666**Local Emergency Contact:** 613-996-6666**2. Hazards Identification****Emergency Overview****Color:** Brown**Physical State:** Liquid.**Odor:** Odorless

\* Indicates a Trademark of Dow AgroSciences Canada Inc.

**Hazards of product:**

**WARNING!** Combustible liquid and vapor. Causes eye irritation. May cause central nervous system effects; may cause respiratory tract irritation. Aspiration hazard. Can enter lungs and cause damage. Isolate area. Keep upwind of spill. Toxic fumes may be released in fire situations. Suspect cancer hazard. May cause cancer.

**Potential Health Effects**

**Eye Contact:** May cause moderate eye irritation which may be slow to heal. May cause slight corneal injury. Vapor may cause eye irritation experienced as mild discomfort and redness.

**Skin Contact:** Brief contact may cause slight skin irritation with local redness.

**Skin Absorption:** Prolonged skin contact is unlikely to result in absorption of harmful amounts.

**Inhalation:** No adverse effects are anticipated from single exposure to mist. Excessive exposure to solvent(s) may cause respiratory irritation and central nervous system depression.

**Ingestion:** 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.

**Aspiration hazard:** Aspiration into the lungs may occur during ingestion or vomiting, causing lung damage or even death due to chemical pneumonia.

**Effects of Repeated Exposure:** For the solvent(s): Excessive exposure to solvent(s) may cause respiratory irritation and central nervous system depression. For the minor component(s): In animals, effects have been reported on the following organs: Liver. Kidney. Blood-forming organs (Bone marrow & Spleen). Blood. Respiratory tract.

**Cancer Information:** For the minor component(s) Naphthalene. Has caused cancer in some laboratory animals. In humans, there is limited evidence of cancer in workers involved in naphthalene production. Limited oral studies in rats were negative.

**Birth Defects/Developmental Effects:** For the active ingredient(s): Fluroxypyr 1-methylheptyl ester. Has been toxic to the fetus in laboratory animals at doses toxic to the mother. For the minor component(s): Has been toxic to the fetus in lab animals at doses nontoxic to the mother. Has caused birth defects in laboratory animals only at doses toxic to the mother.

**Reproductive Effects:** For the minor component(s): In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

### 3. Composition/information on ingredients

Component	CAS #	Amount W/W
Fluroxypyr 1-methylheptyl ester	81406-37-3	26.2 %
Naphthalene	91-20-3	<= 6.0 %
N-Methyl-2-pyrrolidone	872-50-4	5.1 %
1,2,4-Trimethylbenzene	95-63-6	<= 3.4 %
Solvent naphtha (petroleum), light aromatic	64742-95-6	0.7 %
Balance		58.6 %

Amounts are presented as percentages by weight.

### 4. First-aid measures

**Eye Contact:** 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 Contact:** Wash skin with plenty of water.

**Inhalation:** Move person to fresh air. If not breathing, 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. Call a physician or transport to a medical facility.

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

**Notes to Physician:** Maintain adequate ventilation and oxygenation of the patient. 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

**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.

**Fire Fighting Procedures:** Keep people away. Isolate fire and deny unnecessary entry. 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.

**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.

**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.

See Section 9 for related Physical Properties

## 6. Accidental Release Measures

**Steps to be Taken if Material is Released or Spilled:** Contain spilled material if possible. 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.

**Personal Precautions:** Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to Section 7, Handling, for additional precautionary measures. Keep upwind of spill. Ventilate area of leak or spill. No smoking in area. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

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

## 7. Handling and Storage

### Handling

**General Handling:** Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Do not swallow. Avoid breathing vapor. Use with adequate ventilation. Keep container closed. 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. Keep away from heat, sparks and flame. Keep out of reach of children. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

### Storage

Store in a dry place. Store in original container. Keep container tightly closed. Do not store near food, foodstuffs, drugs or potable water supplies.

## 8. Exposure Controls / Personal Protection

### Exposure Limits

Component	List	Type	Value
Fluroxypyr 1-methylheptyl ester	Dow IHG	TWA	10 mg/m <sup>3</sup>
Naphthalene	CAD AB OEL	TWA	52 mg/m <sup>3</sup> 10 ppm SKIN
	CAD AB OEL	STEL	79 mg/m <sup>3</sup> 15 ppm SKIN
	CAD BC OEL	TWA	10 ppm SKIN
	CAD BC OEL	STEL	15 ppm SKIN
	CAD ON OEL	TWAEV	52 mg/m <sup>3</sup> 10 ppm
	CAD ON OEL	STEV	78 mg/m <sup>3</sup> 15 ppm
	ACGIH	TWA	10 ppm SKIN
	ACGIH	STEL	15 ppm SKIN
	OEL (QUE)	TWA	52 mg/m <sup>3</sup> 10 ppm
	OEL (QUE)	STEL	79 mg/m <sup>3</sup> 15 ppm
N-Methyl-2-pyrrolidone	CAD ON OEL	TWAEV	400 mg/m <sup>3</sup>
	WEEL	TWA	40 mg/m <sup>3</sup> 10 ppm SKIN
1,2,4-Trimethylbenzene	CAD AB OEL	TWA	123 mg/m <sup>3</sup> 25 ppm
	CAD BC OEL	TWA	25 ppm
	CAD ON OEL	TWAEV	123 mg/m <sup>3</sup> 25 ppm
	ACGIH	TWA	25 ppm
	OEL (QUE)	TWA	123 mg/m <sup>3</sup> 25 ppm

*Consult local authorities for recommended exposure limits.*

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.

A "skin" notation following the inhalation 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 exposures should be considered.

### Personal Protection

**Eye/Face Protection:** Use chemical goggles. If exposure causes eye discomfort, use a full-face respirator.

**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: Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl chloride ("PVC" or "vinyl"). Viton. Styrene/butadiene rubber. Examples of acceptable glove barrier materials include: Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Chlorinated polyethylene. Butyl rubber. Natural rubber ("latex"). 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 emergency conditions, use an approved positive-pressure self-contained breathing apparatus. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

**Ingestion:** Avoid ingestion of even very small amounts; do not consume or store food or tobacco in the work area; wash hands and face 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

<b>Physical State</b>	Liquid.
<b>Color</b>	Brown
<b>Odor</b>	Odorless
<b>Odor Threshold</b>	Odorless
<b>Flash Point - Closed Cup</b>	63 °C <i>Closed Cup</i>
<b>Flammable Limits In Air</b>	<b>Lower:</b> No test data available <b>Upper:</b> No test data available
<b>Autoignition Temperature</b>	No test data available
<b>Vapor Pressure</b>	No test data available
<b>Boiling Point (760 mmHg)</b>	202 °C <i>Literature</i> .
<b>Vapor Density (air = 1)</b>	No test data available
<b>Specific Gravity (H<sub>2</sub>O = 1)</b>	No test data available
<b>Liquid Density</b>	0.99 g/cm <sup>3</sup> @ 25 °C <i>Calculated</i>
<b>Freezing Point</b>	-10 °C <i>Literature</i>
<b>Melting Point</b>	No test data available
<b>Solubility in water (by weight)</b>	No test data available
<b>pH</b>	5.5 <i>Literature</i> 1% aqueous solution.
<b>Decomposition Temperature</b>	No test data available
<b>Evaporation Rate (Butyl Acetate = 1)</b>	No test data available
<b>Kinematic Viscosity</b>	No test data available

## 10. Stability and Reactivity

### Stability/Instability

Unstable at elevated temperatures.

**Conditions to Avoid:** Active ingredient decomposes at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

**Incompatible Materials:** Avoid contact with: Acids. Bases. Oxidizers.

### Hazardous Polymerization

Will not occur.

### Thermal Decomposition

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

## 11. Toxicological Information

### Acute Toxicity

#### Ingestion

LD50, Rat, male 3,738 mg/kg

LD50, Rat, female 3,162 mg/kg

#### Skin Absorption

LD50, Rabbit > 2,000 mg/kg

#### Inhalation

LC50, 4 h, Aerosol, Rat, male and female > 6.2 mg/l

### Sensitization

#### Skin

Did not cause allergic skin reactions when tested in guinea pigs.

### Repeated Dose Toxicity

For the active ingredient(s): Based on available data, repeated exposures are not anticipated to cause significant adverse effects. For the solvent(s): Excessive exposure to solvent(s) may cause respiratory irritation and central nervous system depression. For the minor component(s): In animals, effects have been reported on the following organs: Liver. Kidney. Blood-forming organs (Bone marrow & Spleen). Blood. Respiratory tract.

### Chronic Toxicity and Carcinogenicity

Active ingredient did not cause cancer in laboratory animals. For the minor component(s) Naphthalene. Has caused cancer in some laboratory animals. In humans, there is limited evidence of cancer in workers involved in naphthalene production. Limited oral studies in rats were negative.

#### Carcinogenicity Classifications:

Component	List	Classification
Naphthalene	IARC	Possible carcinogen.; 2B

### Developmental Toxicity

For the active ingredient(s): Fluroxypyr 1-methylheptyl ester. Has been toxic to the fetus in laboratory animals at doses toxic to the mother. For the minor component(s): Has been toxic to the fetus in lab animals at doses nontoxic to the mother. Has caused birth defects in laboratory animals only at doses toxic to the mother. For the active ingredient(s): Fluroxypyr 1-methylheptyl ester. Did not cause birth defects in laboratory animals.

### Reproductive Toxicity

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

### Genetic Toxicology

For the active ingredient(s): In vitro genetic toxicity studies were negative. For some component(s): In vitro genetic toxicity studies were negative in some cases and positive in other cases. For the active ingredient(s): For the component(s) tested: Animal genetic toxicity studies were negative.

## 12. Ecological Information

### ENVIRONMENTAL FATE

Data for Component: **Fluroxypyr 1-methylheptyl ester**

#### Movement & Partitioning

Bioconcentration potential is low (BCF less than 100 or log Pow less than 3). Expected to be relatively immobile in soil (Koc > 5000).

**Henry's Law Constant (H):** 5.42E-08 atm\*m3/mole; 25 °C Measured

**Partition coefficient, n-octanol/water (log Pow):** 4.5 Measured

**Partition coefficient, soil organic carbon/water (Koc):** 6,200

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

#### Persistence and Degradability

No relevant information found.

Data for Component: **Naphthalene**

#### Movement & Partitioning

Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5). Potential for mobility in soil is medium (Koc between 150 and 500).

**Henry's Law Constant (H):** 2.92E-04 - 5.53E-04 atm\*m3/mole; 25 °C Measured

**Partition coefficient, n-octanol/water (log Pow):** 3.3 Measured

**Partition coefficient, soil organic carbon/water (Koc):** 240 - 1,300 Measured

**Bioconcentration Factor (BCF):** 40 - 300; fish; Measured

**Distribution in Environment: Mackay Level 1 Fugacity Model:**

Air	Water.	Biota	Soil	Sediment
74 %	8.5 %	< 0.01 %	18 %	0.39 %

#### Persistence and Degradability

Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%).

#### Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
2.16E-11 cm3/s	5.9 h	Estimated.

#### Biological oxygen demand (BOD):

BOD 5	BOD 10	BOD 20	BOD 28
57 %	71 %	71 %	

**Theoretical Oxygen Demand:** 3.00 mg/mg

Data for Component: **N-Methyl-2-pyrrolidone**

#### Movement & Partitioning

Bioconcentration potential is low (BCF less than 100 or log Pow less than 3). Potential for mobility in soil is very high (Koc between 0 and 50). Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.

**Henry's Law Constant (H):** 4.46E-08 atm\*m3/mole; 25 °C Measured

**Partition coefficient, n-octanol/water (log Pow):** -0.38 Measured

**Partition coefficient, soil organic carbon/water (Koc):** 21 Estimated.

#### Persistence and Degradability

Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Material is ultimately biodegradable (reaches > 70% mineralization in OECD test(s) for inherent biodegradability).

#### Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
2.199E-11 cm3/s	0.486 d	Estimated.

#### OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method
91 %	28 d	OECD 301B Test
73 %	28 d	OECD 301C Test

**Theoretical Oxygen Demand:** 2.58 mg/mg  
 Data for Component: **1,2,4-Trimethylbenzene**

#### Movement & Partitioning

Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5). Potential for mobility in soil is low (Koc between 500 and 2000).

**Henry's Law Constant (H):** 6.16E-03 atm\*m3/mole; 25 °C Measured

**Partition coefficient, n-octanol/water (log Pow):** 3.63 Measured

**Partition coefficient, soil organic carbon/water (Koc):** 720 Estimated.

**Bioconcentration Factor (BCF):** 33 - 275; common carp (Cyprinus carpio); Measured

#### Persistence and Degradability

Material is expected to biodegrade only very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.

#### Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
1.670E-11 cm3/s	0.641 d	Estimated.

#### OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method
4 - 18 %	28 d	OECD 301C Test

**Theoretical Oxygen Demand:** 3.19 mg/mg

Data for Component: **Solvent naphtha (petroleum), light aromatic**

#### Movement & Partitioning

For the major component(s): Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5). Potential for mobility in soil is low (Koc between 500 and 2000). For the minor component(s): Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

**Partition coefficient, n-octanol/water (log Pow):** No test data available:

#### Persistence and Degradability

For the major component(s): Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%). For some component(s): Biodegradation under aerobic static laboratory conditions is low (BOD20 or BOD28/ThOD between 2.5 and 10%).

#### ECOTOXICITY

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

#### Toxicity to Non-mammalian Terrestrial Species

oral LD50, bobwhite (Colinus virginianus): > 2,250 mg/kg

### 13. Disposal Considerations

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.

### 14. Transport Information

#### TDG Small container

NOT REGULATED

#### TDG Large container

NOT REGULATED

**IMDG**

NOT REGULATED

**ICAO/IATA**

NOT REGULATED

**15. Regulatory Information****CEPA - Domestic Substances List (DSL)**

All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

**Hazardous Products Act Information: CPR Compliance**

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

**Hazardous Products Act Information: WHMIS Classification**

This product is exempt under WHMIS.

**Pest Control Products Act Registration number:** 24815

**National Fire Code of Canada**

Class IIIA

**16. Other Information****Hazard Rating System**

NFPA	Health	Fire	Reactivity
	2	2	1

**Recommended Uses and Restrictions**

Product use: End use herbicide product

**Revision**

Identification Number: 51231 / 1023 / Issue Date 2009.07.16 / Version: 5.0

DAS Code: XRM-5316

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

**Legend**

N/A	Not available
W/W	Weight/Weight
OEL	Occupational Exposure Limit
STEL	Short Term Exposure Limit
TWA	Time Weighted Average
ACGIH	American Conference of Governmental Industrial Hygienists, Inc.
DOW IHG	Dow Industrial Hygiene Guideline
WEEL	Workplace Environmental Exposure Level
HAZ_DES	Hazard Designation
VOL/VOL	Volume/Volume

*Dow AgroSciences Canada Inc. 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.*

# InterProvincial Cooperative Limited

## Material Safety Data Sheet

Product: MCPA Ester 600

### IDENTIFICATION & DESCRIPTION

**PCP Act Reg. #:** 27802  
**WHMIS CLASS (ES):** B3, D2B  
**PHYSICAL STATE:** Liquid  
**APPEARANCE & ODOUR:** Brownish colour, "Solvent" odour  
**USES:** Phenoxy (Broadleaf) Herbicide  
**SUPPLIER:** INTERPROVINCIAL COOPERATIVE LTD.  
**ADDRESS:** 945 Marion St.  
Winnipeg, Manitoba  
R2J 0K7  
**EMERGENCY PHONE NO:** (613) 996-6666 (Canutec)

### PHYSICAL DATA

**SPECIFIC GRAVITY:** (@ 20°C): 1.0600  
**VAPOUR DENSITY:** (Air = 1) **Exxsol D110:** > 7.5  
**SOLUBILITY IN WATER:** Emulsifies  
**SOLUBILITY IN LIQUIDS:** Not Established  
**FREEZING POINT:** < 0°C  
**% VOLATILE BY VOLUME:** Not Established  
**BOILING POINT:** **Exxsol D110:** 237 - 277°C  
**ODOUR THRESHOLD (ppm):** Not Established  
**COEFFICIENT OF WATER/OIL DISTRIBUTION:** Not Established  
**VAPOUR PRESSURE:** **Exxsol D110:** 0 KPa @ 20°C  
**EVAPORATION RATE:** (n-butyl acetate = 1) **Exxsol D110:** < 0.001  
**PH: (1% sol'n)** 4.3  
**VISCOSITY:** (@ 20.0 C): 58.4 cps

### CONTROLLED PRODUCTS LIST

#### MCPA Ester 600

<b>LD50-ORAL:</b>	1046 mg/kg Rat	<b>LD50-DERMAL:</b>	> 2000 mg/kg Rat
<b>T.L.V. (ACGIH):</b>	Not Established	<b>LC50:Inhalation:</b>	2.64 mg/L (4 hr, nose-only exposure) Rat

#### Non-Hazardous

<b>C.A.S. #:</b>	Not Established	<b>% (W/W):</b>	5 - 10
<b>LD50-ORAL:</b>	Not Established	<b>LD50-DERMAL:</b>	Not Established
<b>T.L.V. (ACGIH):</b>	Not Established	<b>LC50:</b>	Not Established

#### (4-Chloro-2-methylphenoxy) acetic acid, 2-ethylhexyl ester

<b>C.A.S. #:</b>	94-74-6	<b>(W/W):</b>	60 - 100
<b>LD50-ORAL:</b>	700 mg/kg Rat	<b>LD50-DERMAL:</b>	Not Established
<b>T.L.V. (ACGIH):</b>	Not Established	<b>LC50:</b>	Not Established

#### Exxsol D110 Fluid

<b>C.A.S. #:</b>	64742-47-8	<b>% (W/W):</b>	1 - 5
<b>LD50-ORAL:</b>	Not Established	<b>LD50-DERMAL:</b>	Not Established
<b>T.W.A. (ACGIH):</b> Total Hydrocarbons	1200 mg/m <sup>3</sup>	<b>LC50:</b>	Not Established

# InterProvincial Cooperative Limited

## Material Safety Data Sheet

### FIRE & EXPLOSION DATA

**FLASH POINT & METHOD:** (°C): 85 (Tag Closed Cup)

**FLAMMABLE LIMITS (% IN AIR): Exxsol D110:** Lower: 0.5%

Upper: 4.6%

**AUTOIGNITION TEMPERATURE: Exxsol D110:** 243°C

**UNUSUAL FIRE & EXPLOSION HAZARDS:** Toxic fumes under high temperature conditions. Contain water from fire fighting to prevent entry into water supplies.

**EXTINGUISHING MEDIA:** Carbon Dioxide, Foam, Water Fog, and Dry Chemical.

**SPECIAL OXIDIZING MATERIAL HAZARDS:** Not Established

**HAZARDOUS COMBUSTION PRODUCTS:** Noxious fumes under fire conditions.

**SPECIAL FIRE FIGHTING PROCEDURES:** Use water spray to cool fires exposed containers or structures. Use water spray to disperse vapours; re-ignition is possible. Use self-contained breathing apparatus and protective clothing.

### HAZARDOUS REACTIVITY

**DECOMPOSITION TEMP:** Not Established

**STABILITY:** Stable under normal conditions.

**MATERIALS TO AVOID:** Acidic, basic or oxidizing agents

**HAZARDOUS DECOMPOSITION PRODUCTS:** Hydrogen Chloride, Carbon Dioxide, Carbon Monoxide, and other chloride compounds

**HAZARDOUS POLYMERIZATION:** Will not occur.

**CONDITIONS TO AVOID:** High temperatures, sparks, open flames, and all other sources of ignition.

### TOXICOLOGICAL DATA

**CHRONIC HEALTH HAZARDS:** Prolonged or repeated exposure may lead to kidney or central nervous system symptoms.

**MUTAGENICITY DATA:** No information is available and no adverse mutagenic effects are anticipated.

**CARCINOGENICITY DATA:** No information is available and no adverse carcinogenic effects are anticipated.

**TERATOGENICITY DATA:** No information is available and no adverse teratogenic effects are anticipated.

**REPRODUCTIVE EFFECTS:** No information is available and no adverse reproductive effects are anticipated.

**ROUTES OF ENTRY:** Inhalation, Ingestion, Absorption through skin

**EFFECTS OF OVEREXPOSURE (INHALATION):** May cause headaches, nausea, and lack of coordination. May be harmful if inhaled.

**EFFECTS OF OVEREXPOSURE (EYES):** Mildly irritating

**EFFECTS OF OVEREXPOSURE (SKIN):** Slightly irritating

**EFFECTS OF OVEREXPOSURE (INGESTION):** May be harmful if swallowed. Aspiration can be a hazard if this material is swallowed. Will cause vomiting, nausea, diarrhea.

**TOXICOLOGICAL INFORMATION:** No specific antidote. Treatment of any systemic intoxication should be primary symptomatic and supportive. Contains petroleum distillates. Do not induce vomiting.

### PREVENTATIVE MEASURES

**STORAGE AND USE:** Store in a cool, well-ventilated area. Keep away from heat, sparks and filling" of containers. Keep away from children, prevent contact with eyes, and skin clothing. Do not store near fertilizers, foodstuffs, seed, insecticides or fungicides. Do not contaminate irrigation ditches or domestic water supplies. If this happens notify police and local authorities.

**STEPS TO BE TAKEN IN THE EVENT OF A SPILL, LEAK, OR RELEASE:** Eliminate all sources of ignition. Stop or reduce discharge if safe to do so. Prevent from entering watercourses or sewers. Ventilate enclosed spaces.

**For large spills:** Contain by dyking for release to land, or damming for release to water. Recover product and collect contaminated soil or water for treatment and/or disposal. **Small spills:** Contain by applying absorbent. Collect waste absorbent and contaminated soil for disposal. For significant releases, contact appropriate regulatory authorities.

**SPECIAL ENGINEERING CONTROLS:** Local exhaust ventilation suggested.

**WASTE DISPOSAL METHOD:** Dispose of waste materials in accordance with provincial regulations. Do not dispose of wastes in local sewer or with normal waste.

**EYE PROTECTION:** CSA approved safety glasses with side shields or goggles.

**RESPIRATORY PROTECTION:** A NIOSH/MSHA approved air-purifying respirator equipped with organic vapor cartridges near or below TLV. Air supplied respirator above TLV or unknown concentrations.

# InterProvincial Cooperative Limited

## Material Safety Data Sheet

**SKIN PROTECTION (HAND AND ARM):** PVC or Rubber gloves.

**SKIN PROTECTION (FEET):** Rubber boots.

**SKIN PROTECTION (BODY):** Coveralls or long sleeve shirt and long pants.

**OTHER PERSONAL PROTECTION:** Recommendations listed above indicate the type of equipment, which will provide protection against overexposure to this product. Conditions of use, adequacy of engineering or other control measures, and actual exposures will dictate the need for specific protective devices at your workplace.

### FIRST AID DATA

**FIRST AID (EMERGENCY MEDICAL CARE):** Get medical attention in case of poisoning.

**FIRST AID (SKIN):** Remove contaminated clothing and wash skin thoroughly with soap and water.

**FIRST AID (EYES):** Flush with water IMMEDIATELY and continue for 15 minutes. Obtain medical attention or contact a poison control centre IMMEDIATELY.

**FIRST AID (INGESTION):** Do not induce vomiting but rush patient to nearest hospital or doctor's office or contact a poison control centre IMMEDIATELY.

**FIRST AID (INHALATION):** Move to fresh air and get medical attention or contact a poison control centre IMMEDIATELY.

**TAKE CONTAINER, LABEL OR PRODUCT NAME AND PEST CONTROL REGISTRATION NUMBER WITH YOU WHEN SEEKING MEDICAL ATTENTION**

### OTHER INFORMATION

**SPECIAL SHIPPING INFORMATION:** Observe applicable shipping and handling regulations.

**ADDITIONAL INFORMATION:** THE ENCLOSED INFORMATION IS SUPPLIED AS A CUSTOMER SERVICE AND IS PROVIDED IN GOOD FAITH. ALTHOUGH IT HAS BEEN BASED ON DATA DRAWN FROM SOURCES DEEMED TO BE RELIABLE, IPCO CANNOT GUARANTEE ITS ACCURACY AND ASSUMES NO RESPONSIBILITY FOR CONDITIONS RESULTING FROM ITS USE.

### TRANSPORT OF DANGEROUS GOODS DATA

**SHIPPING NAME:** NOT REGULATED

**CLASSIFICATION:** Not Applicable

**P.I.N.:**

Not Applicable

**PACKING GROUP:** Not Applicable

### PREPARATION DATA

**PREPARATION DATE:** 9/01/2009

**PREPARED BY:**

Wayne Eastveld

**DEPARTMENT:** Laboratory

**PHONE NUMBER:** (204) 233-3461