



## EVEREST<sup>®</sup> GBX HERBICIDE

EVEREST<sup>®</sup> GBX HERBICIDE is a co-pack of EVEREST<sup>®</sup> 2.0 HERBICIDE  
and GBX<sup>™</sup>HERBICIDE.

EVEREST<sup>®</sup> is a registered trademark of Arysta LifeScience North America, LLC.  
GBX<sup>™</sup> is a registered trademark of Dow AgroSciences LLC.



Please read the entire document. This Material Safety Data Sheet contains important environmental, health and toxicology information for your employees, and anyone who will use, transport, store, dispose of or handle this product. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information contained herein must be incorporated in your MSDS.

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: EVEREST® 2.0 Herbicide
PMRA REGISTRATION NUMBER: 30342
SYNONYM(S): ARY-0454-105 SC Herbicide

Table with 2 columns: COMPANY (Arysta LifeScience North America, LLC) and EMERGENCY TELEPHONE NUMBERS (HEALTH EMERGENCY: 1-866-303-6952, SPILL EMERGENCY: 1-800-424-9300)

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

Table with 5 columns: Active Ingredient(s)/Hazardous Inert Ingredient(s), CAS #, Exposure Limits\*, % Weight, % Volume. Rows include Flucarbazono-sodium Technical, Cloquintocet-Mexyl Technical, and Propylene Glycol.

Acticide GA: mixture of Bronopol, 2-Methyl-3(2H)-isothiazolone, and 5-Chloro-2-methyl-3(2H)-isothiazolone	52-51-7 55965-84-9	<b>TWA<sup>a</sup></b> OSHA PEL <sup>b</sup> : None ACGIH TLV <sup>c</sup> : None NIOSH REL <sup>d</sup> : None	< 0.1	NDA
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Only the identities of the active ingredient(s) and any hazardous inert ingredients are listed. Specific information on all of this product's ingredients can be obtained by the treating medical professional or spill emergency responder for the management of exposures, spills, or safety assessments.

\*Source: *Guide to Occupational Exposure Values 2008*, published by ACGIH

<sup>a</sup>**TWA**: Time-weighted average exposure concentration for a conventional 8-hour (TLV, PEL) or up to a 10-hour (REL) workday and a 40-hour workweek.

<sup>b</sup>**OSHA PEL**: Occupational Safety and Health Administration Permissible Exposure Limits.

<sup>c</sup>**ACGIH TLV**: American Conference of Governmental Industrial Hygienists, Inc., Threshold Limit Values.

<sup>d</sup>**NIOSH REL**: National Institute for Occupational Safety and Health Recommended Exposure Limits.

### SECTION 3: HAZARDS IDENTIFICATION

#### EMERGENCY OVERVIEW

##### CAUTION:

- HARMFUL IF ABSORBED THROUGH SKIN
- AVOID CONTACT WITH SKIN, EYES OR CLOTHING
- WASH THOROUGHLY WITH SOAP AND WATER AFTER HANDLING
- CAUSES MODERATE EYE IRRITATION
- KEEP OUT OF REACH OF CHILDREN

##### Acute Health Hazards

**Eye:** This product is mildly irritating to the conjunctiva and iris of the eyes. Symptoms of irritation were cleared within 72 hours post-treatment.

**Skin:** This product is slightly irritating to the skin. This product is not a skin sensitizer.

**Ingestion:** Not harmful by ingestion under normal handling operations.

**Inhalation:** Not harmful by inhalation under normal handling operations.

**Chronic Health Hazards (Including Cancer):** No evidence of carcinogenicity based on long-term animal studies. This product is not listed by NTP, IARC or regulated as a carcinogen by OSHA.

**Reproductive and Developmental Toxicity:** No evidence of reproductive and developmental toxicity based on animal studies.

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MSDS Number: 00539

Issue Date: 11/10/2011

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### SECTION 4: FIRST AID MEASURES

**Ingestion:** Call a poison control centre or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control centre or doctor. Do not give anything by mouth to an unconscious person.

**Skin:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15 to 20 minutes. Call a poison control centre or doctor for treatment advice.

**Eyes:** Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control centre or doctor for treatment advice.

**Inhalation:** Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth. Call a poison control centre or doctor for further treatment advice.

**Notes to Physician:** No specific antidote is available. Treat the patient symptomatically.

### SECTION 5: FIRE FIGHTING MEASURES

<b>Flammable Limits in Air (% by volume):</b>		
	<b>Upper:</b>	NA
	<b>Lower:</b>	NA
<b>Flash Point:</b>		>93°C
	<b>Method Used:</b>	Tag closed cup
<b>Autoignition Temperature:</b>		NDA
<b>LEL/UEL:</b>		NDA
<b>NFPA Hazard Classification:</b>		
	<b>Health:</b>	1
	<b>Flammability:</b>	1
	<b>Reactivity:</b>	0
	<b>Other:</b>	None
<b>Extinguishing Media:</b>		Foam, CO <sub>2</sub> , dry chemical, water-fog
<b>Special Fire Fighting Procedures:</b>		Smoke from fires involving this material may present unusual hazards. Avoid breathing smoke and mists. Avoid contact with fallout and runoff. Minimize the amount of water used for fire fighting. Do not enter any enclosed area without full protective equipment, including self-contained breathing equipment. Contain and isolate runoff and debris for proper disposal. Read the entire document. Special Protective Equipment: Wear positive pressure self-contained breathing apparatus.
<b>Hazardous Combustion Products:</b>		Emits toxic fumes under fire conditions.

### SECTION 6: ACCIDENTAL RELEASE MEASURES

#### EMERGENCY PHONE NUMBERS

**Exposure Calls (PROSAR): 1-866-303-6952 or 1-651-632-8946 (International)**

**Spill Calls (CHEMTREC): 1-800-424-9300 or 1-703-527-3887**

Isolate area and keep unauthorized people away. Do not walk through spilled material. Avoid breathing dusts and skin contact. Use recommended protective equipment while carefully sweeping up spilled material. Place in covered container for reuse or disposal. Scrub contaminated area with soap and water. Rinse with water. Use dry absorbent material such as clay granules to absorb and collect wash solution for proper disposal. Contaminated soil may have to be removed and disposed. Do not allow material to enter streams, sewers, or other waterways.

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## SECTION 7: HANDLING AND STORAGE

It is a violation of federal law to use this product in a manner inconsistent with its labeling. Read entire label. Use strictly in accordance with label precautionary statements and directions.

### HANDLING PROCEDURES: KEEP OUT OF REACH OF CHILDREN AND ANIMALS

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. Personnel handling this product should be thoroughly trained as to its hazards. Do not ingest. Avoid getting material on clothing. Use handling, storage and disposal procedures that will prevent contamination of water, food or feed.

**STORING PROCEDURES:** Do not store in or around home. Store unused product in a cool, ventilated, dry and locked area. Do not allow prolonged storage in areas with high temperature.

**MIN/MAX STORAGE:** Min Temp: Not determined; Max Temp: Not determined.

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### PERSONAL PROTECTIVE EQUIPMENT (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves (category A) made of materials such as butyl rubber ≥14 mils, natural rubber ≥14 mils, neoprene rubber ≥14 mils, or nitrile rubber ≥14 mils
- Shoes plus socks

User should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using toilet.
- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance:</b>	Off-white to beige viscous liquid
<b>Odor:</b>	Mild characteristic odor
<b>Physical State:</b>	Liquid
<b>pH:</b>	8.0 – 9.5 (1% suspension)
<b>Boiling Point:</b>	NDA
<b>Melting Point:</b>	NDA
<b>Freezing Point</b>	NDA
<b>Vapor Pressure:</b>	NDA
<b>Vapor Density:</b>	NDA
<b>Specific Gravity:</b>	1.20
<b>Evaporation Rate:</b>	NA
<b>Solubility:</b>	NDA
<b>Percent Solids by Weight:</b>	NDA
<b>Percent Volatile:</b>	NDA
<b>Volatile Organic Compounds (VOC):</b>	NDA
<b>Viscosity:</b>	NDA

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## SECTION 10: STABILITY AND REACTIVITY

<b>Chemical Stability:</b>	Stable
<b>Hazardous Polymerization:</b>	Will not occur
<b>Flash Point:</b>	>93°C
<b>Flammable Point:</b>	NDA
<b>Auto Ignition:</b>	NDA
<b>Incompatibility With Other Materials:</b>	Avoid contact with strong alkaline or acidic materials.
<b>Hazardous Decomposition Products:</b>	Carbon monoxide, Carbon dioxide, Nitrogen oxides. Hazardous polymerization will not occur.

## SECTION 11: TOXICOLOGICAL INFORMATION

**Acute:**

**Eye and Skin:** Mildly irritating to eyes and slightly irritating to the skin (rabbits). Not a contact sensitizer.

**Dermal Toxicity:** The dermal LD<sub>50</sub> in rats is > 2 g/kg.

**Oral Toxicity:** The oral LD<sub>50</sub> in female rats is > 5 g/kg.

**Inhalation Toxicity:** The 4-hour LC<sub>50</sub> in rats is > 2.08 mg/L.

(The following information pertains to the active ingredient, Flucarbazone-sodium technical.)

**Subchronic:** In a subacute dermal study, rats were exposed to technical at 1,000 mg/kg for 6 hr/day for 22 applications. No systemic effects were observed in the treated animals. Subacute studies were conducted in rats and mice to investigate the immunotoxicological potential of technical. Rats were treated by oral gavage for 2 weeks at doses of 100, 300, 600, 1000 or 2500 mg/kg. Mice were administered dietary concentrations of 30, 100 or 1000 ppm for 2 weeks. No treatment-related adverse immunotoxic effects were determined at the end of the study in either species. The NOELs for overall toxicity were 300 mg/kg and 1000 ppm, for rats and mice, respectively.

In a 28-day subacute feeding study, technical was administered to rats at dietary concentrations of 100, 250, 2500 or 10000 ppm. The NOEL was 250 ppm based on immunotoxic effects (decreased splenic cell counts, increased macrophage activation and decreased IgA titers). In a Plaque-forming-cell assay conducted to investigate the immunotoxicological potential of technical, rats were administered dietary concentrations of 1000, 5000 or 20000 ppm for 4 weeks. A special function immunotoxicological test was performed at the end of exposure. There were no treatment-related findings observed at dietary levels up to and including 20000 ppm. The NOEL in the Plaque-forming-cell assay was 20000 ppm, the highest dose tested.

Subchronic (90 day) feeding studies were conducted on technical using mice, rats, and dogs at maximum doses of 7000, 20000, and 50000 ppm, respectively. No treatment-related findings were observed in mice at dietary levels up to and including the highest dose tested. In rats, effects observed included clinical signs of toxicity, changes in clinical chemistries, immunologic changes, reduced spleen weights and histopathological findings in the forestomach. The immunologic changes were completely or largely reversible with only minimal changes observed at the end of a 5-week recovery period. When dogs were administered technical, effects observed included changes in clinical chemistries, hematological changes, red discoloration of the gastric mucosa at necropsy, increased liver and adrenal weights, and histopathological findings (stomach, liver, kidney, adrenals). The overall NOELs established in these studies were 7000 ppm for mice, 250 ppm for rats, and 1000 ppm for dogs.

**Chronic Toxicity:** Dogs were administered Flucarbazone-sodium at dietary concentrations of 200, 1000 or 5000 ppm for 1 year. Effects observed in the study included decreased body weights, increased levels of ALAT, ASAT, GLDH, and N-Demethylase, transient decreased levels of thyroxine (T4), and increased liver

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weights. The decrease in T4 levels was most likely related to an increased hepatic clearance and not a primary effect on the thyroid. This was based on the absence of effects on the other thyroid biomarkers, the slightly increased N-Demethylase levels, and the increased liver weights. The overall NOEL in the dog was 200 ppm. In a 2-year study, rats were administered Flucarbazono-sodium via the diet. The mean daily intake per kg body weight was adjusted on a weekly basis to achieve a daily exposure of 2.5, 7.5, 125 or 1000 mg/kg. Effects observed at the end of the study included decreased body weights, increased food consumption, and an increased incidence of some gross- and histopathological-findings observed in the stomach. The NOEL in the rat was 125 mg/kg.

**Carcinogenicity:** Flucarbazono-sodium was investigated for carcinogenicity in chronic feeding studies using rats and mice at maximum levels of 1000 mg/kg and 7000 ppm, respectively. There was no evidence of a carcinogenic potential observed in either species.

**Mutagenicity:** The results of in vitro and in vivo mutagenicity studies on Flucarbazono-sodium are all negative.

**Developmental Toxicity:** In a developmental toxicity study in rats, Flucarbazono-sodium was administered by oral gavage during gestation at doses of 100, 300 or 1000 mg/kg. Flucarbazono-sodium did not induce any maternal or developmental toxicity at doses up to and including 1000 mg/kg, the limit dose. The NOEL for maternal and developmental toxicity in the rat was 1000 mg/kg. In a developmental toxicity study in rabbits, technical was administered by oral gavage during gestation at doses of 100, 300, 500, or 1000 mg/kg. Developmental effects such as abortions, decreased fetal weights, and delayed skeletal ossification occurred in correlation with systemic maternal toxicity. The NOEL for both maternal and developmental toxicity in the rabbit was 100 mg/kg.

**Reproduction:** In a reproduction study, Flucarbazono-sodium was administered to rats for 2 generations at dietary concentrations of 50, 4000 or 20000/12000 ppm. The high dose was reduced to 12000 ppm after five weeks due to a sharp increase in food intake that resulted in unphysiologically high feces excretion and water consumption accompanied by diarrhea. Other parental toxicity included decreased body weights, decreased organ weights (liver, uterus, spleen), and an increased incidence of caecal dilatations. Effects observed in the offspring included decreased pup weights, decreased liver weights and an increased incidence of a marbled liver surface and air-filled stomachs in pups necropsied at culling. The overall parental NOEL was 50 ppm. The NOEL for reproductive toxicity was 4000 ppm.

**Neurotoxicity:** In an acute neurotoxicity screening study using rats, Flucarbazono-sodium was administered as a single oral dose at levels of 125, 500 or 2000 mg/kg. Transient clinical signs of toxicity and neurobehavioral effects were observed at the high dose without correlating micropathological findings. The NOEL for microscopic lesions was 2000 mg/kg, the highest dose tested. The NOEL for overall toxicity was 500 mg/kg. In a 13-week neurotoxicity screening study, Flucarbazono-sodium was administered to rats at dietary concentrations of 250, 2000 or 20000 ppm. Body weight and food consumption was reduced at the high-dose level. Functional observational battery (FOB) and automated measures of motor and locomotor activity were not affected by treatment. There were no treatment-related microscopic lesions in neural tissues or skeletal muscle in any of the treated animals. There was no evidence of neurotoxicity at any dietary level. The NOEL for microscopic lesions was 20000 ppm, the highest dose tested. The NOEL for overall toxicity was 2000 ppm.

#### **Toxicity of Other Components:**

##### **Cloquintocet-Mexyl:**

Test results reported in Section 11 for the final product take into account any acute hazards related to the Cloquintocet-Mexyl in the formulation.

##### **Propylene Glycol:**

Test results reported in Section 11 for the final product take into account any acute hazards related to the Propylene Glycol in the formulation. Reported to cause central nervous system depression (anesthesia, dizziness, and confusion), headache and nausea. Chronic dietary exposure caused kidney and liver injury in experimental animals.

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**Acticide GA:**

Test results reported in Section 11 for the final product take into account any acute hazards related to the Acticide GA in the formulation.

**Target Organs:**

Flucarbazone-sodium: Liver, stomach

Cloquintocet-Mexyl: Not Applicable

Propylene Glycol: Central nervous system, kidney, liver

**SECTION 12: ECOLOGICAL INFORMATION**

**Aquatic Organism Toxicity:** As with any pesticide, this product should be used according to label directions and should be kept out of streams, lakes and other aquatic habitats of concern.

The following information is based on the active ingredient, Flucarbazone-sodium technical.

Fish toxicity: LC<sub>50</sub> (96-hr) > 96.7 mg/L (Rainbow trout)  
LC<sub>50</sub> (96-hr) > 99.3 mg/L (Bluegill sunfish)

Invertebrate toxicity: EC<sub>50</sub> (48-hr) = 38.8 mg/L (Daphnia magna)  
EC<sub>50</sub> > 10,000 mg/L (bacteria)  
EC<sub>50</sub> (96-hr) = 6.4 mg/L (green algae)

**Avian Toxicity:** Flucarbazone-sodium is not toxic to birds.

Acute oral LD<sub>50</sub> (Bobwhite quail): > 2000 mg/kg

Subchronic oral LC<sub>50</sub>: > 4646 mg/kg (Bobwhite quail)  
> 4969 mg/kg (Mallard duck)

Reproductive toxicity NOEC: 1311 mg/kg (Bobwhite quail)  
223 mg/kg (Mallard duck)

**Other Non-Target Organisms:** Flucarbazone-sodium is not toxic to bees.

The acute LD<sub>50</sub> is > 445 µg/bee for oral and > 200 µg/bee for direct contact.

**SECTION 13: DISPOSAL CONSIDERATIONS**

**Waste disposal information:** Do not reuse empty containers unless they are specifically designed to be refilled. Empty container retains product residue. Triple rinse, or equivalent, empty container, return rinse water to dilution mixture, and dispose of dilution mixture as a hazardous waste if it cannot be disposed of by use according to label instructions. Dispose of empty containers in accordance with local regulations. Consult provincial environment ministry for advice on waste disposal. Industrial/commercial waste may be handled at licensed facilities only. Waste shipments must be securely packaged and properly labeled. Only licensed carriers may be used, and proper documents must accompany the shipment.

**SECTION 14: TRANSPORT INFORMATION**

**Shipping information such as shipping classification:**

TRANSPORTATION OF DANGEROUS GOODS CLASSIFICATION – ROAD/RAIL  
Not Regulated.

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**SECTION 15: REGULATORY INFORMATION**

**WHMIS classification for product:** Exempt

A statement that the MSDS has been prepared to WHMIS requirements, except for use of the 16 headings. This MSDS has been prepared in accordance with WHMIS requirements, but the data are presented under 16 headings.

Other regulations; restrictions and prohibitions

Pest Control Products (PCP) Act Registrations No.: 30342

**SECTION 16: OTHER INFORMATION**

<b>Reason for issue:</b>	New MSDS
<b>Prepared by:</b>	Ashley R. Brown
<b>Issue date:</b>	11/10/2011
<b>Supersedes date:</b>	NA
<b>MSDS number:</b>	00539

The information in this MSDS is based on data available to us as of the issue date given herein, and believed to be correct. Contact Arysta LifeScience North America LLC at (919) 678-4900 to determine if additional data and information have become available since the issue date.

Judgments as to the suitability of information herein for the individual's own use or purposes are necessarily the individual's own responsibility. Although reasonable care has been taken in the preparation of such information, Arysta LifeScience North America LLC extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the individual's purposes or the consequences of its use.

**Product Name:** GBX Herbicide**Issue Date:** 2013.01.23

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**

GBX Herbicide

**COMPANY IDENTIFICATION**

Dow AgroSciences Canada Inc.  
A Subsidiary of The Dow Chemical Company  
Suite 2100, 450 1<sup>st</sup> 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, Hazard Communications.  
**Revision** 2013.01.23**Customer Information Number:** 800-667-3852  
[solutions@dow.com](mailto:solutions@dow.com)**EMERGENCY TELEPHONE NUMBER****24-Hour Emergency Contact:** 613-996-6666**Local Emergency Contact:** 613-996-6666

## 2. Hazards Identification

**Emergency Overview****Color:** Yellow**Physical State:** Liquid**Odor:** Aromatic**Hazards of product:**

**WARNING!** May cause allergic skin reaction. May cause eye irritation. Isolate area.  
Toxic fumes may be released in fire situations.

**Potential Health Effects**

**Eye Contact:** May cause moderate eye irritation. May cause slight corneal injury.

**Skin Contact:** Brief contact may cause slight skin irritation with local redness. May cause drying and flaking of the skin.

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

**Skin Sensitization:** As product: Has demonstrated the potential for contact allergy in mice.

**Inhalation:** No adverse effects are anticipated from single exposure to mist. Based on the available data, respiratory irritation was not observed.

**Ingestion:** Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

**Aspiration hazard:** Based on physical properties, not likely to be an aspiration hazard.

**Effects of Repeated Exposure:** For the major component(s): For similar material(s): In animals, effects have been reported on the following organs: Kidney. For the minor component(s): In animals, effects have been reported on the following organs: Gastrointestinal tract. Thyroid. Urinary tract. Lung. Dose levels producing these effects were many times higher than any dose levels expected from exposure due to use.

**Birth Defects/Developmental Effects:** For the active ingredient(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother. For the minor component(s): N-methyl pyrrolidone has caused toxic effects to the fetus in laboratory animals at high dose levels with either mild or undetectable maternal toxicity.

**3. Composition/information on ingredients**

Component	CAS #	Amount W/W
Fluroxypyr 1-methylheptyl ester	81406-37-3	45.52 %
Solvent naphtha (petroleum), heavy aromatic	64742-94-5	>= 0.7 - <= 2.6 %
N-Methyl-2-pyrrolidone	872-50-4	0.1 %
Balance	Not available	>= 51.8 - <= 53.7 %

Amounts are presented as percentages by weight.

**4. First-aid measures****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.

**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. Suitable emergency safety shower facility should be available in work area.

**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:** No emergency medical treatment necessary.

**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), no additional symptoms and effects are anticipated.

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

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.

Skin contact may aggravate preexisting dermatitis.

## 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.

See Section 9 for related Physical Properties

## 6. Accidental Release Measures

**Personal precautions, protective equipment and emergency procedures:** Isolate area. Keep unnecessary and unprotected personnel from entering the area. 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.

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

**Methods and materials for containment and cleaning up:** 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.

## 7. Handling and Storage

### Handling

**General Handling:** Keep out of reach of children. 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. Use with adequate ventilation. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

### Storage

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.

## 8. Exposure Controls / Personal Protection

### Exposure Limits

Component	List	Type	Value
Fluroxypyr 1-methylheptyl ester	Dow IHG	TWA	10 mg/m <sup>3</sup>
N-Methyl-2-pyrrolidone	CAD ON OEL	TWAEV	400 mg/m <sup>3</sup>
	AIHA WEEL	TWA	40 mg/m <sup>3</sup> 10 ppm SKIN
Solvent naphtha (petroleum), heavy aromatic	CAD ON OEL	TWAEV	1,600 mg/m <sup>3</sup>

*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.

**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

Physical State	Liquid
Color	Yellow
Odor	Aromatic
Odor Threshold	No test data available
pH	4.58 (@ 1 %) <i>ASTM E70</i>
Melting Point	Not applicable
Freezing Point	No test data available
Boiling Point (760 mmHg)	No test data available
Flash Point - Closed Cup	> 100 °C <i>ASTM D3278</i>
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammability (solid, gas)	Not applicable to liquids
Flammable Limits In Air	<b>Lower:</b> No test data available <b>Upper:</b> No test data available
Vapor Pressure	No test data available
Vapor Density (air = 1)	No test data available
Specific Gravity (H <sub>2</sub> O = 1)	1.05
Solubility in water (by weight)	emulsifiable
Partition coefficient, n-octanol/water (log Pow)	No data available for this product. See Section 12 for individual component data.
Autoignition Temperature	358 °C <i>EC Method A15</i>
Decomposition Temperature	No test data available
Dynamic Viscosity	28.2 mPa.s @ 40 °C <i>OECD 114</i>
Kinematic Viscosity	No test data available
Explosive properties	No <i>EEC A14</i>
Liquid Density	1.05 g/ml @ 20 °C <i>OECD 109</i>
Molecular Weight	No test data available
Surface tension	32 mN/m @ 25 °C <i>EC Method A5</i>

## 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

**Acute Toxicity****Ingestion**

As product: LD50, rat, female > 5,000 mg/kg  
No deaths occurred at this concentration.

**Dermal**

As product: LD50, rat, male and female > 5,000 mg/kg  
No deaths occurred at this concentration.

**Inhalation**

LC50, 4 h, Mist, rat, male and female > 5.50 mg/l

**Eye damage/eye irritation**

May cause moderate eye irritation. May cause slight corneal injury.

**Skin corrosion/irritation**

Brief contact may cause slight skin irritation with local redness. May cause drying and flaking of the skin.

**Sensitization****Skin**

As product: Has demonstrated the potential for contact allergy in mice.

**Respiratory**

No relevant data found.

**Repeated Dose Toxicity**

For the active ingredient(s): 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. For the minor component(s): In animals, effects have been reported on the following organs: Gastrointestinal tract. Thyroid. Urinary tract. Lung. Dose levels producing these effects were many times higher than any dose levels expected from exposure due to use.

**Chronic Toxicity and Carcinogenicity**

For similar active ingredient(s). Fluroxypyr-meptyl. Did not cause cancer in laboratory animals.

**Developmental Toxicity**

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 minor component(s): N-methyl pyrrolidone has caused toxic effects to the fetus in laboratory animals at high dose levels with either mild or undetectable maternal toxicity.

**Reproductive Toxicity**

For the active ingredient(s): In animal studies, did not interfere with reproduction.

**Genetic Toxicology**

As product: In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

## 12. Ecological Information

### Toxicity

Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested). Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).

### Fish Acute & Prolonged Toxicity

LC50, *Oncorhynchus mykiss* (rainbow trout), flow-through test, 96 h: 14.3 mg/l

### Aquatic Invertebrate Acute Toxicity

EC50, *Daphnia magna* (Water flea), static test, 48 h, immobilization: 20 mg/l

### Aquatic Plant Toxicity

ErC50, *Pseudokirchneriella subcapitata* (green algae), static test, Growth rate inhibition, 72 h: 9.6 mg/l

### Toxicity to Above Ground Organisms

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

oral LD50, *Apis mellifera* (bees): > 170 ug/bee

contact LD50, *Apis mellifera* (bees): > 340 ug/bee

### Toxicity to Soil Dwelling Organisms

LC50, *Eisenia fetida* (earthworms), 14 d: > 1,000 mg/kg

### Persistence and Degradability

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

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

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

454 d

#### OECD Biodegradation Tests:

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

Theoretical Oxygen Demand: 2.2 mg/mg

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

Biodegradation may occur under aerobic conditions (in the presence of oxygen). 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.

#### OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
30 - 41 %	28 d	OECD 301D Test	fail

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

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

#### OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
91 %	28 d	OECD 301B Test	pass
> 90 %	8 d	OECD 302B Test	Not applicable
73 %	28 d	OECD 301C Test	Not applicable

#### Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
2.199E-11 cm <sup>3</sup> /s	0.486 d	Estimated.

Theoretical Oxygen Demand: 2.58 mg/mg



## Bioaccumulative potential

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

**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

### Data for Component: Solvent naphtha (petroleum), heavy aromatic

**Bioaccumulation:** Bioconcentration potential is high (BCF > 3000 or Log Pow between 5 and 7).

**Partition coefficient, n-octanol/water (log Pow):** 2.9 - 6.1 Measured

**Bioconcentration Factor (BCF):** 61 - 159; Fish

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

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

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

## Mobility in soil

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

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

**Partition coefficient, soil organic carbon/water (Koc):** 6,200 - 43,000 Henry's Law

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

### Data for Component: Solvent naphtha (petroleum), heavy aromatic

**Mobility in soil:** No data available.

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

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

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

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

## 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**

**Proper Shipping Name:** ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S

**Technical Name:** Fluroxypyr

**Hazard Class:** 9 **ID Number:** UN3082 **Packing Group:** PG III

**EMS Number:** f-a,s-f

**Marine pollutant.:** Yes

**ICAO/IATA****Proper Shipping Name:** ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S**Technical Name:** Fluroxypyr**Hazard Class:** 9 **ID Number:** UN 3082 **Packing Group:** PG III**Cargo Packing Instruction:** 964**Passenger Packing Instruction:** 964**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:** 29958

**National Fire Code of Canada**

Not applicable

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

<b>NFPA</b>	<b>Health</b>	<b>Fire</b>	<b>Reactivity</b>
	1	1	1

**Recommended Uses and Restrictions****Identified uses**

End use herbicide product

**Revision**

Identification Number: 1010010 / 1023 / Issue Date 2013.01.23 / Version: 4.0

DAS Code: GF-1784

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

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