

Conquer™ Herbicide

Tank Mix

- Aim® EC Herbicide (PCP No 28573)
- Koril® 235 Liquid Herbicide (PCP No 25341)



Nufarm

Grow a better tomorrow.

MATERIAL SAFETY DATA SHEET

AIM® EC HERBICIDE

MSDS #: 6165-A
Revision date: 2015-03-06
Version 1.04



This MSDS has been prepared to meet U.S. OSHA Hazard Communication Standard 29 CFR 1910.1200
And Canadian Workplace Hazardous Materials Information System (WHMIS) requirements.

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	AIM® EC HERBICIDE
Formula code	006165
Active Ingredient(s)	Carfentrazone-ethyl
Synonyms	CARFENTRAZONE-ETHYL (FMC 116426): ethyl (RS)-2-chloro-3-[2-chloro-5-(4-difluoromethyl-4,5-dihydro-3-methyl-5-oxo-1H-1,2,4-triazol-1-yl)-4-fluorophenyl] propionate; ethyl α ,2-dichloro-5-[4-(difluoromethyl)-4,5-dihydro-3-methyl-5-oxo-1H-1,2,4-triazol-1-yl]-4-fluorobenzenepropanoate
Chemical Family	Triazolinones
Recommended Use:	Herbicide
<u>Manufacturer/Supplier</u>	<u>Emergency telephone number</u>
FMC Corporation Agricultural Solutions 1735 Market Street Philadelphia, PA 19103 General Information: Phone: (215) 299-6000 E-Mail: msdsinfo@fmc.com	Medical Emergencies: 1 800 / 331-3148 (PROSAR - U.S.A. & Canada) 1 651 / 632-6793 (PROSAR - All Other Countries - Collect) For leak, fire, spill or accident emergencies, call: 1 800 / 424 9300 (CHEMTREC - U.S.A.) 1 703 / 527 3887 (CHEMTREC - Collect - All Other Countries)

2. HAZARDS IDENTIFICATION

<u>Appearance</u>	Brown orange liquid
<u>Physical State</u>	Liquid
<u>Odor</u>	Aromatic
<u>Potential Health Effects</u>	
Principal Routes of Exposure	Eye Contact, Skin Contact, Inhalation, Ingestion
Acute Effects	
Eyes	May cause slight irritation.
Skin	Substance may cause slight skin irritation.
Inhalation	May cause irritation of respiratory tract. May cause central nervous system depression with nausea, headache, dizziness, vomiting, and incoordination.
Ingestion	Potential for aspiration if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. May cause central nervous system depression.
Chronic Effects	Carfentrazone-ethyl: Long-term exposure caused hematotoxicity and deposit of porphyrin in the liver in animal studies.

Environmental Hazard

See Section 12 for additional Ecological Information.

3. COMPOSITION/INFORMATION ON INGREDIENTS**Hazardous ingredients**

Chemical name	CAS-No	Weight %
Carfentrazone-ethyl	128639-02-1	21.9
Naphtha (petroleum), heavy aromatic	64742-94-5	60-70
2-Methylnaphthalene	91-57-6	20-30
1-Methylnaphthalene	90-12-0	10-20
Naphthalene	91-20-3	0.1-1

4. FIRST AID MEASURES

Skin Contact	Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for further treatment advice.
Eye Contact	Hold eyes 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 center or doctor for further treatment advice.
Inhalation	Move person to fresh air. If person is not breathing, call 911 (within the U.S. and Canada) or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.
Ingestion	Immediately call a poison control center or doctor. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give any liquid to the person. Do not induce vomiting or give anything by mouth to an unconscious person.
Notes to Physician	Treatment is symptomatic and supportive. Contains petroleum distillate. Vomiting may cause aspiration pneumonia.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media	Water spray. Carbon dioxide (CO ₂). Foam. Dry powder.
Hazardous Combustion Products	None known.
Specific Hazards Arising from the Chemical	Slightly combustible. May support combustion at elevated temperatures.
Protective equipment and precautions for firefighters	Wear self-contained breathing apparatus and protective suit.

NFPA

Health Hazards	1
Flammability	2
Stability	0
Special Hazards	-

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions	Isolate and post spill area. Remove all sources of ignition. Wear suitable protective clothing, gloves and eye/face protection. For personal protection see section 8.
Environmental Precautions	Keep people and animals away from and upwind of spill/leak. Keep material out of lakes, streams, ponds, and sewer drains. See Section 12 for additional Ecological Information.
Methods for Containment	Dike to prevent runoff. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.
Methods for cleaning up	Clean and neutralize spill area, tools and equipment by washing with bleach water and soap. Absorb rinsate and add to the collected waste. Waste must be classified and labeled prior to recycling or disposal. Dispose of waste as indicated in Section 13.
Other	For further clean-up instructions, call FMC Emergency Hotline number listed in Section 1 "Product and Company Identification" above.

7. HANDLING AND STORAGE

Handling	Do not contaminate other pesticides, fertilizers, water, food, or feed by storage or disposal.
Storage	Keep in a dry, cool and well-ventilated place. Keep away from open flames, hot surfaces and sources of ignition. Keep out of reach of children and animals. Keep/store only in original container.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Chemical name	ACGIH TLV	OSHA PEL	NIOSH	Mexico
2-Methylnaphthalene 91-57-6	S* TWA: 0.5 ppm			
1-Methylnaphthalene 90-12-0	S* TWA: 0.5 ppm			
Naphthalene 91-20-3	S* TWA: 10 ppm	TWA: 10 ppm TWA: 50 mg/m ³	IDLH: 250 ppm TWA: 10 ppm TWA: 50 mg/m ³ STEL: 15 ppm STEL: 75 mg/m ³	Mexico: TWA 10 ppm Mexico: TWA 50 mg/m ³ Mexico: STEL 15 ppm Mexico: STEL 75 mg/m ³
Chemical name	British Columbia	Quebec	Ontario TWAEV	Alberta
2-Methylnaphthalene 91-57-6	TWA: 0.5 ppm Skin		TWA: 0.5 ppm Skin	
1-Methylnaphthalene 90-12-0	TWA: 0.5 ppm Skin		TWA: 0.5 ppm Skin	
Naphthalene 91-20-3	TWA: 10 ppm STEL: 15 ppm Skin	TWA: 10 ppm TWA: 52 mg/m ³ STEL: 15 ppm STEL: 79 mg/m ³	TWA: 10 ppm STEL: 15 ppm Skin	TWA: 10 ppm TWA: 52 mg/m ³ STEL: 15 ppm STEL: 79 mg/m ³ Skin

Occupational exposure controls

Engineering measures	Apply technical measures to comply with the occupational exposure limits. When working in confined spaces (tanks, containers, etc.), ensure that there is a supply of air suitable for breathing and wear the recommended equipment.
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Personal protective equipment

General information	If the product is used in mixtures, it is recommended that you contact the appropriate protective equipment suppliers. These recommendations apply to the product as supplied.
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Respiratory Protection	For dust, splash, mist or spray exposures wear a filtering mask.
Eye/Face Protection	For dust, splash, mist or spray exposure, wear chemical protective goggles
Skin and Body Protection	Wear long-sleeved shirt, long pants, socks, and shoes.
Hand Protection	Protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion and the contact time.
Hygiene measures	Clean water should be available for washing in case of eye or skin contamination. Wash skin prior to eating, drinking, chewing gum or using tobacco. Shower or bathe at the end of working. Remove and wash contaminated clothing before re-use. Launder work clothing separately from regular household laundry.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Brown orange liquid
Color	Brown orange
Physical State	Liquid
Odor	Aromatic
pH	5.3 (1% solution)
Boiling Point/Range	Not applicable
Flash point	79.9 °C / 168.08 °F Closed cup
Density	9.0 lb/gal
Specific gravity	1.08 @ 20°C
Water solubility	No information available

10. STABILITY AND REACTIVITY

Stability	Stable under recommended storage conditions.
Conditions to Avoid	Heat, flames and sparks
Materials to avoid	Strong oxidizing agents
Hazardous Decomposition Products	Carbon monoxide (CO), Carbon dioxide (CO ₂), Hydrogen chloride, Hydrogen fluoride, Nitrogen oxides (NO _x), Sulfur oxides.
Hazardous polymerization	Hazardous polymerization does not occur.

11. TOXICOLOGICAL INFORMATION

Acute Effects

Acute toxicity

Signs of toxicity in laboratory animals included mydriasis, cyanosis, ataxia, dyspnea, lacrimation, and diarrhea.

Eye Contact	Minimally irritating
Skin Contact	Slightly or non-irritating (rabbit)
LD50 Dermal	> 4000 mg/kg (rat)
LD50 Oral	4077 mg/kg (rat)

LC50 Inhalation > 6.31 mg/L 4 hr (rat)

Sensitization Non-sensitizing

Chronic Effects

Chronic toxicity Carfentrazone-ethyl: Long-term exposure caused hematotoxicity and deposit of porphyrin in the liver in animal studies.

Carcinogenicity Carfentrazone-ethyl : No evidence of carcinogenicity from animal studies. There was no evidence of carcinogenic activity of naphthalene in male mice, but there was some evidence of carcinogenic activity in female mice and clear evidence of carcinogenic activity in male and female rats in 2-year inhalation studies conducted by the National Toxicology Program (NTP).

Mutagenicity Carfentrazone-ethyl : Not genotoxic in laboratory studies.

Reproductive toxicity Carfentrazone-ethyl : No toxicity to reproduction in animal studies.

Neurological effects Carfentrazone-ethyl : Not neurotoxic.

Developmental toxicity Carfentrazone-ethyl : Not teratogenic in animal studies.

Chemical name	ACGIH	IARC	NTP	OSHA	NIOSH - Target Organs
Naphthalene	A3	Group 2B	Reasonably Anticipated	X	eyes,blood,liver,kidneys,skin,CNS

Legend:

ACGIH (American Conference of Governmental Industrial Hygienists)

A3 - Animal Carcinogen

IARC (International Agency for Research on Cancer)

Group 2B - Possibly Carcinogenic to Humans

NTP (National Toxicology Program)

Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen

OSHA (Occupational Safety and Health Administration of the US Department of Labor)

X - Present

12. ECOLOGICAL INFORMATION

Ecotoxicity effects

Carfentrazone-ethyl (128639-02-1)				
Active Ingredient(s)	Duration	Species	Value	Units
Carfentrazone-ethyl	72 h EC50	Algae	0.012	mg/L
	96 h LC50	Fish	1.6	mg/L
	48 h LC50	Daphnia	>9.8	mg/L
	96 h NOEC	Algae	1.0	µg/L
	21 d NOEC	Fish	0.0187	mg/L
	21 d NOEC	Crustacea	0.22	mg/L

Chemical name	Toxicity to algae	Toxicity to fish	Toxicity to Microorganisms	Toxicity to daphnia and other aquatic invertebrates

Naphtha (petroleum), heavy aromatic		96 h LC50: = 19 mg/L (Pimephales promelas) 96 h LC50: = 2.34 mg/L (Oncorhynchus mykiss) 96 h LC50: = 1740 mg/L (Lepomis macrochirus) 96 h LC50: = 45 mg/L (Pimephales promelas) 96 h LC50: = 41 mg/L (Pimephales promelas)		48 h EC50: 0.95 mg/L (Daphnia magna)
Naphthalene		96 h LC50: 5.74 - 6.44 mg/L (Pimephales promelas) 96 h LC50: = 1.6 mg/L (Oncorhynchus mykiss) 96 h LC50: 0.91 - 2.82 mg/L (Oncorhynchus mykiss) 96 h LC50: = 1.99 mg/L (Pimephales promelas) 96 h LC50: = 31.0265 mg/L (Lepomis macrochirus)		48 h LC50: 2.16 mg/L (Daphnia magna) 48 h EC50: 1.96 mg/L (Daphnia magna) 48 h EC50: 1.09 - 3.4 mg/L (Daphnia magna)

Environmental Fate

Chemical name	Partition coefficient
2-Methylnaphthalene	3.86
Naphthalene	3.3

Persistence and degradability Carfentrazone-ethyl : Non-persistent. Readily hydrolyzed. Not readily biodegradable.

Bioaccumulation Carfentrazone-ethyl : The substance does not have a potential for bioconcentration.

Mobility Carfentrazone-ethyl : Mobility in soil: Not relevant

13. DISPOSAL CONSIDERATIONS

Waste disposal methods Improper disposal of excess pesticide, spray mixture, or rinsate is prohibited. If these wastes cannot be disposed of by use according to label instructions, contact appropriate disposal authorities for guidance.

Contaminated Packaging Containers must be disposed of in accordance with local, state and federal regulations. Refer to the product label for container disposal instructions. Do not reuse or refill this container.

14. TRANSPORT INFORMATION

DOT This material is a Combustible liquid and is, therefore, not subject to the hazardous materials regulations when in non-bulk packages shipped within the USA per 49 CFR §173.150(f)(2).

Packaging Type	Bulk
Proper Shipping Name	Combustible liquid, n.o.s
UN/ID no	NA1993
Hazard class	3
Packing Group	III
Reportable Quantity (RQ)	Napthalene
Additional Information	Napthalene is a "RQ" quantity when this material meets or exceeds 100 pounds (45.4 kg) per package.

TDG Classification below is only applicable when shipped by vessel and is not applicable when shipped by road or rail only.

UN/ID no	UN3082
Hazard class	9
Packing Group	III
Marine Pollutant	Carfentrazone-ethyl

Description UN3082, Environmentally hazardous substance, liquid, n.o.s. (Carfentrazone-ethyl), 9, PG III, Marine Pollutant

ICAO/IATA

UN/ID no UN3082
Hazard class 9
Packing Group III
Marine Pollutant Carfentrazone-ethyl
Description UN3082, Environmentally hazardous substance, liquid, n.o.s. (Carfentrazone-ethyl), 9, PG III, Marine Pollutant

IMDG/IMO

UN/ID no UN3082
Hazard class 9
Packing Group III
EmS No. F-A, S-F
Marine Pollutant Carfentrazone-ethyl
Description UN3082, Environmentally hazardous substance, liquid, n.o.s. (Carfentrazone-ethyl), 9, PG III, Marine Pollutant

15. REGULATORY INFORMATION

U.S. Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical name	CAS-No	Weight %	SARA 313 - Threshold Values %
n-Butanol	71-36-3	1-5	1.0
Naphthalene	91-20-3	0.1-1	0.1

SARA 311/312 Hazard Categories

Acute health hazard Yes
Chronic health hazard Yes
Fire hazard No
Sudden release of pressure hazard No
Reactive Hazard No

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302):

Chemical name	Hazardous Substances RQs	Extremely Hazardous Substances RQs
Naphthalene	100 lb	

TSCA (United States)

Component	U.S. - TSCA (Toxic Substances Control Act) - Section 4 - Chemical Test Rules (40 CFR 799)	U.S. - TSCA (Toxic Substances Control Act) - Section 5(a)(2) - Chemicals with Significant New Use Rules (SNURs)
Naphthalene 91-20-3 (0.1-1)	40 CFR 799.5115	
Chemical name	U.S. - TSCA (Toxic Substances Control Act) - Section 8(a) - Chemical-Specific Reporting and Recordkeeping	
Naphthalene	PAIR: 08/04/1995	
Component	U.S. - TSCA (Toxic Substances Control Act) - Section 8(d) - 716.120(a) - Health and Safety Reporting - List of Substances	
Naphthalene 91-20-3 (0.1-1)	06/01/1987	

International Regulations

Mexico - Grade Moderate risk, Grade 2

Chemical name	Carcinogen Status	Mexico
Naphthalene		Mexico: TWA 10 ppm Mexico: TWA 50 mg/m ³ Mexico: STEL 15 ppm Mexico: STEL 75 mg/m ³

CANADA

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

WHMIS Hazard Class

B3 - Combustible liquid
 D2A - Very toxic materials



16. OTHER INFORMATION

Revision date: 2015-03-06
 Reason for revision: (M)SDS sections updated.

Disclaimer

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Prepared By:

FMC Corporation

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End of Safety Data Sheet



NUFARM AGRICULTURE INC.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

SUPPLIED BY:

Nufarm Agriculture Inc.
Ste 350, 2618 Hopewell Pl NE
Calgary, AB T1Y 7J7
Phone Number: 1-800-868-5444
Fax Number: (403) 219-2092

MANUFACTURED BY:

Nufarm Agriculture Inc.
Ste 350, 2618 Hopewell Pl NE
Calgary, AB T1Y 7J7
Phone Number: 1-800-868-5444
Fax Number: (403) 219-2092

PRODUCT:**Koril[®] 235 Emulsifiable Herbicide****PCP NUMBER:**

25341

DATE PREPARED:

April 4, 2017

PREPARER:

Nufarm Agriculture Inc.; Regulatory Affairs & Research Department

CHEMICAL FAMILY/USE:

Herbicide.

FORMULA: $C_{15}H_{17}Br_2NO_2$ **CHEMICAL SYNONYMS:**

Bromoxynil octanoate ester; 3,5-dibromo-4-hydroxybenzotrile, octanoate ester;
octanoic acid ester of bromoxynil; 2,6-dibromo-4-cyanophenyl octanoate

TELEPHONE NUMBERS:

24 Hour Emergency Response Number, Chemtrec, 1-800-424-9300.

For medical emergencies, ProPharma Group, 1-877-325-1840.

For product and use information, Nufarm Agriculture Inc.,

1-800-868-5444.

2. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Ingredients	Wt. %	CAS NO.
Bromoxynil octanoate ester	30-35	1689-99-2
Aromatic hydrocarbon solvent	50-60	64742-94-5
Naphthalene	< 1	91-20-3
Emulsifiers and other proprietary ingredients	5-15	NA

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: WARNING-POISON. Keep out of reach of children. Combustible. Do not get into eyes, on skin, or on clothing. Do not inhale spray mist (e.g., during herbicide application). Eye and skin irritant. Potential skin sensitizer.

EFFECTS OF ACUTE EXPOSURE:

INGESTION: Harmful if swallowed. May cause headache, dizziness, nausea, vomiting, gastrointestinal irritation, weakness, central nervous system depression, unconsciousness, respiratory failure, or in extreme cases, death. Small amounts of liquid aspirated into the respiratory system during ingestion or from vomiting may cause mild to severe pulmonary injury and possibly death.

SKIN CONTACT: Causes severe skin irritation. Harmful if absorbed through the skin. Overexposure by skin absorption may cause symptoms similar to those for ingestion. May cause allergic reaction in sensitive individuals.

INHALATION: Low to moderate inhalation toxicity based on laboratory animal testing of a similar formulation as a mist. Inhalation toxicity by vapour is unlikely under normal conditions, however, high concentrations of vapours from undiluted product may cause headache, dizziness, respiratory tract irritation and symptoms similar to those from ingestion.

EYE CONTACT: Causes severe eye irritation.



NUFARM AGRICULTURE INC.

MEDICAL CONDITIONS AGGRAVATED: Skin exposure may aggravate preexisting skin conditions. Inhalation of spray mist may aggravate preexisting respiratory conditions.

SUBCHRONIC (TARGET ORGAN) EFFECTS: (An adverse effect with symptoms that develop slowly over a long period of time): Repeated overexposure may cause chronic dermatitis, reproductive and developmental effects. See below.

CHRONIC EFFECTS/CARCINOGENICITY: Bromoxynil phenol has been classified by U.S. EPA in Group C, limited evidence of carcinogenicity in animals. A minor ingredient in this product, naphthalene, has been reported by the U.S. National Toxicology Program to be associated with increased nose/lung tumors in laboratory animals via inhalation exposure.

REPRODUCTIVE TOXICITY: Animal studies on bromoxynil phenol did not indicate a pattern of reproductive toxicity, but a study on bromoxynil octanoate indicated possible mild male reproductive toxicity at high doses.

DEVELOPMENTAL TOXICITY: Based on the results of studies in laboratory animals, bromoxynil phenol is considered to be a developmental toxicant. Women of childbearing age should avoid excessive exposure.

GENOTOXICITY: There have been some positive and some negative studies, but the weight of evidence is that bromoxynil is not mutagenic.

PRINCIPLE ROUTES OF EXPOSURE: Eye contact. Skin absorption. Inhalation. Oral.

TOXICOLOGICALLY SYNERGISTIC MATERIALS: None known.

OTHER: None known.

4. FIRST AID MEASURES

Remove person from contaminated area, remove contaminated clothing. Keep patient warm, comfortable, at rest.

In case of Ingestion: Call a poison control centre or doctor immediately for treatment advice. Do not induce vomiting unless told to do so by a poison control centre or doctor. Do not give **any** liquid to the person. Do not give anything by mouth to an unconscious person.

In case of Eye Contact: Hold eye 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 eye. Call a poison control centre or doctor for treatment advice.

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

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

Take container, label or product name and Pest Control Product Registration Number with you when seeking medical attention.

NOTE TO PHYSICIAN: This product contains petroleum distillates. If large amounts have been ingested, empty the stomach by gastric intubation with the aid of a cuffed endotracheal tube to prevent aspiration and possible chemical pneumonia.

No specific antidote. Treatment based on sound judgment of physician and individual reactions of patient. Overexposure to materials other than this product may have occurred.

5. FIRE FIGHTING MEASURES

FLASH POINT: > 94°C.

CONDITIONS OF FLAMMABILITY:.....Combustible mixture. When heated above the flash point, this material emits vapours which, when mixed with air, can burn or be explosive. Heavier than air vapours may travel to an ignition source.

FLAMMABLE LIMITS IN AIR - Upper (%):.....NA. Approximately 11-13 for hydrocarbon component.

FLAMMABLE LIMITS IN AIR - Lower (%):.....NA. Approximately 1.5-2.1 for hydrocarbon component.

AUTOIGNITION TEMPERATURE:NA.

SENSITIVITY TO MECHANICAL IMPACT (Y/N):NA. No sensitivity expected based on similar products.

SENSITIVITY TO STATIC DISCHARGE:NA. Sensitivity possible based on solvent data.



NUFARM AGRICULTURE INC.

EXTINGUISHING MEDIA: Water fog, alcohol foam, carbon dioxide, dry chemical.

SPECIAL FIREFIGHTING PROCEDURES: Firefighters should wear self-contained breathing apparatus and full protective clothing when fighting chemical fires. Minimize and contain water runoff.

6. ACCIDENTAL RELEASE MEASURES

ACTION TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Use safety equipment and procedures appropriate to the size of the spill. Keep potential ignition sources and unnecessary people away. Avoid runoff to natural waters and sewers. Surround and absorb spills with inert material such as perlite, clay granules, vermiculite, sand or dirt. Contain all affected material in a closed, labeled container for proper disposal. Isolate from other waste materials. Clean contaminated area such as hard surfaces with detergent and water, collecting cleaning solution for proper disposal. Large spills to soil or similar surfaces may necessitate removal of top soil.

7. HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: This product is not extremely combustible, but it is suggested to handle as a combustible liquid. Keep away from potential ignition sources. This material may accumulate a static charge that can discharge violently. Empty, unrinsed containers can retain combustible liquid product or vapours. Improper handling of these may cause injury, or in extreme cases, death. Keep away from food and feed products. Avoid storage in close proximity to insecticides, fungicides, fertilizers, plants and seeds. Avoid contact with eyes, skin and clothing. Keep container tightly closed when not in use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE LIMITS:

Hazardous Ingredients	TWA*	ACGIH TLV®	STEL	Units
Naphthalene	10	N/E	15	ppm
Total hydrocarbons	15**	N/E	N/E	ppm

*8-hour TWA unless otherwise noted

**unofficial recommendation of solvent manufacturer

ENGINEERING CONTROLS: Use in a well ventilated area. General ventilation with a good source of make-up air recommended as minimum for indoor situations. Ventilation should be adequate to maintain air concentrations below flammable limits.

RESPIRATORY PROTECTION EQUIPMENT: Use an approved pesticide respirator if ventilation is not adequate or exposure to sprays, mists or concentrated vapours is likely.

PROTECTIVE GLOVES: Chemical-resistant gloves such as nitrile.

EYE AND FACE PROTECTION: Goggles or face shield when handling concentrate.

OTHER PROTECTIVE EQUIPMENT: Long sleeved shirt, long pants, socks and shoes suggested as minimum work clothing. Generally, a second layer such as coveralls suggested for handling concentrate. Use other equipment appropriate to specific situation.

VENTILATION: Use only in well ventilated area.

9. PHYSICAL AND CHEMICAL PROPERTIES

NOTE: Physical data are typical values, but may vary from sample to sample. A typical value should not be construed as a guaranteed analysis or as a specification.

BOILING POINT:NA. Hydrocarbon solvent 235-278° C.

VAPOR PRESSURE:NA. Hydrocarbon solvent < 0.1 kPa @ 20° C.



NUFARM AGRICULTURE INC.

VAPOR DENSITY (air = 1):.....NA. Hydrocarbon solvent > 5.
FREEZING POINT:..... Approximately -20° C.
MELTING POINT: Approximately 0° C.
PHYSICAL STATE:.....Liquid.
ODOUR:.....Hydrocarbon.
COLOUR:..... Amber to brown.
ODOR THRESHOLD (ppm):.....NA.
EVAPORATION RATE (butyl acetate = 1):.....NA.
SPECIFIC GRAVITY (water = 1):.....About 1.049
DENSITY @ 25°C:About 1.049
pH:.....Approximately 4-5 (1% aqueous)
SOLUBILITY IN WATER (20°C):.....Product is emulsifiable in water.
COEFFICIENT OF WATER/OIL DISTRIBUTION:.....NA. Product is oil soluble.

10. STABILITY AND REACTIVITY

STABILITY: Stable.

HAZARDOUS POLYMERIZATION: Will not occur.

HAZARDOUS THERMAL DECOMPOSITION/COMBUSTION PRODUCTS: Hydrogen bromide, other bromine compounds, carbon dioxide, carbon monoxide, oxides of nitrogen, oxides of sulfur and other potentially toxic combustion products may be present.

INCOMPATIBILITY (MATERIALS TO AVOID): Avoid contact with strong acidic, basic or oxidizing agents.

CONDITIONS TO AVOID: None known.

11. TOXICOLOGICAL INFORMATION

Values are estimates based on studies conducted on similar formulations:

ACUTE ORAL LD₅₀ (mg/kg):..... 1125 (Rat, male); 685 (Rat, female)

ACUTE DERMAL LD₅₀ (mg/kg): > 5000 (Rat, both sexes)

ACUTE INHALATION LC₅₀ (mg/l): 0.99 mg/l (4-Hour Rat, combined male and female, whole body)

OTHER: Severe skin and eye irritant (Rabbit). Contact sensitizer (Guinea Pig).

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION:

Data on bromoxynil octanoate:

96-HOUR LC₅₀ (mg/L): 0.1 (Rainbow Trout)

96-HOUR LC₅₀ (mg/L): 0.053 (Bluegill)

48-HOUR EC₅₀ (mg/L): 0.096 (Daphnia)

DIETARY LC₅₀ (ppm): 1150 (Bobwhite Quail)

DIETARY LC₅₀ (ppm): 1880 (Mallard Duck)

CHEMICAL FATE INFORMATION: Bromoxynil octanoate ester degrades readily to bromoxynil phenol in the environment. Representative soil half-lives are 2 days for the octanoate and 14 days for the phenol.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: For information on disposal of unused, unwanted product, contact the manufacturer or the provincial regulatory agency. Disposal should be made in accordance with federal, provincial and local regulations. Contact the manufacturer



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and the provincial regulatory agency in case of a spill, and for clean up of spills.

Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned or destroyed. Do not reuse container for any purpose. If applicable, return container in accordance with return program. If a recyclable container, dispose of at a container collection site. Contact local distributor, dealer or municipality for the location of the nearest collection site. Before taking the container to the collection site, triple or pressure rinse the empty container adding rinsings to spray tank, and make container unsuitable for further use. If there is no container collection site in your area, dispose of the container in accordance with provincial requirements.

14. TRANSPORT INFORMATION

CANADIAN TDG DESCRIPTION (Road & Rail): Contact manufacturer for updates to transport information.

Refer to carton markings.

2012 and earlier production: PESTICIDE, LIQUID, TOXIC, N.O.S. (BROMOXYNIL), 6.1, UN2902, PG III.

2013 and later production: UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Bromoxynil), Class 9, PG III

Section 1.45.1 of the TDG Regulations provides an exemption from documentation and safety marks only for this product and only when transported by a road or railway vehicle.

15. REGULATORY INFORMATION

WHMIS HAZARD CLASS: D1B and D2B Toxic Materials.

WHMIS TRADE SECRET: Exempt. (This product is regulated under the Pest Control Products Act - WHMIS exempt.)

CANADIAN INVENTORY: This product is currently exempt from CEPA.

HAZARD RATING SYSTEMS:

HMIS: Not Available

National Fire Protection Association (NFPA®) Hazard Ratings:

Ratings for This Product		Key to Ratings	
2	Health Hazard	0	Minimal
2	Flammability	1	Slight
0	Instability	2	Moderate
		3	Serious
		4	Severe

16. OTHER INFORMATION

EMERGENCY TELEPHONE NUMBERS:

For spills or transportation accidents, Chemtrec, 1-800-424-9300.

For health or environmental emergencies, Prosar, 1-877-325-1840.

For product and use information, Nufarm Agriculture Inc., 1-800-868-5444.

REVISIONS:

The following has been revised since the last issue of this SDS: Section 1, 3 & 11 revisions.



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ADDITIONAL INFORMATION:

Abbreviations used throughout the SDS are: NA = Not available

NAp = Not applicable

N/E = None Established.

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

Company and published references utilized in preparation of the SDS.

*****END OF SDS*****