

Enforcer[®] MSU

Herbicide Tank Mix

- **Enforcer[®] M Herbicide (PCP No 30691)**
- **Nufarm Boost[®] Herbicide (PCP No 30377)**



Nufarm

Grow a better tomorrow.



Enforcer M Herbicide Safety Data Sheet

Issue Date: 2017-12-20

Supersedes Date: 2017-05-17

{Reserved}

1. Identification

Product Name: Enforcer M Herbicide

PCP Registration No.: 30691

Refer to the approved product label for handling and use instructions.

Product Type: Herbicide

Supplier: Nufarm Agriculture Inc.
Suite 350, 2618 Hopewell Place NE
Calgary, Alberta, T1Y 7J7, Canada
1-800-868-5444

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. Hazard Identification

Classified according to UN GHS Version 5.

Physical Hazards:

None

Health Hazards:

Skin irritation	Category 2
Skin sensitizer	Category 1B
Acute toxicity (Oral)	Category 4
Acute toxicity (Inhalation)	Category 4

Environmental Hazards:

Hazardous to aquatic environment, acute Category 1

Signal Word:

WARNING

Hazard Statements:

Causes skin irritation. May cause an allergic skin reaction. Harmful if swallowed.
Harmful if inhaled. Very toxic to aquatic life.



Precautionary Statements:

Avoid contact with skin, eyes and clothing. Wear goggles or face shield during mixing/loading. Wear coveralls over a long-sleeved shirt, long pants, socks, shoes and chemical-resistant gloves. Rinse gloves before removal. After use, wash hands and other exposed skin. Remove and wash contaminated clothing before reuse. Avoid breathing spray mist. Use only outdoors or in a well-ventilated area. Do not eat, drink or smoke when using this product. Harmful if swallowed. This product contains an active ingredient and petroleum distillates which are toxic to aquatic organisms.

3. Composition / Information on Ingredients
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Hazardous Components	CAS No.	Wt. %
MCPA 2-ethylhexyl ester	29450-45-1	27.5-29.5
Chemical Synonyms: MCPA 2EH; 2-ethylhexyl 2-(4-chloro-2-methylphenoxy)acetate; 2-ethylhexyl (4-chloro-2-methylphenoxy)acetate		
Bromoxynil octanoate	1689-99-2	26.0-28.0
Chemical Synonyms: 2,6-dibromo-4-cyanophenyl octanoate		
Solvent naphtha (petroleum), heavy aromatic, naphthalene depleted	64742-94-5	23.5-25.0
Fluroxypyr 1-methylheptyl ester	81406-37-3	9.9-11.4
Chemical Synonyms: fluroxypyr MHE; fluroxypyr-meptyl; 1-methylheptyl [(4-amino-3,5-dichloro-6-fluoro-2-pyridinyl)oxy]acetate		

Other ingredients are considered non-hazardous.

Content as Expressed on Product Label
Fluroxypyr, present as 1-methylheptyl ester... 80 g a.e. /L
Bromoxynil, present as octanoate ester ... 200 g/L
MCPA, present as 2-ethylhexyl ester ... 200 g a.e. /L

4. First Aid Measures

If swallowed, 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.

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.

If in eyes, 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 inhaled, 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.

DO NOT induce vomiting. This product contains petroleum distillates. Vomiting may cause aspiration pneumonia. No specific antidote. Employ supportive care. High concentrations of MCPA may cause severe irritation to the eyes. Symptoms of overexposure to MCPA could include slurred speech, twitching, jerking and spasms, drooling, low-blood pressure and unconsciousness. Treat symptomatically.

5. Fire-fighting Measures

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.

Flash Point:..... 100 C

Conditions of Flammability: Not classed as a combustible liquid, but may burn under fire conditions.

Hazardous Decomposition Products: ... Under fire conditions, may produce gases such as hydrogen bromide or other bromine compounds, hydrogen chloride, nitrogen oxides and carbon oxides.

National Fire Protection Association (NFPA) Hazard Rating:

Rating for this product: Health: 2 Flammability: 1 Reactivity: 0

Hazards Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

6. Accidental Release Measures

Use safety equipment and procedures appropriate to the size of the spill. Keep unnecessary people away. Avoid runoff to natural waters and sewers. Surround and absorb spills with inert material such as perlite, sawdust, 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

Handling: Avoid contact with skin, eyes and clothing. Wear goggles or face shield during mixing/loading. Wear coveralls over a long-sleeved shirt, long pants, socks, shoes and chemical-resistant gloves. Rinse gloves before removal. After use, wash hands and other exposed skin. Remove and wash contaminated clothing before reuse. Avoid breathing spray mist. Do not eat, drink or smoke when using this product.

Storage: Store the container tightly closed away from seeds, fertilizer, plants and foodstuffs. May be stored at any temperature. Shake well before using.

8. Exposure Controls / Personal Protection

Engineering Controls: Use only outdoors or in a well-ventilated area.

Personal Protective Equipment: Goggles or face shield, coveralls, long-sleeved shirt, long pants, socks, shoes and chemical-resistant gloves. Rinse gloves before removal.

Exposure Guidelines:

Component	TWA*	STEL**	Reference/Note
MCPA 2-ethylhexyl ester	N/E	N/E	None found
Bromoxynil octanoate	0.21 mg/m ³	N/E	Supplier recommendation
Solvent naphtha (petroleum), heavy aromatic, naphthalene depleted	50 mg/m ³	N/E	Supplier recommendation
Fluroxypyr 1-methylheptyl ester	10 mg/m ³	N/E	Supplier recommendation

*Time-weighted Average, 8-hour unless otherwise noted.

**Short Term Exposure Limit

NE = Not Established

Refer to approved product label for additional exposure control guidance.

9. Physical and Chemical Properties
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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. If no value is determined for the formulation, the value listed is the most relevant value of the predominant ingredient(s).

Appearance (physical state, colour, etc.)	clear amber liquid
Odour	hydrocarbon-like
Odour threshold	not available
pH	4.2 (1% w/w dilution)
Melting point / Freezing point	~-20C
Initial boiling point and boiling range	>185C (bromoxynil octanoate)
Flash point	100C
Evaporation rate	<0.01 (n-butyl acetate = 1) (solvent)
Flammability (solids, gases)	not applicable
Upper / Lower flammability or explosive limits ...	LEL = 0.7, UEL = 5.6 vol. % in air (solvent)
Vapour pressure	4.0 Pa @ 20C (solvent) < 10 ⁻⁷ Pa @ 25C (bromoxynil octanoate) 5.7 x 10 ⁻³ mm Hg @ 25C (MCPA 2EH) 1.349 x 10 ⁻³ mPa @20C (fluroxypyr MHE)
Vapour density	5.6 @ 101 kPa (air = 1) (solvent)
Relative density	1.135 @ 20C
Solubility(ies)	negligible in water, emulsifiable highly soluble in organic solvents
Partition coefficient: n-octanol/water	logP = 5.9 @ pH 7, 25C (bromoxynil octanoate) logP = 6.8 (MCPA 2EH)

logP = 5.04 @ pH 7 (fluroxypyr MHE)

Autoignition temperature not available
Decomposition temperature >60C (fluroxypyr MHE)
Viscosity (kinematic)..... 36.75 cSt @ 20C

10. Stability and Reactivity

Reactivity: Not reactive.

Chemical Stability: Stable under normal handling and storage conditions.

Possibility of Hazardous Reactions: Hazardous polymerization will not occur.

Conditions to Avoid: Excessive heat. Do not store near heat or flame.

Incompatible Materials: Avoid contact with strong acidic, basic or oxidizing agents.

Hazardous Decomposition Products: Under fire conditions, may produce gases such as hydrogen bromide or other bromine compounds, hydrogen chloride, nitrogen oxides and carbon oxides.

11. Toxicological Information

Likely routes of exposure: Inhalation, ingestion, skin and eye contact.

Eye contact: May cause eye irritation, generally of minimal degree. Causes redness and tearing.

Skin contact: Causes skin irritation. May cause an allergic skin reaction.

Ingestion: Harmful if swallowed. May cause headache, dizziness, nausea, vomiting, gastrointestinal irritation, abdominal pain, central nervous system depression, temporary loss of muscle coordination, decreased blood pressure, fatigue, muscle weakness, muscle spasms, unconsciousness, respiratory failure, or in extreme cases, death.

Inhalation: Harmful if inhaled. Vapours could cause coughing, burning, headache, dizziness, respiratory irritation and symptoms similar to those from ingestion.

Medical Conditions Aggravated by Exposure: Skin exposure may aggravate preexisting skin conditions. Inhalation of mist may aggravate preexisting respiratory conditions.

Toxicological Data:

Acute oral LD₅₀ (mg/kg) 550 mg/kg (Rat, female)

Acute dermal LD₅₀ (mg/kg) >5000 (Rat, male & female)

Acute inhalation LC₅₀ (mg/l) >2.1 (Rat, male & female, 4-hour, nose-only exposure)

Skin corrosion/irritation Moderately irritating to skin (Rabbit)

Serious eye damage/irritation Mildly irritating to the eye (Rabbit)

Respiratory or skin sensitization ... Potential skin sensitizer (Guinea pig)

Germ cell mutagenicity The weight of evidence is that MCPA and bromoxynil are not mutagenic. Fluroxypyr shows no evidence of genotoxicity. Products similar to the hydrocarbon component are not considered to be mutagenic.

Carcinogenicity Bromoxynil phenol has been classified by U.S. EPA in Group C, possible human carcinogen. The International Agency for Research on Cancer (IARC) lists exposure to chlorophenoxy herbicides as possibly carcinogenic to humans (Group 2B), the category for limited evidence for carcinogenicity in humans. MCPA was not carcinogenic to rats or mice in lifetime feeding studies. Fluroxypyr shows no evidence of carcinogenicity. Products

similar to the hydrocarbon component are not considered to be mutagenic and are unlikely to cause tumors.

Reproductive toxicity Animal reproduction studies with MCPA, bromoxynil phenol and bromoxynil octanoate indicate there is no increased sensitivity of the young relative to maternal animals. Fluroxypyr shows no evidence of reproductive toxicity.

12. Ecological Information

Ecotoxicity:

Data are from laboratory studies conducted on MCPA-2-ethylhexyl technical.

Aquatic Invertebrate: 48-Hour EC₅₀ (mg/L) 0.28 (*Daphnia*)

Fish: 96-Hour LC₅₀ (mg/L) 3.2 (Rainbow Trout), > 3.2 (Bluegill Sunfish)

Algae: 120-Hour EC₅₀ (mg ae/L) 0.25 (*Selenastrum*), 1.2 (*Navicula*), 0.085 (*Skeletonema*)

Birds: Oral LD₅₀ (mg ae/kg) >2250 (Bobwhite); Dietary LDD₅₀ > 3800 (Bobwhite), > 930 (Mallard) (mg ae/kg bw/d)

Bees: Oral LD₅₀ > 250 µg 500 g/L MCPA 2EH formulation/bee

Bees: Contact LD₅₀ > 210 µg 500 g/L MCPA 2EH formulation/bee

Data are from laboratory studies conducted on bromoxynil octanoate technical.

Aquatic Invertebrate: 48-Hour EC₅₀ (mg/L) 0.46 (*Daphnia*)

Fish: 96-Hour LC₅₀ (mg/L) 0.041 (Rainbow Trout), 0.06 (Bluegill Sunfish)

Algae: 120-Hour EC₅₀ (mg/L) 0.22 (*Selenastrum*), 0.043 (*Navicula*)

Birds: Oral LD₅₀ (mg/kg) 170 (Bobwhite), 2350 (Mallard); 5-d Dietary LC₅₀ (ppm) 1315 (Bobwhite), 2150 (Mallard)

Bees: LD₅₀ >100 µg/bee (48 h contact), >119.8 µg/bee (96 h oral)

Data are for fluroxypyr 1-methylheptyl ester technical, from published sources.

Aquatic Invertebrate: 48-Hour EC₅₀ (mg/L) >0.09 (solubility limit) (*Daphnia*)

Fish: 96-Hour LC₅₀ (mg/L) >0.09 (solubility limit) (Rainbow Trout)

Algae: 120-Hour EC₅₀ (mg/L) >0.09 (solubility limit) (*Selenastrum*), 0.093 (*Navicula*)

Birds: Oral LD₅₀ (mg/kg) >2000 (Mallard and Bobwhite)

Bees: Oral and Contact LD₅₀ >100 µg/bee

Persistence and Degradability: MCPA 2EH rapidly hydrolyzes to parent MCPA acid. MCPA is microbially degraded with typical half-life (ester and acid) of 5 to 20 days. Persistent in anaerobic environments. Bromoxynil octanoate degrades readily to bromoxynil phenol by abiotic hydrolysis, photolytic degradation, and microbially-mediated metabolism, in both aerobic and anaerobic environments. Representative soil half-lives are 2 days for the octanoate and 14 days for the phenol. Fluroxypyr MHE is rapidly converted to fluroxypyr acid in all soil types. Fluroxypyr is degraded microbially with representative soil half-lives for fluroxypyr MHE and acid of 11 to 38 days.

Mobility in Soil: MCPA and bromoxynil have moderate to high mobility potential, but are rapidly degraded. Field studies with fluroxypyr demonstrate no evidence of significant leaching.

Bioaccumulation Potential: MCPA and fluroxypyr have negligible potential. Bromoxynil octanoate can bioaccumulate, but will deplete.

13. Disposal Considerations

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.

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):

UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (MCPA Ester, bromoxynil, fluroxypyr), Class 9, PG III, Marine pollutant.

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.

United States DOT Description:

< 119 gallons per completed package

Non Regulated

≥ 119 but < 300 gallons per completed package

UN 3082, Environmentally hazardous substance, liquid, n.o.s., (MCPA ester, Bromoxynil octanoate), 9, III, Marine Pollutant, RQ

≥ 300 gallons per completed package

UN 3082, Environmentally hazardous substance, liquid, n.o.s., (MCPA ester, Bromoxynil octanoate), (Naphthalene), 9, III, Marine Pollutant, RQ

IMDG

UN 3082, Environmentally hazardous substance, liquid, n.o.s., (MCPA ester, Bromoxynil octanoate), 9, III, Marine Pollutant

IATA

UN 3082, Environmentally hazardous substance, liquid, n.o.s., (MCPA ester, Bromoxynil octanoate), 9, III, Marine Pollutant

15. Regulatory Information

Pest Control Products Act Registration Number: 30691

Read the approved label, authorized under the *Pest Control Products Act*, prior to using or handling the pest control product.

This chemical is a pest control product registered by Health Canada Pest Management Regulatory Agency and is subject to certain labelling requirements under the *Pest Control Products Act*. These requirements differ from the classification criteria and hazard information required for GHS-consistent safety data sheets. Following is the hazard information required on the pest control product label:



WARNING POISON
POTENTIAL SKIN SENSITIZER
EYE AND SKIN IRRITANT

WHMIS exempt.

16. Other Information

This Safety Data Sheet (SDS) is designed to comply with the Globally Harmonized System (GHS) of classification, and the *Hazardous Products Regulations*.

This SDS provides important health, safety and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use. The product labeling provides that information specifically for product use as intended.

Company and published information is used in the development of this SDS. The information herein is presented in good faith and believed accurate at the date of publication. However, no warranty, expressed or implied, is given.

Revisions to the last issue: Addition of PMRA guidance info to Section 15.



Nufarm Boost Herbicide Safety Data Sheet

Issue Date: 2017-12-20

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{Reserved}

1. Identification

Product Name: Nufarm Boost Herbicide

PCP Registration No.: 30377

Refer to the approved product label for handling and use instructions.

Product Type: Herbicide

Supplier: Nufarm Agriculture Inc.
Suite 350, 2618 Hopewell Place NE
Calgary, Alberta, T1Y 7J7, Canada
1-800-868-5444

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. Hazard Identification

Classified according to UN GHS Version 5.

Physical Hazards:

None

Health Hazards:

Eye irritation	Category 2B
Acute toxicity (Oral)	Category 5
Acute toxicity (Dermal)	Category 5
Acute toxicity (Inhalation)	Category 5

Environmental Hazards:

Hazardous to aquatic environment, acute Category 1

Signal Word:

WARNING

Hazard Statements:

Causes eye irritation. May be harmful if swallowed. May be harmful in contact with skin. May be harmful if inhaled. Very toxic to aquatic life.



Precautionary Statements:

Causes eye irritation. Avoid contact with skin, eyes and clothing. Wear goggles or face shield during mixing/loading. Wear coveralls or a long-sleeved shirt and long pants, socks, shoes and chemical-resistant gloves. Rinse gloves before removal. After use, wash hands and other exposed skin. Remove and wash contaminated clothing before reuse. Avoid breathing dust. Use only outdoors or in a well-ventilated area. This product contains an active ingredient which is toxic to aquatic organisms.

3. Composition / Information on Ingredients
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Hazardous Components	CAS No.	Wt. %
Thifensulfuron-methyl	79277-27-3	50
Chemical Synonyms: methyl 3-[[[(4-methoxy-6-methyl-1,3,5-triazin-2-yl)amino]carbonyl]amino]sulfonyl]-2-thiophenecarboxylate		
Tribenuron-methyl	101200-48-0	25
Chemical Synonyms: methyl 2-[[[(4-methoxy-6-methyl-1,3,5- triazin-2-yl)methylamino]carbonyl]amino]sulfonyl]benzoate		
Calcium carbonate	1317-65-3	<0.5
Chemical Synonyms: CaCO ₃ , limestone		

Other ingredients are considered non-hazardous.

Content as Expressed on Product Label
Thifensulfuron-methyl ... 50%
Tribenuron-methyl ... 25%

4. First Aid Measures

If swallowed, 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 anything by mouth to an unconscious person.

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.

If in eyes, 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 inhaled, 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.

5. Fire-fighting Measures

Extinguishing Media: Product does not support sustained combustion. Use extinguishing media appropriate to surrounding fire conditions.

Special Firefighting Procedures: Firefighters should wear self-contained breathing apparatus and full protective clothing when fighting chemical fires. Minimize and contain water runoff.

Flash Point:..... Does not flash.

Conditions of Flammability: None. Under severe dusting conditions, this material may form explosive mixtures in air.

Hazardous Decomposition Products: ... Carbon oxides, sulphur oxides, nitrogen oxides, calcium oxide, irritating fumes and smoke.

National Fire Protection Association (NFPA) Hazard Rating:

Rating for this product: Health: 1 Flammability: 1 Reactivity: 0

Hazards Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

6. Accidental Release Measures

Use safety equipment and procedures appropriate to the size of the spill. Keep unnecessary people away. Contain and sweep up material of small spills. Do not vacuum up material to prevent generation of fine dust. For large spills outdoors, cover to protect from moisture, and contain the spill area to prevent spread or dispersion. Avoid contamination of natural waters and sewers. 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

Handling: Avoid contact with skin, eyes and clothing. After use, wash hands and other exposed skin. Wear coveralls or a long-sleeved shirt and long pants, socks, shoes and chemical-resistant gloves. Rinse gloves before removal. Remove and wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Avoid breathing dust.

Storage: Store the container tightly closed away from seeds, fertilizer, plants and foodstuffs. Store in a cool, dry place.

8. Exposure Controls / Personal Protection

Engineering Controls: Use only outdoors or in a well-ventilated area.

Personal Protective Equipment: Goggles or face shield, coveralls or a long-sleeved shirt and long pants, socks, shoes and chemical-resistant gloves. Rinse gloves before removal.

Exposure Guidelines:

Component	TWA*	STEL**	Reference/Note
Thifensulfuron-methyl	NE	NE	None found
Tribenuron-methyl	1 mg/m ³	NE	Manufacturer's

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{Reserved}

			recommendation
Calcium carbonate	10 mg/m ³ (total dust) 3 mg/m ³ (respirable fraction)	20 mg/m ³	WorkSafeBC, 2015

*Time-weighted Average, 8-hour unless otherwise noted.

**Short Term Exposure Limit

NE = Not Established

Refer to approved product label for additional exposure control guidance.

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. If no value is determined for the formulation, the value listed is the most relevant value of the predominant ingredient(s).

- Appearance (physical state, colour, etc.)** light brown granule
- Odour** slightly pungent
- Odour threshold** not available
- pH** 5.6
- Melting point / Freezing point** not applicable
- Initial boiling point and boiling range** not applicable
- Flash point** not applicable
- Evaporation rate** not applicable
- Flammability (solids, gases)** not available
- Upper / Lower flammability or explosive limits** ... not available
- Vapour pressure** 1.7 x 10⁻⁵ mPa @ 25C (thifensulfuron-methyl)
5.2 x 10⁻⁵ mPa @ 25C (tribenuron-methyl)
- Vapour density** not available
- Relative density** 0.67
- Solubility(ies)** dispersible in water, sparingly soluble
- Partition coefficient: n-octanol/water** logP = 0.02 @ pH 7, (thifensulfuron-methyl)
logP = 0.78 @ pH 7, 25C (tribenuron-methyl)
- Autoignition temperature** 420C (tribenuron-methyl)
- Decomposition temperature** not available
- Viscosity** not applicable

10. Stability and Reactivity

Reactivity: Not reactive.

Chemical Stability: Stable under normal handling and storage conditions.

Possibility of Hazardous Reactions: Hazardous polymerization will not occur.

Conditions to Avoid: None known.

Incompatible Materials: Strong oxidizing agents, acids.

Hazardous Decomposition Products: Carbon oxides, sulphur oxides, nitrogen oxides, calcium oxide, irritating fumes and smoke.

11. Toxicological Information

Likely routes of exposure: Inhalation, ingestion, skin and eye contact.

Eye contact: Causes eye irritation.

Skin contact: May cause mild skin irritation, generally of minimal degree.

Ingestion: May be harmful if swallowed. No significant adverse health effects are expected if only small amounts are swallowed.

Inhalation: May be harmful if inhaled. May cause irritation of the mucous membranes.

Medical Conditions Aggravated by Exposure: Skin exposure may aggravate preexisting skin conditions. Inhalation of dust may aggravate preexisting respiratory conditions.

Toxicological Data:

Acute oral LD₅₀ (mg/kg) >2000 (Rat)

Acute dermal LD₅₀ (mg/kg) >2000 (Rat)

Acute inhalation LC₅₀ (mg/l) >5.01 (Rat)

Skin corrosion/irritation Considered as minimally irritating to skin

Serious eye damage/irritation Considered as moderately irritating to the eye

Respiratory or skin sensitization ... Not considered a skin sensitizer

Germ cell mutagenicity Thifensulfuron-methyl and tribenuron-methyl did not produce genetic damage in bacterial or mammalian cell cultures or in animals.

Carcinogenicity Thifensulfuron-methyl is not considered to be a carcinogen. Tribenuron-methyl produced an increased incidence of mammary tumors in female rats at dose levels also producing other significant effects.

Reproductive toxicity Thifensulfuron-methyl induced some effects possibly indicating increased sensitivity of the young relative to maternal animals. Tribenuron-methyl is not considered a reproductive toxin.

12. Ecological Information

Ecotoxicity:

Data are for thifensulfuron-methyl, from published sources.

Aquatic Invertebrate: 48-Hour EC₅₀ (mg/L) 984 (*Daphnia*)

Fish: 96-Hour LC₅₀ (mg/L) 410 (Rainbow Trout), 520 (Bluegill Sunfish)

Algae: 72-120-Hr EC₅₀ (mg/L) .. >0.0157 (*Selenastrum*), >0.00815 (*Navicula*), >0.0175 (*Skeletonema*), >0.0263 (*Anabaena*)

Birds: Oral LD₅₀ (mg/kg) >2510 (Mallard Duck); 8-Day Dietary LC₅₀ >5620 (Mallard Duck, Japanese Quail)

Bees: Contact LD₅₀ >12.5 µg/bee

Data are for tribenuron-methyl, from published sources.

Aquatic Invertebrate: 48-Hour EC₅₀ (mg/L) 984 (*Daphnia*)

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{Reserved}

Fish: 96-Hour LC₅₀ (mg/L) 738 (Rainbow Trout)

Algae: 120-Hour EC₅₀ (mg/L) 0.0208 (*Selenastrum*)

Birds: Oral LD₅₀ (mg/kg) >2250 (Bobwhite Quail); 8-Day Dietary LC₅₀ >5620 (Mallard Duck, Bobwhite Quail)

Bees: LD₅₀ >100 µg/bee (contact), >9.1 µg/bee (oral)

Persistence and Degradability: Thifensulfuron-methyl and tribenuron-methyl are non-persistent to slightly persistent in field soils of intended use, DT₅₀ 1 - 7 days. Degradation in soil occurs primarily by aqueous hydrolysis and by direct microbial degradation. Hydrolysis is affected by temperature and soil pH, being faster in acidic than in alkaline soils.

Mobility in Soil: Thifensulfuron-methyl and its degradation products have the potential to leach, but are rapidly degraded. Tribenuron-methyl is virtually immobile.

Bioaccumulation Potential: Negligible.

13. Disposal Considerations

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.

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):

UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.,
(thifensulfuron-methyl, tribenuron-methyl), Class 9, PG III, Marine Pollutant.

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.

United States:

DOT Description:

Non Regulated – See 49 CFR 173.132(b)(3) & 172.101 Appendix A

≥ 882 Pounds per complete package

UN 3077, Environmentally hazardous substance, solid, n.o.s.

(thifensulfuron-methyl, tribenuron-methyl), 9, III, Marine Pollutant

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{Reserved}

IMDG

UN 3077, Environmentally hazardous substance, solid, n.o.s.
(thifensulfuron-methyl, tribenuron-methyl), 9, III, Marine Pollutant

IATA

UN 3077, Environmentally hazardous substance, solid, n.o.s.
(thifensulfuron-methyl, tribenuron-methyl), 9, III, Marine Pollutant

15. Regulatory Information

Pest Control Products Act Registration Number: 30377

OPAC Schedule: 4

Read the approved label, authorized under the Pest Control Products Act, prior to using or handling the pest control product.

This chemical is a pest control product registered by Health Canada Pest Management Regulatory Agency and is subject to certain labelling requirements under the Pest Control Products Act. These requirements differ from the classification criteria and hazard information required for GHS-consistent safety data sheets. Following is the hazard information required on the pest control product label:

WARNING: CONTAINS THE ALLERGENS MILK AND SOY

WHMIS exempt.

16. Other Information

This Safety Data Sheet (SDS) is designed to comply with the Globally Harmonized System (GHS) of classification, and the *Hazardous Products Regulations*.

This SDS provides important health, safety and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use. The product labeling provides that information specifically for product use as intended.

Company and published information is used in the development of this SDS. The information herein is presented in good faith and believed accurate at the date of publication. However, no warranty, expressed or implied, is given.

Revisions to the last issue: Addition of PMRA guidance info to Section 15.

**Nufarm Boost Herbicide
Safety Data Sheet**

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