Boost™ M Herbicide Tank Mix

- Nufarm Boost™ Herbicide (PCP No 30377)
- MCPA Ester 600 Liquid Herbicide (PCP No 27803)

Nufarm Grow a better tomorrow.

SAFETY DATA SHEET

Refine Extra 75 MUP

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	02/16/2022	50000039	Date of first issue: 02/15/2022

SECTION 1. IDENTIFICATION

Product identifier

Product name Refine Extra 75 MUP

Other means of identification

Product code 50000039

Product Registration Number 25457

Recommended use of the chemical and restrictions on use

Restrictions on use Use as recommended by the label.

Details of the supplier of the safety data sheet

Manufacturer

FMC of Canada Ltd
6755 Mississauga Road, Suite 204
Mississauga, ON, L5N 7Y2
Web: https://ag.fmc.com/ca/en
Phone (AgHotline): 1-833-FMC-PPAC (1-833-362-7722)
E-mail: SDS-Info@fmc.com

Supplier Address

6755 Mississauga Road, Suite 204
Mississauga, ON,Canada L5N 7Y2

Emergency telephone

For leak, fire, spill or accident emergencies, call:
1 703 / 741-5970 (CHEMTREC - International)
1 703 / 527-3887 (CHEMTREC - Alternate)
1 800 / 424-9300 (CHEMTREC - U.S.A.)

Medical emergency:
All other countries: +1 651 / 632-6793 (Collect)
U.S.A. & Canada: +1 800 / 331-3148

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the Hazardous Products Regulations

Not a hazardous substance or mixture.

GHS label elements

Not a hazardous substance or mixture.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Components

Chemical name	Common Name/Synonym	CAS-No.	Concentration (% w/w)
thifensulfuron-methyl (ISO)	thifensulfuron-methyl (ISO)	79277-27-3	50
Tribenuron-methyl	tribenuron-methyl (ISO)	101200-48-0	25
kaolin	kaolin	1332-58-7	>= 10 - < 15 *
Sodium polynaphthalene sulphonate	Sodium polynaphthalene sulphonate	9084-06-4	>= 1 - < 5 *
Residues (petroleum), catalytic reformer fractionator, sulfonated, polymers with formaldehyde, sodium salts	Residues (petroleum), catalytic reformer fractionator, sulfonated, polymers with formaldehyde, sodium salts	68425-94-5	>= 1 - < 5 *

* Actual concentration or concentration range is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

General advice : Move out of dangerous area.
Show this safety data sheet to the doctor in attendance.
Do not leave the victim unattended.

If inhaled : Consult a physician after significant exposure.
If unconscious, place in recovery position and seek medical advice.

In case of skin contact : Wash off with soap and water.
If symptoms persist, call a physician.

In case of eye contact : Flush eyes with water as a precaution.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.

If swallowed : Do not induce vomiting without medical advice.
Keep respiratory tract clear.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.
Take victim immediately to hospital.

Most important symptoms and effects, both acute and delayed : None known.

Notes to physician	:	Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Dry chemical, CO2, water spray or regular foam.
Unsuitable extinguishing media	:	Do not spread spilled material with high-pressure water streams.
Specific hazards during fire fighting	:	Do not allow run-off from fire fighting to enter drains or water courses.
Hazardous combustion products	:	Nitrogen oxides (NOx) Sulfur oxides Carbon oxides
Specific extinguishing methods	:	Remove undamaged containers from fire area if it is safe to do so. Use a water spray to cool fully closed containers.
Further information	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. Standard procedure for chemical fires. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Special protective equipment for fire-fighters	:	Firefighters should wear protective clothing and self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Use personal protective equipment. Avoid dust formation. Avoid breathing dust. Ensure adequate ventilation. Evacuate personnel to safe areas. Use personal protective equipment. If it can be safely done, stop the leak. Do not touch or walk through the spilled material. Never return spills in original containers for re-use. For disposal considerations see section 13.
Environmental precautions	:	Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.
Methods and materials for containment and cleaning up	:	Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion : Avoid dust formation.
Provide appropriate exhaust ventilation at places where dust is formed.

Normal measures for preventive fire protection.

Advice on safe handling : Avoid formation of respirable particles.
Do not breathe vapors/dust.
Avoid exposure - obtain special instructions before use.
Avoid contact with skin and eyes.
For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
Provide sufficient air exchange and/or exhaust in work rooms.
Dispose of rinse water in accordance with local and national regulations.

Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Observe label precautions.
Electrical installations / working materials must comply with the technological safety standards.

Further information on storage stability : No decomposition if stored and applied as directed.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
kaolin	1332-58-7	TWA (Respirable)	2 mg/m3	CA AB OEL
		TWA (Respirable)	2 mg/m3	CA BC OEL
		TWAEV (respirable dust)	2 mg/m3	CA QC OEL
		TWA (Respirable particulate matter)	2 mg/m3	ACGIH

Personal protective equipment

Respiratory protection : In the case of dust or aerosol formation use respirator with an approved filter.

Hand protection

Material	:	Protective gloves
Remarks	:	The suitability for a specific workplace should be discussed with the producers of the protective gloves.
Eye protection	:	Eye wash bottle with pure water Tightly fitting safety goggles Safety glasses
Skin and body protection	:	Dust impervious protective suit Choose body protection according to the amount and concentration of the dangerous substance at the work place.
Protective measures	:	Plan first aid action before beginning work with this product.
Hygiene measures	:	When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday. General industrial hygiene practice. Avoid contact with skin, eyes and clothing. Do not breathe dust or spray mist. Provide adequate ventilation.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	solid
Color	:	light brown, beige
Odor	:	mild, lignin like
Odor Threshold	:	Not applicable
pH	:	5.7 (25 °C) Concentration: 10 g/l
Melting point/range	:	No data available
Boiling point/boiling range	:	No data available
Flash point	:	Not applicable
Evaporation rate	:	Not available for this mixture.
Flammability (solid, gas)	:	No data available
Self-ignition	:	No data available
Upper explosion limit / Upper flammability limit	:	No data available

Lower explosion limit / Lower flammability limit	:	No data available
Vapor pressure	:	No data available
Relative density	:	No data available
Density	:	No data available
Bulk density	:	700 kg/m3 0.7 g/cm3
Solubility(ies) Water solubility	:	dispersible
Autoignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	No data available
Explosive properties	:	Not explosive
Oxidizing properties	:	No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	No decomposition if stored and applied as directed.
Chemical stability	:	No decomposition if stored and applied as directed.
Possibility of hazardous reactions	:	No decomposition if stored and applied as directed.
Conditions to avoid	:	Avoid extreme temperatures Avoid dust formation.
Incompatible materials	:	Avoid strong acids, bases, and oxidizers.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Not classified based on available information.

Product:

Acute oral toxicity	:	LD50 (Rat, male and female): > 5,000 mg/kg Method: OECD Test Guideline 401

Assessment: The substance or mixture has no acute oral toxicity

Acute inhalation toxicity : LC50 (Rat): > 5.3 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rat, male and female): > 5,000 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity

Skin corrosion/irritation

Not classified based on available information.

Product:

Species : Rabbit
Method : OECD Test Guideline 404
Result : No skin irritation

Serious eye damage/eye irritation

Not classified based on available information.

Product:

Species : Rabbit
Result : No eye irritation
Method : OECD Test Guideline 405

Species : Rat
Result : No eye irritation
Remarks : Minimal effects that do not meet the threshold for classification.

Respiratory or skin sensitization

Skin sensitization

Not classified based on available information.

Respiratory sensitization

Not classified based on available information.

Product:

Species : Guinea pig
Method : Buehler Test
Result : Did not cause sensitization on laboratory animals.

Germ cell mutagenicity

Not classified based on available information.

Components:

thifensulfuron-methyl (ISO):

Germ cell mutagenicity - Assessment	:	Weight of evidence does not support classification as a germ cell mutagen.

Tribenuron-methyl:

Germ cell mutagenicity - Assessment	:	Did not show mutagenic effects in animal experiments.

kaolin:

Genotoxicity in vitro	:	Test Type: Ames test Method: OECD Test Guideline 471 Result: negative
Genotoxicity in vivo	:	Remarks: No data available

Carcinogenicity

Not classified based on available information.

Components:

thifensulfuron-methyl (ISO):

Carcinogenicity - Assessment	:	Weight of evidence does not support classification as a carcinogen

Tribenuron-methyl:

Remarks	:	No significant adverse effects were reported
Carcinogenicity - Assessment	:	Did not show carcinogenic effects in animal experiments.

Reproductive toxicity

Not classified based on available information.

Components:

Tribenuron-methyl:

Reproductive toxicity - Assessment	:	No toxicity to reproduction Animal testing did not show any effects on fetal development., Did not show teratogenic effects in animal experiments.

kaolin:

Effects on fertility	:	Remarks: No data available
Effects on fetal development	:	Remarks: No data available

STOT-single exposure

Not classified based on available information.

Product:

Assessment : The substance or mixture is not classified as specific target organ toxicant, single exposure.

STOT-repeated exposure

Not classified based on available information.

Product:

Assessment : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Repeated dose toxicity

Components:

Tribenuron-methyl:

Species	:	Rabbit
LOAEL	:	80 mg/kg
Target Organs	:	Thyroid, Nervous system
Assessment	:	The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.
Remarks	:	Increased mortality or reduced survival

kaolin:

Remarks : No data available

Aspiration toxicity

Not classified based on available information.

Components:

Tribenuron-methyl:

The substance does not have properties associated with aspiration hazard potential.

Further information

Product:

Remarks : No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Ecotoxicology Assessment

Acute aquatic toxicity	:	Very toxic to aquatic life.
Chronic aquatic toxicity	:	Very toxic to aquatic life with long lasting effects.

Components:

thifensulfuron-methyl (ISO):

Toxicity to fish	:	LC50 (Salmo gairdneri): 100 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 470 mg/l Exposure time: 48 h
Toxicity to algae/aquatic plants	:	IC50 (green algae): 0.0159 mg/l Exposure time: 72 h
		EC50 (Lemna minor (duckweed)): 1.3 µg/l
Toxicity to fish (Chronic toxicity)	:	NOEC (Salmo gairdneri): 250 mg/l Exposure time: 28 d
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Daphnia magna (Water flea)): 100 mg/l Exposure time: 21 d
Toxicity to soil dwelling organisms	:	LC50 (Eisenia fetida (earthworms)): > 2,000 mg/kg
Toxicity to terrestrial organisms	:	LD50 (Colinus virginianus (Bobwhite quail)): > 5,620 ppm
		LD50 (Anas platyrhynchos (Mallard duck)): > 2,510 mg/kg
		LD50 (Apis mellifera (bees)): > 7.1 µg/bee

Ecotoxicology Assessment

Acute aquatic toxicity	:	Very toxic to aquatic life.
Chronic aquatic toxicity	:	Very toxic to aquatic life with long lasting effects.

Tribenuron-methyl:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 738 mg/l Exposure time: 96 h
Toxicity to daphnia and other	:	EC50 (Daphnia magna (Water flea)): > 894 mg/l

aquatic invertebrates		Exposure time: 48 h
Toxicity to algae/aquatic plants	:	EC50 (Pseudokirchneriella subcapitata (green algae)): 0.0208 mg/l Exposure time: 120 h EC50 (Lemna gibba (duckweed)): 0.00424 mg/l Exposure time: 14 d
Toxicity to fish (Chronic toxicity)	:	NOEC (Oncorhynchus mykiss (rainbow trout)): 560 mg/l Exposure time: 21 d
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Daphnia magna (Water flea)): 41 mg/l Exposure time: 21 d
Toxicity to soil dwelling organisms	:	NOEC (Eisenia fetida (earthworms)): 3.2 mg/kg Exposure time: 56 d
Toxicity to terrestrial organisms	:	LD50 (Colinus virginianus (Bobwhite quail)): > 2,250 mg/kg LD50 (Colinus virginianus (Bobwhite quail)): > 5,620 ppm Remarks: Dietary LD50 (Anas platyrhynchos (Mallard duck)): > 5,620 ppm Remarks: Dietary LD50 (Apis mellifera (bees)): > 98.4 µg/bee Exposure time: 48 h End point: Acute contact toxicity LD50 (Apis mellifera (bees)): > 9.1 µg/bee Exposure time: 48 h End point: Acute oral toxicity

Ecotoxicology Assessment

Acute aquatic toxicity	:	Very toxic to aquatic life.
Chronic aquatic toxicity	:	Very toxic to aquatic life with long lasting effects.

kaolin:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): > 100 mg/l Exposure time: 96 h Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 1,000 mg/l Exposure time: 48 h Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	:	EC50 (Raphidocelis subcapitata (freshwater green alga)): > 100 mg/l Exposure time: 72 h Method: OECD Test Guideline 201

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	Remarks: No data available
Toxicity to microorganisms	:	Remarks: No data available

Sodium polynaphthalene sulphonate:

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	EC50 (Daphnia magna (Water flea)): 5.37 - 8.77 mg/l Exposure time: 45 d

Residues (petroleum), catalytic reformer fractionator, sulfonated, polymers with formaldehyde, sodium salts:

Toxicity to fish	:	LC50 (Zebra fish): > 10 - 100 mg/l Exposure time: 96 h Method: OECD Test Guideline 203 Remarks: Based on data from similar materials
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 100 mg/l Exposure time: 48 h Method: OECD Test Guideline 202 Remarks: Based on data from similar materials
Toxicity to algae/aquatic plants	:	EC50 (Pseudokirchneriella subcapitata (green algae)): > 100 mg/l Exposure time: 72 h Method: OECD Test Guideline 201 Remarks: Based on data from similar materials EC10 (Pseudokirchneriella subcapitata (green algae)): > 100 mg/l Exposure time: 72 h Method: OECD Test Guideline 201 Remarks: Based on data from similar materials
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	EC10 (Daphnia magna (Water flea)): > 10 - 100 mg/l Exposure time: 21 d Method: OECD Test Guideline 211 Remarks: Based on data from similar materials

Persistence and degradability

Components:

Tribenuron-methyl:

Biodegradability	:	Biodegradation: 29.4 % Exposure time: 28 d

kaolin:

Biodegradability	:	Remarks: The methods for determining biodegradability are not applicable to inorganic substances.

Sodium polynaphthalene sulphonate:

Biodegradability : Result: Not readily biodegradable.
Remarks: According to the results of tests of biodegradability this product is not readily biodegradable.

Residues (petroleum), catalytic reformer fractionator, sulfonated, polymers with formaldehyde, sodium salts:

Biodegradability : Result: Not readily biodegradable.
Remarks: Based on data from similar materials

Bioaccumulative potential

Components:

thifensulfuron-methyl (ISO):

Bioaccumulation : Remarks: Does not bioaccumulate.

Tribenuron-methyl:

Bioaccumulation : Bioconcentration factor (BCF): < 1
Remarks: Does not bioaccumulate.

Partition coefficient: n-octanol/water : log Pow: -0.38

kaolin:

Bioaccumulation : Remarks: Bioaccumulation is unlikely.

Partition coefficient: n-octanol/water : Remarks: Not applicable

Mobility in soil

Components:

thifensulfuron-methyl (ISO):

Distribution among environmental compartments : Remarks: Mobile in soils

Tribenuron-methyl:

Distribution among environmental compartments : Remarks: Under normal conditions the active ingredient/s is/are of high to intermediate mobility in soil. There is a potential for leaching to groundwater.

kaolin:

Distribution among environmental compartments : Remarks: Low mobility in soil.

Other adverse effects

Product:

Additional ecological information	:	Environmental hazards Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters or rinsate. An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Very toxic to aquatic life with long lasting effects.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	:	The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.
Contaminated packaging	:	Empty remaining contents. Dispose of as unused product. Do not re-use empty containers. Empty containers should be taken to an approved waste handling site for recycling or disposal.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG

UN number	:	UN 3077
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Thifensulfuron-methyl, Tribenuron-methyl)
Class	:	9
Subsidiary risk	:	ENVIRONM.
Packing group	:	III
Labels	:	9 (ENVIRONM.)

IATA-DGR

UN/ID No.	:	UN 3077
Proper shipping name	:	Environmentally hazardous substance, solid, n.o.s. (Thifensulfuron-methyl, Tribenuron-methyl)
Class	:	9
Packing group	:	III
Labels	:	Miscellaneous
Packing instruction (cargo aircraft)	:	956

Packing instruction (passenger aircraft)	:	956

IMDG-Code

UN number	:	UN 3077
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Thifensulfuron-methyl, Tribenuron-methyl)
Class	:	9
Packing group	:	III
Labels	:	9
EmS Code	:	F-A, S-F
Marine pollutant	:	no

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

Domestic regulation

TDG
Not regulated as a dangerous good

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION

NPRI Components	:	formaldehyde

The ingredients of this product are reported in the following inventories:

TCSI	:	Not in compliance with the inventory
TSCA	:	Product contains substance(s) not listed on TSCA inventory.
AIIC	:	Not in compliance with the inventory
DSL	:	This product contains the following components that are not on the Canadian DSL nor NDSL.
ENCS	:	Not in compliance with the inventory
ISHL	:	Not in compliance with the inventory
KECI	:	Not in compliance with the inventory
PICCS	:	Not in compliance with the inventory
IECSC	:	Not in compliance with the inventory
NZIoC	:	Not in compliance with the inventory

TECI : Not in compliance with the inventory

Canadian lists

No substances are subject to a Significant New Activity Notification.

SECTION 16. OTHER INFORMATION

Full text of other abbreviations

ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
CA AB OEL	:	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
CA BC OEL	:	Canada. British Columbia OEL
CA QC OEL	:	Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants
ACGIH / TWA	:	8-hour, time-weighted average
CA AB OEL / TWA	:	8-hour Occupational exposure limit
CA BC OEL / TWA	:	8-hour time weighted average
CA QC OEL / TWAEV	:	Time-weighted average exposure value

AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

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CA / EN

Prepared by:

FMC Corporation

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End of Material Safety Data Sheet

Nufarm MCPA Ester 600 Liquid Herbicide
Safety Data Sheet

Issue Date: 2017-12-21 Supersedes Date: 2017-05-17 {Reserved}

1. Identification

Product Name: **Nufarm MCPA Ester 600 Liquid Herbicide**
PCP Registration No.: **27803**
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:

Acute toxicity (Oral)	Category 4
Acute toxicity (Inhalation)	Category 4
Acute toxicity (Dermal)	Category 5

Environmental Hazards:

Hazardous to aquatic environment, acute	Category 1

Signal Word:
WARNING
Hazard Statements:
Harmful if swallowed. Harmful if inhaled. May be harmful in contact with skin. Very toxic to aquatic life.


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

3. Composition / Information on Ingredients

Hazardous Components	CAS No.	Wt. %
MCPA 2-ethylhexyl ester	29450-45-1	89-94
Chemical Synonyms: MCPA 2EH; 2-ethylhexyl 2-(4-chloro-2-methylphenoxy)acetate; 2-ethylhexyl (4-chloro-2-methylphenoxy)acetate		
Distillate petroleum, hydro treated light	64742-47-8	1-3

Other ingredients are considered non-hazardous.

Content as Expressed on Product Label
MCPA, present as 2-ethylhexyl ester … 600 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 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. After use, wash hands and other exposed skin. Wear a long-sleeved shirt, 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.
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: 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

Distillate petroleum, hydro treated light	1200 mg/m^3	N/E	Manufacturers recommendation, total hydrocarbon

*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.

Appearance (physical state, colour, etc.) ..... clear amber liquid
Odour ..... hydrocarbon-like, phenolic
Odour threshold ..... not available
pH ..... 4.3 (1% w/w dilution)
Melting point / Freezing point ..... <-25C (MCPA 2EH)
Initial boiling point and boiling range ..... >220C (MCPA 2EH)
Flash point ..... >100C
Evaporation rate ..... not available
Flammability (solids, gases) ..... not applicable
Upper / Lower flammability or explosive limits ... not available
Vapour pressure ..... 5.7×10^{-3} mm Hg @ 25C (MCPA 2EH)
Vapour density ..... not available
Relative density 1.064
Solubility(ies) ..... product is emulsifiable in water
Partition coefficient: n-octanol/water ..... product is oil soluble
Autoignition temperature ..... not available
Decomposition temperature ..... >220C (MCPA 2EH)
Viscosity ..... 58.4 cP @ 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 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: May be harmful if absorbed through skin. May cause skin irritation, generally of minimal degree.
Ingestion: Harmful if swallowed. May cause dizziness, temporary loss of muscle coordination, nausea, vomiting, abdominal pain, decreased blood pressure, fatigue, muscle weakness, muscle spasms.
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 LD_{50} (mg/kg) ..... 1046 (Rat, combined male & female)
Acute dermal LD_{50} (mg/kg) ..... >2000 (Rat, male & female)
Acute inhalation LC_{50} (mg/l) ..... >2.64 (Rat, male & female, 4-hour, nose-only exposure)
Skin corrosion/irritation ..... Slightly irritating to skin (Rabbit)
Serious eye damage/irritation ..... Mildly irritating to the eye (Rabbit)
Respiratory or skin sensitization ... Not considered as a contact dermal sensitizer (Guinea pig)
Germ cell mutagenicity ..... There have been some positive and some negative studies, but the weight of evidence is that MCPA is not mutagenic. Products similar to the hydrocarbon component are not considered to be mutagenic.
Carcinogenicity ..... 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. 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 indicate there is no increased sensitivity of the young relative to maternal animals.

12. Ecological Information

Ecotoxicity:
Data are from laboratory studies conducted on MCPA-2-ethylhexyl technical.
Aquatic Invertebrate: 48-Hour EC_{50} (mg/L) ..... 0.28 (*Daphnia*)
Fish: 96-Hour LC_{50} (mg/L) ..... 3.2 (Rainbow Trout), > 3.2 (Bluegill Sunfish)
Algae: 120-Hour EC_{50} (mg ae/L) 0.25 (*Selenastrum*), 1.2 (*Navicula*), 0.085 (*Skeletonema*)
Birds: Oral LD_{50} (mg ae/kg) ..... >2250 (Bobwhite); Dietary LDD_{50} > 3800 (Bobwhite), > 930 (Mallard) (mg ae/kg bw/d)
Bees: Oral LD_{50} ..... > 250 µg 500 g/L MCPA 2EH formulation/bee
Bees: Contact LD_{50} ..... > 210 µg 500 g/L MCPA 2EH formulation/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.

Mobility in Soil: Moderate to high mobility potential, but rapidly degraded.
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):
UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (MCPA Ester), 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:
< 119 gallons per complete package
Non Regulated
≥ 119 gallons per complete package
UN 3082, Environmentally hazardous substance, liquid, n.o.s. (MCPA Ester), 9, III, Marine Pollutant

15. Regulatory Information

Pest Control Products Act Registration Number: 27803

OPAC Schedule: …. 3

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

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.

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