



Product Name: Tandem™ Herbicide

Tandem™ Herbicide is a combination of the following products:

Tandem™ A Herbicide, PCP: 29985

Tandem™ B Herbicide, PCP: 29965

Water Conditioner

The Safety Data Sheets are attached

COMPANY IDENTIFICATION

CORTEVA AGRISCIENCE CANADA COMPANY
#2450, 215 - 2ND STREET S.W.
CALGARY AB, T2P 1M4
CANADA

Customer Information Number : 800-667-3852

E-mail address : solutions@corteva.com

EMERGENCY TELEPHONE

24-Hour Emergency Contact : 1-888-226-8832

Local Emergency Contact : 1-888-226-8832

Product name: TANDEM™ A Herbicide**Issue Date:** 12/21/2020

CORTEVA AGRISCIENCE CANADA COMPANY encourages you and expects you to read and understand the entire SDS as there is important information throughout the document. This SDS provides users with information relating to the protection of human health and safety at the workplace, protection of the environment and supports emergency response. Product users and applicators should primarily refer to the product label attached to or accompanying the product container.

1. IDENTIFICATION

Product name: TANDEM™ A Herbicide**Recommended use of the chemical and restrictions on use****Identified uses:** End use herbicide product**COMPANY IDENTIFICATION**

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2. HAZARDS IDENTIFICATION

Hazard classification

This product is hazardous under the criteria of the Hazardous Products Regulation (HPR) as implemented under the Workplace Hazardous Materials Information System (WHMIS 2015).

Acute toxicity - Category 4 - Inhalation

Skin irritation - Category 2

Eye irritation - Category 2A

Skin sensitization - Sub-category 1B

Carcinogenicity - Category 2

Aspiration hazard - Category 1

Label elements**Hazard pictograms**Signal Word: **DANGER!**

Hazards

May be fatal if swallowed and enters airways.
Causes skin irritation.
May cause an allergic skin reaction.
Causes serious eye irritation.
Harmful if inhaled.
Suspected of causing cancer.

Precautionary statements**Prevention**

Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response

IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
IF ON SKIN: Wash with plenty of water.
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical advice/ attention.
Do NOT induce vomiting.
If skin irritation or rash occurs: Get medical advice/ attention.
If eye irritation persists: Get medical advice/ attention.

Storage

Store locked up.

Disposal

Dispose of contents/ container to an approved waste disposal plant.

Other hazards

No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a mixture.

Component	CASRN	Concentration
Pyroxsulam	422556-08-9	2.88%
Cloquintocet-mexyl	99607-70-2	8.64%
Solvent naphtha (petroleum), heavy aromatic	64742-94-5	71.5%

Benzenesulfonic acid, mono-C11- 13-branched alkyl derivs., calcium salts	68953-96-8	4.5%
Naphthalene	91-20-3	0.7%
Balance	Not available	11.78%

4. FIRST AID MEASURES

Description of first aid measures

General advice:

First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice. If breathing is difficult, oxygen should be administered by qualified personnel.

Skin contact: Take off contaminated clothing. Wash skin with soap and plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. Wash clothing before reuse. Shoes and other leather items which cannot be decontaminated should be disposed of properly. Suitable emergency safety shower facility should be available in work area.

Eye contact: Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice. Suitable emergency eye wash facility should be available in work area.

Ingestion: 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 give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed:

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed

Notes to physician: Maintain adequate ventilation and oxygenation of the patient. May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants, antitussives and corticosteroids may be of help. The decision of whether to induce vomiting or not should be made by a physician. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment. Repeated excessive exposure may aggravate preexisting lung disease. Skin contact may aggravate preexisting dermatitis.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. General purpose synthetic foams (including AFFF type) or protein foams are preferred if available. Alcohol resistant foams (ATC type) may function.

Unsuitable extinguishing media: Do not use direct water stream. May spread fire.

Special hazards arising from the substance or mixture

Hazardous combustion products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Sulfur oxides. Nitrogen oxides. Hydrogen fluoride. Hydrogen chloride. Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

Advice for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Consider feasibility of a controlled burn to minimize environment damage. Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Do not use direct water stream. May spread fire. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to section 7, Handling, for additional precautionary measures. Keep upwind of spill. Ventilate area of leak or spill. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. Spills or discharge to natural waterways is likely to kill aquatic organisms.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact the company for clean-up assistance.

7. HANDLING AND STORAGE

Precautions for safe handling: Keep out of reach of children. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated contact with skin. Avoid breathing vapor or mist. Do not swallow. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage: Store in a dry place. Store in original container. Keep container tightly closed when not in use. Do not store near food, foodstuffs, drugs or potable water supplies.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

If exposure limits exist, they are listed below. If no exposure limits are displayed, then no values are applicable.

Consult local authorities for recommended exposure limits.

Component	Regulation	Type of listing	Value/Notation
Pyroxsulam	Dow IHG	TWA	5 mg/m3
	Dow IHG	TWA	Skin Sensitizer
	ACGIH	TWA	200 mg/m3 , total hydrocarbon vapor
	Corteva OEL	TWA	100 mg/m3
	Corteva OEL	STEL	300 mg/m3
Solvent naphtha (petroleum), heavy aromatic	CA AB OEL	TWA	200 mg/m3 , total hydrocarbon vapor
	ACGIH	TWA	10 ppm
	CA AB OEL	TWA	52 mg/m3 10 ppm
	CA AB OEL	STEL	79 mg/m3 15 ppm
	CA BC OEL	TWA	10 ppm
Naphthalene	CA BC OEL	STEL	15 ppm
	CA QC OEL	TWAEV	52 mg/m3 10 ppm
	CA QC OEL	STEV	79 mg/m3 15 ppm

RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.

Exposure controls

Engineering controls: Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use chemical goggles.

Skin protection

Hand protection: Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Chlorinated polyethylene. Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Viton. Examples of acceptable glove barrier materials include: Butyl rubber. Natural rubber ("latex"). Polyvinyl chloride ("PVC" or "vinyl"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection),

potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use an approved respirator. Selection of air-purifying or positive-pressure supplied-air will depend on the specific operation and the potential airborne concentration of the material. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical state	Liquid
Color	Brown
Odor	pungent
Odor Threshold	No test data available
pH	5.18 <i>pH Electrode</i>
Melting point/range	Not applicable
Freezing point	No data available
Boiling point (760 mmHg)	No test data available
Flash point	closed cup > 100 °C <i>Closed Cup</i>
Evaporation Rate (Butyl Acetate = 1)	No data available
Flammability (solid, gas)	No data available
Lower explosion limit	No test data available
Upper explosion limit	No test data available
Vapor Pressure	No test data available
Relative Vapor Density (air = 1)	No test data available
Relative Density (water = 1)	No data available
Water solubility	No test data available
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	No test data available
Decomposition temperature	No test data available
Kinematic Viscosity	No data available
Explosive properties	No data available
Oxidizing properties	No data available
Liquid Density	1.04 g/cm ³ at 20 °C <i>Digital density meter</i>
Molecular weight	No data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: No dangerous reaction known under conditions of normal use.

Chemical stability: Stable under recommended storage conditions. See Storage, Section 7.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible materials: Avoid contact with oxidizing materials.

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

11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Acute toxicity

Acute oral toxicity

Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

For similar material(s):
LD50, Rat, 3,129 mg/kg

Acute dermal toxicity

Prolonged skin contact is unlikely to result in absorption of harmful amounts.

For similar material(s):
LD50, Rat, > 5,000 mg/kg

Acute inhalation toxicity

Prolonged excessive exposure to mist may cause serious adverse effects, even death. Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs. May cause central nervous system effects. Symptoms may include headache, dizziness and drowsiness, progressing to incoordination and unconsciousness.

For similar material(s):
LC50, Rat, 4 Hour, dust/mist, > 1 - < 2.12 mg/l

Skin corrosion/irritation

Brief contact may cause moderate skin irritation with local redness.
Prolonged contact may cause skin irritation, even a burn.
May cause drying and flaking of the skin.
Effects may be slow to heal.

Serious eye damage/eye irritation

May cause moderate eye irritation which may be slow to heal.
May cause slight corneal injury.

Sensitization

For similar material(s):

Has demonstrated the potential for contact allergy in mice.

For respiratory sensitization:

No relevant information found.

Specific Target Organ Systemic Toxicity (Single Exposure)

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Specific Target Organ Systemic Toxicity (Repeated Exposure)

For the active ingredient(s):

In animals, effects have been reported on the following organs:

Bone marrow.

Kidney.

Liver.

Thymus.

Thyroid.

Bladder.

For the solvent(s):

Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

For the minor component(s):

In animals, effects have been reported on the following organs:

Kidney.

Carcinogenicity

For the active ingredient(s): Cloquintocet-mexyl. Did not cause cancer in laboratory animals.

For the active ingredient(s): Pyroxsulam. There was equivocal evidence of carcinogenic activity in long-term bioassays. These effects are not believed to be relevant to humans.

Contains naphthalene which has caused cancer in some laboratory animals. In humans, there is limited evidence of cancer in workers involved in naphthalene production. Limited oral studies in rats were negative.

Teratogenicity

For the active ingredient(s): For the solvent(s): Did not cause birth defects or any other fetal effects in laboratory animals.

Reproductive toxicity

In animal studies, active ingredient did not interfere with reproduction. For the major component(s): No relevant data found.

Mutagenicity

For the active ingredient(s): For the major component(s): In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Aspiration Hazard

May be fatal if swallowed and enters airways.

Carcinogenicity

Component
Solvent naphtha (petroleum),
heavy aromatic

List
ACGIH

Classification

A3: Confirmed animal carcinogen with
unknown relevance to humans.

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

Toxicity

Pyroxsulam

Acute toxicity to fish

LC50, Oncorhynchus mykiss (rainbow trout), static test, 96 Hour, > 87.0 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates

EC50, Daphnia magna (Water flea), static test, 48 Hour, > 100 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants

Material is very highly toxic to aquatic organisms on an acute basis (LC50/EC50 <0.1 mg/L in the most sensitive species).

EC50, Lemna minor (duckweed), 7 d, Biomass, 0.00257 mg/l, OECD 221.

Toxicity to bacteria

EC50, activated sludge, 3 Hour, > 1,000 mg/l

Chronic toxicity to fish

NOEC, Pimephales promelas (fathead minnow), flow-through test, 40 d, survival, 3.2 - 10.1 mg/l

Chronic toxicity to aquatic invertebrates

NOEC, Daphnia magna (Water flea), static test, 21 d, survival, 10.4 mg/l

Toxicity to Above Ground Organisms

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

Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).

LC50, Colinus virginianus (Bobwhite quail), 8 d, > 5000mg/kg diet.

LD50, Colinus virginianus (Bobwhite quail), > 2000mg/kg bodyweight.

oral LD50, Apis mellifera (bees), 48 Hour, > 107.4micrograms/bee

contact LD50, Apis mellifera (bees), 48 Hour, > 100micrograms/bee

Toxicity to soil-dwelling organisms

LC50, Eisenia fetida (earthworms), 14 d, > 10,000 mg/kg

Cloquintocet-mexyl

Acute toxicity to fish

Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested).

As the ester active substance.

LC50, Oncorhynchus mykiss (rainbow trout), flow-through test, 96 Hour, > 0.97 mg/l, Method Not Specified.

Acute toxicity to aquatic invertebrates

As the ester active substance.

EC50, Daphnia magna (Water flea), flow-through test, 48 Hour, > 0.82 mg/l, Method Not Specified.

Acute toxicity to algae/aquatic plants

As the ester active substance.

EbC50, alga Scenedesmus sp., 96 Hour, Biomass, 0.63 mg/l, Method Not Specified.

As the ester active substance.

EbC50, Lemna minor (duckweed), 14 d, Biomass, > 0.42 mg/l, Method Not Specified.

Toxicity to Above Ground Organisms

Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).
Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).
oral LD50, *Anas platyrhynchos* (Mallard duck), > 2000mg/kg bodyweight.
dietary LC50, *Anas platyrhynchos* (Mallard duck), 8 d, > 5200mg/kg diet.
oral LD50, *Apis mellifera* (bees), 48 Hour, > 100micrograms/bee
contact LD50, *Apis mellifera* (bees), 48 Hour, > 100micrograms/bee

Toxicity to soil-dwelling organisms

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

Solvent naphtha (petroleum), heavy aromatic**Acute toxicity to fish**

For similar material(s):

Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).

EC50, *Oncorhynchus mykiss* (rainbow trout), 96 Hour, 3.6 mg/l

LL50, *Oncorhynchus mykiss* (rainbow trout), semi-static test, 96 Hour, 2 - 5 mg/l

Acute toxicity to aquatic invertebrates

For similar material(s):

EC50, *Daphnia magna* (Water flea), semi-static test, 48 Hour, 1.1 mg/l

EL50, *Daphnia magna* (Water flea), static test, 48 Hour, 1.4 mg/l, OECD Test Guideline 202

Acute toxicity to algae/aquatic plants

For similar material(s):

EC50, *Pseudokirchneriella subcapitata* (green algae), 72 Hour, 7.9 mg/l

EL50, *Pseudokirchneriella subcapitata* (green algae), static test, 72 Hour, Growth inhibition (cell density reduction), 1 - 3 mg/l, OECD Test Guideline 201

Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., calcium salts**Acute toxicity to fish**

Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/L in the most sensitive species tested).

For similar material(s):

LC50, zebra fish (*Brachydanio rerio*), 96 Hour, 31.6 mg/l

Acute toxicity to aquatic invertebrates

EC50, *Daphnia magna* (Water flea), 48 Hour, 62 mg/l

Acute toxicity to algae/aquatic plants

For similar material(s):

ErC50, *Selenastrum capricornutum* (green algae), 96 Hour, Growth rate inhibition, 29 mg/l

Toxicity to bacteria

For similar material(s):

EC50, activated sludge, 3 Hour, Respiration rates., 550 mg/l

Chronic toxicity to fish

For similar material(s):

NOEC, Rainbow trout (*Salmo gairdneri*), 72 d, survival, 0.23 mg/l

Chronic toxicity to aquatic invertebrates

For similar material(s):

NOEC, *Daphnia magna* (Water flea), 21 d, number of offspring, 1.18 mg/l

Naphthalene**Acute toxicity to fish**

Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested).

LC50, *Oncorhynchus mykiss* (rainbow trout), 96 Hour, 0.11 mg/l

Acute toxicity to aquatic invertebrates

EC50, *Daphnia magna* (Water flea), static test, 48 Hour, 1.6 - 24.1 mg/l

Acute toxicity to algae/aquatic plants

ErC50, *Skeletonema costatum* (marine diatom), Growth rate inhibition, 72 Hour, 0.4 mg/l

Chronic toxicity to fish

NOEC, Other, flow-through, 40 d, mortality, 0.37 mg/l

Balance**Acute toxicity to fish**

No relevant data found.

Persistence and degradability**Pyroxsulam**

Biodegradability: Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

10-day Window: Fail

Biodegradation: 20 - 30 %

Exposure time: 28 d

Method: OECD Test Guideline 301B or Equivalent

Cloquintocet-mexyl

Biodegradability: No relevant data found.

Solvent naphtha (petroleum), heavy aromatic

Biodegradability: For similar material(s): Biodegradation may occur under aerobic conditions (in the presence of oxygen). Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

Biodegradation: 58.6 %

Exposure time: 28 d

Method: OECD Test Guideline 301F

Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., calcium salts

Biodegradability: 10-day Window: Fail

Biodegradation: 2.9 %

Exposure time: 28 d

Method: OECD Test Guideline 301E or Equivalent

Naphthalene

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

Theoretical Oxygen Demand: 3.00 mg/mg

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	57.000 %
10 d	71.000 %
20 d	71.000 %

Photodegradation**Test Type:** Half-life (indirect photolysis)**Sensitization:** OH radicals**Atmospheric half-life:** 5.9 Hour**Method:** Estimated.**Balance****Biodegradability:** No relevant data found.**Bioaccumulative potential****Pyroxsulam****Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).**Partition coefficient: n-octanol/water(log Pow):** -1.01 Measured**Cloquintocet-mexyl****Bioaccumulation:** Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).**Partition coefficient: n-octanol/water(log Pow):** 5.3 Estimated.**Bioconcentration factor (BCF):** 122 - 621 Fish**Solvent naphtha (petroleum), heavy aromatic****Bioaccumulation:** For similar material(s): Bioconcentration potential is high (BCF > 3000 or Log Pow between 5 and 7).**Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., calcium salts****Bioaccumulation:** Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).**Partition coefficient: n-octanol/water(log Pow):** 4.6 OECD Test Guideline 107 or Equivalent**Naphthalene****Bioaccumulation:** Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).**Partition coefficient: n-octanol/water(log Pow):** 3.4 OECD Test Guideline 107**Bioconcentration factor (BCF):** 40 - 300 Fish 28 d Measured**Balance****Bioaccumulation:** No relevant data found.**Mobility in soil****Pyroxsulam**

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

Partition coefficient (Koc): <= 42 Estimated.**Cloquintocet-mexyl**

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

Partition coefficient (Koc): 38070 Estimated.

Solvent naphtha (petroleum), heavy aromatic

No data available.

Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., calcium salts

No relevant data found.

Naphthalene

Potential for mobility in soil is low (Koc between 500 and 2000).

Partition coefficient (Koc): 664**Balance**

No relevant data found.

13. DISPOSAL CONSIDERATIONS

Disposal methods: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

14. TRANSPORT INFORMATION

TDG

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(PYROXSULAM, Naphthalene)
UN number	UN 3082
Class	9
Packing group	III
Marine pollutant	PYROXSULAM, Naphthalene

Classification for SEA transport (IMO-IMDG):

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(PYROXSULAM, Naphthalene)
UN number	UN 3082
Class	9
Packing group	III
Marine pollutant	PYROXSULAM, Naphthalene
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Proper shipping name	Environmentally hazardous substance, liquid, n.o.s.(PYROXSULAM, Naphthalene)
UN number	UN 3082
Class	9
Packing group	III

Further information:

Marine Pollutants assigned UN number 3077 and 3082 in single or combination packaging containing a net quantity per single or inner packaging of 5 L or less for liquids or having a net mass per single or inner packaging of 5 KG or less for solids may be transported as non-dangerous goods as provided in section 2.10.2.7 of IMDG code, IATA special provision A197, and ADR/RID special provision 375.
NOT REGULATED PER TDG EXEMPTION 1.45.1 FOR ROAD OR RAIL

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

National Fire Code of Canada

Not applicable

Canadian Domestic Substances List (DSL)

This product contains chemical substance(s) exempt from CEPA DSL Inventory requirements. It is regulated as a pesticide subject to Pest Control Products Act (PCPA) requirements.

Pest Control Products Act

Pest Control Products Act (PCPA) Registration Number: 29985

Read the PCPA label, authorized under the Pest Control Products Act, prior to using or handling this 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 (PCPA). There are Canada-specific environmental requirements for handling, use, and disposal of this pest control product that are indicated on the label. 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 products label:

PCPA Label Hazard Communications:

Read the label and booklet before using. Keep out of reach of children.

WARNING POISON

EYE AND SKIN IRRITANT

POTENTIAL DERMAL SENSITIZER

Allergens Contained in the Pest Control Product: Warning, contains the allergen soy

This product is toxic to:

Aquatic organisms

Non-target terrestrial plants

16. OTHER INFORMATION

Hazard Rating System**NFPA**

Health	Flammability	Instability
2	1	1

Revision

Identification Number: 362784 / Issue Date: 12/21/2020 / Version: 3.0

DAS Code: GF-2541

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

Legend

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
Corteva OEL	Corteva Occupational Exposure Limit
Dow IHG	Dow Industrial Hygiene Guideline
STEL	15-minute occupational exposure limit
STEV	Short-term exposure value
TWA	Time Weighted Average (TWA):
TWAEV	Time-weighted average exposure value

Full text of other abbreviations

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; 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; HMIS - Hazardous Materials Identification System; 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; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; 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; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance 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

Information Source and References

This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

CORTEVA AGRISCIENCE CANADA COMPANY urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

CA

Product name: TANDEM™ B Herbicide

Issue Date: 11/19/2020

CORTEVA AGRISCIENCE CANADA COMPANY encourages you and expects you to read and understand the entire SDS as there is important information throughout the document. This SDS provides users with information relating to the protection of human health and safety at the workplace, protection of the environment and supports emergency response. Product users and applicators should primarily refer to the product label attached to or accompanying the product container.

1. IDENTIFICATION

Product name: TANDEM™ B Herbicide

Recommended use of the chemical and restrictions on use

Identified uses: End use herbicide product

COMPANY IDENTIFICATION

CORTEVA AGRISCIENCE CANADA COMPANY

#2450, 215 - 2ND STREET S.W.

CALGARY AB, T2P 1M4

CANADA

Customer Information Number

: 800-667-3852

E-mail address

: solutions@corteva.com

EMERGENCY TELEPHONE

24-Hour Emergency Contact

: 1-888-226-8832

Local Emergency Contact

: 1-888-226-8832

2. HAZARDS IDENTIFICATION

Hazard classification

This product is hazardous under the criteria of the Hazardous Products Regulation (HPR) as implemented under the Workplace Hazardous Materials Information System (WHMIS 2015).

Eye irritation - Category 2A

Skin sensitisation - Category 1

Specific target organ toxicity - single exposure - Category 3

Label elements

Hazard pictograms



Signal Word: **WARNING!**

Hazards

May cause an allergic skin reaction.
Causes serious eye irritation.
May cause respiratory irritation.

Precautionary statements**Prevention**

Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves/ eye protection/ face protection.

Response

IF ON SKIN: Wash with plenty of water.
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If skin irritation or rash occurs: Get medical advice/ attention.
If eye irritation persists: Get medical advice/ attention.

Storage

Store in a well-ventilated place. Keep container tightly closed.
Store locked up.

Disposal

Dispose of contents/ container to an approved waste disposal plant.

Other hazards

This mixture contains no substance considered to be persistent, bioaccumulating and toxic (PBT).
This mixture contains no substance considered to be very persistent and very bioaccumulating (vPvB).

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a mixture.

Component	CASRN	Concentration
Fluroxypyr 1-methylheptyl ester	81406-37-3	45.52%
Heavy aromatic naphtha	64742-94-5	>= 0.7 - <= 2.6 %
Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., calcium salts	68953-96-8	2.6%
N-Methyl-2-pyrrolidone	872-50-4	0.1%
Balance	Not available	>= 49.2 - <= 51.1 %

4. FIRST AID MEASURES

Description of first aid measures

General advice:

First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice.

Skin contact: Take off contaminated clothing. Wash skin with soap and plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. Wash clothing before reuse. Shoes and other leather items which cannot be decontaminated should be disposed of properly.

Eye contact: Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice. Suitable emergency eye wash facility should be available in work area.

Ingestion: No emergency medical treatment necessary.

Most important symptoms and effects, both acute and delayed:

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed

Notes to physician: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment. Skin contact may aggravate preexisting dermatitis.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

Unsuitable extinguishing media: Do not use direct water stream. May spread fire.

Special hazards arising from the substance or mixture

Hazardous combustion products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Nitrogen oxides. Hydrogen fluoride. Hydrogen chloride. Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Dense smoke is produced when product burns.

Advice for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Consider feasibility of a controlled burn to minimize environment damage. Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. Spills or discharge to natural waterways is likely to kill aquatic organisms.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact the company for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling: Keep out of reach of children. Do not swallow. Avoid contact with eyes, skin, and clothing. Avoid breathing vapor or mist. Avoid prolonged or repeated contact with skin. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage: Store in a dry place. Store in original container. Keep container tightly closed when not in use. Do not store near food, foodstuffs, drugs or potable water supplies.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

If exposure limits exist, they are listed below. If no exposure limits are displayed, then no values are applicable.

Consult local authorities for recommended exposure limits.

Component	Regulation	Type of listing	Value/Notation
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Fluroxypyr 1-methylheptyl ester	Dow IHG	TWA	10 mg/m3
Heavy aromatic naphtha	ACGIH	TWA	200 mg/m3 , total hydrocarbon vapor
	Corteva OEL	TWA	100 mg/m3
	Corteva OEL	STEL	300 mg/m3
	CA AB OEL	TWA	200 mg/m3 , total hydrocarbon vapor
N-Methyl-2-pyrrolidone	US WEEL	TWA	10 ppm
	US WEEL	TWA	SKIN
	CA ON OEL	TWA	400 mg/m3
	US WEEL	TWA	SKIN

RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
N-Methyl-2-pyrrolidone	872-50-4	5-Hydroxy-N-methyl-2-pyrrolidone	Urine	End of shift (As soon as possible after exposure ceases)	100 mg/l	ACGIH BEI

Exposure controls

Engineering controls: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use chemical goggles.

Skin protection

Hand protection: Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Butyl rubber. Chlorinated polyethylene. Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). Viton. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. In misty atmospheres, use an approved particulate respirator.

The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical state	Liquid
Color	Yellow to brown
Odor	Spicy
Odor Threshold	No test data available
pH	4.58 1% ASTM E70
Melting point/range	Not applicable
Freezing point	No data available
Boiling point (760 mmHg)	No test data available
Flash point	closed cup > 100 °C ASTM D3278
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammability (solid, gas)	Not applicable to liquids
Lower explosion limit	No test data available
Upper explosion limit	No test data available
Vapor Pressure	No test data available
Relative Vapor Density (air = 1)	No test data available
Relative Density (water = 1)	1.05
Water solubility	emulsifiable
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	358 °C EC Method A15
Decomposition temperature	No test data available
Dynamic Viscosity	28.2 mPa.s at 40 °C OECD 114
Kinematic Viscosity	No test data available
Explosive properties	No EEC A14
Oxidizing properties	No data available
Liquid Density	1.05 g/cm ³ at 20 °C OECD 109
Molecular weight	No test data available
Surface tension	32 mN/m at 25 °C EC Method A5

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: No dangerous reaction known under conditions of normal use.

Chemical stability: Unstable at elevated temperatures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible materials: None known.

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

11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Acute toxicity

Acute oral toxicity

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

As product:

LD50, Rat, female, > 5,000 mg/kg OECD Test Guideline 425 No deaths occurred at this concentration.

Acute dermal toxicity

Prolonged skin contact is unlikely to result in absorption of harmful amounts.

As product:

LD50, Rat, male and female, > 5,000 mg/kg OECD Test Guideline 402 No deaths occurred at this concentration.

Acute inhalation toxicity

No adverse effects are anticipated from single exposure to mist. Mist may cause irritation of upper respiratory tract (nose and throat).

As product:

LC50, Rat, male and female, 4 Hour, dust/mist, > 5.50 mg/l OECD Test Guideline 403

Skin corrosion/irritation

Brief contact may cause slight skin irritation with local redness.

May cause drying and flaking of the skin.

Prolonged contact is essentially nonirritating to skin.

Serious eye damage/eye irritation

May cause moderate eye irritation.

May cause slight corneal injury.

Sensitization

As product:

Has demonstrated the potential for contact allergy in mice.

For respiratory sensitization:

No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)

May cause respiratory irritation.

Specific Target Organ Systemic Toxicity (Repeated Exposure)

For the active ingredient(s):

Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

For the major component(s):

Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

For the minor component(s):

In animals, effects have been reported on the following organs:

Kidney.

Propylene glycol monomethyl ether acetate

Carcinogenicity

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

Teratogenicity

For the active ingredient(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother.

Did not cause birth defects in laboratory animals.

Reproductive toxicity

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

Mutagenicity

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

Aspiration Hazard

No aspiration toxicity classification

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

Toxicity

Acute toxicity to fish

Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested).

LC50, *Oncorhynchus mykiss* (rainbow trout), flow-through test, 96 Hour, 14.3 mg/l, OECD Test Guideline 203

Acute toxicity to aquatic invertebrates

EC50, *Daphnia magna* (Water flea), static test, 48 Hour, 20 mg/l, OECD Test Guideline 202

Acute toxicity to algae/aquatic plants

ErC50, *Pseudokirchneriella subcapitata* (green algae), static test, 72 Hour, Growth rate inhibition, 9.6 mg/l, OECD Test Guideline 201

ErC50, *Myriophyllum spicatum*, static test, 14 d, 0.178 mg/l, OECD Test Guideline 201

NOEC, *Myriophyllum spicatum*, static test, 14 d, 0.0152 mg/l, OECD Test Guideline 201

Toxicity to Above Ground Organisms

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

oral LD50, *Colinus virginianus* (Bobwhite quail), > 2,250 mg/kg

Apis mellifera (bees)

Toxicity to soil-dwelling organisms

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

Persistence and degradability**Fluroxypyr 1-methylheptyl ester**

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

10-day Window: Fail

Biodegradation: 32 %

Exposure time: 28 d

Method: OECD Test Guideline 301D or Equivalent

Theoretical Oxygen Demand: 2.2 mg/mg

Stability in Water (1/2-life)

Hydrolysis, half-life, 454 d

Heavy aromatic naphtha

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

Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., calcium salts

Biodegradability: 10-day Window: Fail

Biodegradation: 2.9 %

Exposure time: 28 d

Method: OECD Test Guideline 301E or Equivalent

N-Methyl-2-pyrrolidone

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

10-day Window: Pass

Biodegradation: 91 %

Exposure time: 28 d

Method: OECD Test Guideline 301B or Equivalent

10-day Window: Not applicable

Biodegradation: 73 %

Exposure time: 28 d

Method: OECD Test Guideline 301C or Equivalent

10-day Window: Not applicable

Biodegradation: > 90 %

Exposure time: 8 d

Method: OECD Test Guideline 302B or Equivalent

Theoretical Oxygen Demand: 2.58 mg/mg

Photodegradation

Test Type: Half-life (indirect photolysis)

Sensitization: OH radicals

Atmospheric half-life: 0.486 d

Method: Estimated.

Balance

Biodegradability: No relevant data found.

Bioaccumulative potential**Fluroxypyr 1-methylheptyl ester**

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

Partition coefficient: n-octanol/water(log Pow): 5.04 Measured

Bioconcentration factor (BCF): 26 Oncorhynchus mykiss (rainbow trout) Measured

Heavy aromatic naphtha

Bioaccumulation: For similar material(s): Bioconcentration potential is high (BCF > 3000 or Log Pow between 5 and 7).

Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., calcium salts

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

Partition coefficient: n-octanol/water(log Pow): 4.6 OECD Test Guideline 107 or Equivalent

N-Methyl-2-pyrrolidone

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

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

Balance

Bioaccumulation: No relevant data found.

Mobility in soil**Fluroxypyr 1-methylheptyl ester**

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

Partition coefficient (Koc): 6200 - 43000

Heavy aromatic naphtha

No relevant data found.

Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., calcium salts

No relevant data found.

N-Methyl-2-pyrrolidone

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

Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.

Partition coefficient (Koc): 21 Estimated.

Balance

No relevant data found.

13. DISPOSAL CONSIDERATIONS

Disposal methods: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

14. TRANSPORT INFORMATION

TDG

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(Fluroxypyr)
UN number	UN 3082
Class	9
Packing group	III
Marine pollutant	Fluroxypyr

Classification for SEA transport (IMO-IMDG):

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(Fluroxypyr)
UN number	UN 3082
Class	9
Packing group	III
Marine pollutant	Fluroxypyr
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Proper shipping name	Environmentally hazardous substance, liquid, n.o.s.(Fluroxypyr)
UN number	UN 3082
Class	9
Packing group	III

Further information:

Marine Pollutants assigned UN number 3077 and 3082 in single or combination packaging containing a net quantity per single or inner packaging of 5 L or less for liquids or having a net mass per single or inner packaging of 5 KG or less for solids may be transported as non-dangerous goods as provided in section 2.10.2.7 of IMDG code, IATA special provision A197, and ADR/RID special provision 375.

NOT REGULATED PER TDG EXEMPTION 1.45.1 FOR ROAD OR RAIL

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

National Fire Code of Canada

Not applicable

Canadian Domestic Substances List (DSL)

This product contains chemical substance(s) exempt from CEPA DSL Inventory requirements. It is regulated as a pesticide subject to Pest Control Products Act (PCPA) requirements.

Pest Control Products Act

Pest Control Products Act (PCPA) Registration Number: 29965

Read the PCPA label, authorized under the Pest Control Products Act, prior to using or handling this 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 (PCPA). There are Canada-specific environmental requirements for handling, use, and disposal of this pest control product that are indicated on the label. 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 products label:

PCPA Label Hazard Communications:

Read the label and booklet before using. Keep out of reach of children.

WARNING EYE AND SKIN IRRITANT

POTENTIAL SKIN SENSITIZER

DANGER POISON

This product is toxic to:

Non-target terrestrial plants

Aquatic organisms

16. OTHER INFORMATION

Hazard Rating System

NFPA

Health	Flammability	Instability
1	1	1

Revision

Identification Number: 11082317 / Issue Date: 11/19/2020 / Version: 11.0

DAS Code: GF-1784

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

Legend

ACGIH	USA. ACGIH Threshold Limit Values (TLV)
ACGIH BEI	ACGIH - Biological Exposure Indices (BEI)
CA AB OEL	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
CA ON OEL	Ontario Table of Occupational Exposure Limits made under the Occupational Health and Safety Act.
Corteva OEL	Corteva Occupational Exposure Limit
Dow IHG	Dow Industrial Hygiene Guideline
SKIN	Absorbed via skin
STEL	Short term exposure limit
TWA	8-hr TWA
US WEEL	USA. Workplace Environmental Exposure Levels (WEEL)

Full text of other abbreviations

AICS - Australian Inventory of Chemical Substances; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; 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; HMIS - Hazardous Materials Identification System; 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; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; 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; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance 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

Information Source and References

This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

CORTEVA AGRISCIENCE CANADA COMPANY urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

CA

Product name: Water Conditioner

Issue Date: 03/02/2021

CORTEVA AGRISCIENCE CANADA COMPANY encourages you and expects you to read and understand the entire SDS as there is important information throughout the document. This SDS provides users with information relating to the protection of human health and safety at the workplace, protection of the environment and supports emergency response. Product users and applicators should primarily refer to the product label attached to or accompanying the product container.

1. IDENTIFICATION

Product name: Water Conditioner

Recommended use of the chemical and restrictions on use

Identified uses: Solvent.

COMPANY IDENTIFICATION

CORTEVA AGRISCIENCE CANADA COMPANY

#2450, 215 - 2ND STREET S.W.

CALGARY AB, T2P 1M4

CANADA

Customer Information Number

: 800-667-3852

E-mail address

: solutions@corteva.com

EMERGENCY TELEPHONE

24-Hour Emergency Contact

: 1-888-226-8832

Local Emergency Contact

: 1-888-226-8832

2. HAZARDS IDENTIFICATION

Hazard classification

This product is hazardous under the criteria of the Hazardous Products Regulation (HPR) as implemented under the Workplace Hazardous Materials Information System (WHMIS 2015).

Acute toxicity - Category 4 - Inhalation

Skin corrosion - Category 1B

Serious eye damage - Category 1

Specific target organ toxicity - single exposure - Category 3

Label elements

Hazard pictograms



Signal Word: DANGER!

Hazards

Causes severe skin burns and eye damage.
Harmful if inhaled.
May cause respiratory irritation.

Precautionary statements**Prevention**

Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
Wash contaminated clothing before reuse.

Storage

Store in a well-ventilated place. Keep container tightly closed.
Store locked up.

Disposal

Dispose of contents/ container to an approved waste disposal plant.

Other hazards

No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a mixture.

Component	CASRN	Concentration
Ammonium hydroxide	1336-21-6	>= 3.0 - < 10.0 %
Tetrammonium salt of ethylenediaminetetraacetic acid	22473-78-5	>= 20.0 - < 25.0 %
Water	7732-18-5	>= 60.0 - < 70.0 %

4. FIRST AID MEASURES

Description of first aid measures**General advice:**

First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice. If breathing is difficult, oxygen should be administered by qualified personnel.

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 treatment advice. Suitable emergency safety shower facility should be immediately available.

Eye contact: Wash immediately and continuously with flowing water for at least 30 minutes. Remove contact lenses after the first 5 minutes and continue washing. Obtain prompt medical consultation, preferably from an ophthalmologist. Suitable emergency eye wash facility should be immediately available.

Ingestion: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed:

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed

Notes to physician: Repeated excessive exposure may aggravate preexisting lung disease. Maintain adequate ventilation and oxygenation of the patient. May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants, antitussives and corticosteroids may be of help. Chemical eye burns may require extended irrigation. Obtain prompt consultation, preferably from an ophthalmologist. Due to irritant properties, swallowing may result in burns/ulceration of mouth, stomach and lower gastrointestinal tract with subsequent stricture. Aspiration of vomitus may cause lung injury. Suggest endotracheal/esophageal control if lavage is done. If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media: This material does not burn. If exposed to fire from another source, use suitable extinguishing agent for that fire.

Unsuitable extinguishing media: No data available

Special hazards arising from the substance or mixture

Hazardous combustion products: Fire conditions may cause this product to decompose. Refer to section 10 - Thermal Decomposition.

Unusual Fire and Explosion Hazards: This material does not burn.

Advice for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. This material does not burn. Fight fire for other material that is burning. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Evacuate area. Only trained and properly protected personnel must be involved in clean-up operations. Keep upwind of spill. Ventilate area of leak or spill. Refer to section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. Spills or discharge to natural waterways is likely to kill aquatic organisms.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact the company for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling: Keep out of reach of children. Do not get in eyes, on skin, on clothing. Do not swallow. Avoid breathing vapor or mist. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage: Store in a dry place. Store in original container. Keep container tightly closed when not in use. Do not store near food, foodstuffs, drugs or potable water supplies. Do not store in: Aluminum.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

If exposure limits exist, they are listed below. If no exposure limits are displayed, then no values are applicable.

Consult local authorities for recommended exposure limits.

Component	Regulation	Type of listing	Value/Notation
Ammonium hydroxide	ACGIH	TWA	25 ppm, Ammonia
	ACGIH	STEL	35 ppm, Ammonia
	Dow IHG	TWA	10 ppm, As Ammonia
	CA AB OEL	TWA	17 mg/m3 25 ppm
	CA AB OEL	STEL	24 mg/m3 35 ppm
	CA BC OEL	TWA	25 ppm
	CA BC OEL	STEL	35 ppm
	CA QC OEL	TWAEV	17 mg/m3 25 ppm
	CA QC OEL	STEV	24 mg/m3 35 ppm

RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.

Exposure controls

Engineering controls: Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

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

Skin protection

Hand protection: Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Chlorinated polyethylene. Natural rubber ("latex"). Neoprene. Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl chloride ("PVC" or "vinyl"). Styrene/butadiene rubber. Viton. Butyl rubber. Nitrile/butadiene rubber ("nitrile" or "NBR"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use an approved respirator. Selection of air-purifying or positive-pressure supplied-air will depend on the specific operation and the potential airborne concentration of the material. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus. In confined or poorly ventilated areas, use an approved self-contained breathing apparatus or positive pressure air line with auxiliary self-contained air supply.

The following should be effective types of air-purifying respirators: Ammonia cartridge with particulate pre-filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical state	Liquid
Color	Colorless
Odor	pungent
Odor Threshold	No test data available
pH	No test data available
Melting point/range	-9.4 °C Approximately
Freezing point	No data available
Boiling point (760 mmHg)	71.1 °C
Flash point	closed cup Not applicable
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammability (solid, gas)	Not available
Lower explosion limit	No test data available
Upper explosion limit	No test data available
Vapor Pressure	130 mmHg at 26.6 °C
Relative Vapor Density (air = 1)	0.60 at 0 °C
Relative Density (water = 1)	0.961
Water solubility	Complete
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	No test data available
Decomposition temperature	No test data available

Dynamic Viscosity	No test data available
Kinematic Viscosity	No data available
Explosive properties	No data available
Oxidizing properties	No data available
Molecular weight	No data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: No data available

Chemical stability: Thermally stable at recommended temperatures and pressures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Some components of this product can decompose at elevated temperatures. Avoid direct sunlight.

Incompatible materials: Avoid contact with: Halogens. Nitromethane. Strong acids. Strong oxidizers. Corrosive to some metals. Flammable hydrogen may be generated from contact with metals such as: Aluminum.

Hazardous decomposition products: Decomposition products can include and are not limited to: Ammonia. Toxic gases are released during decomposition.

11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Acute toxicity

Acute oral toxicity

Low toxicity if swallowed. Swallowing may result in irritation or burns of the mouth, throat, and gastrointestinal tract.

As product: Single dose oral LD50 has not been determined.

Based on information for component(s):
LD50, Rat, 3,500 mg/kg Estimated.

Acute dermal toxicity

Prolonged skin contact is unlikely to result in absorption of harmful amounts.

As product: The dermal LD50 has not been determined.

Based on information for component(s):
LD50, > 2,000 mg/kg Estimated.

Acute inhalation toxicity

Prolonged excessive exposure to mist may cause serious adverse effects, even death. Vapor concentrations are attainable which could be hazardous on single exposure. Excessive exposure

may cause irritation to upper respiratory tract (nose and throat) and lungs. Excessive exposure may cause lung injury.

As product: The LC50 has not been determined.

Based on information for component(s): Estimated.
LC50, Rat, 4 Hour, dust/mist, 4 mg/l

Skin corrosion/irritation

Brief contact may cause skin burns. Symptoms may include pain, severe local redness and tissue damage.

Serious eye damage/eye irritation

May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

Vapor may cause eye irritation experienced as mild discomfort and redness.

Sensitization

No relevant data found.

For respiratory sensitization:

No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)

Available data are inadequate to determine single exposure specific target organ toxicity.

Specific Target Organ Systemic Toxicity (Repeated Exposure)

Based on information for component(s):

Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.

Carcinogenicity

Based on information for component(s): Did not cause cancer in laboratory animals.

Teratogenicity

Based on information for component(s): For similar material(s): EDTA and its sodium salts have been reported to cause birth defects in laboratory animals only at exaggerated doses that were toxic to the mother. These effects are likely associated with zinc deficiency due to chelation.

Reproductive toxicity

For the component(s) tested: Limited data in laboratory animals suggest that the material does not affect reproduction.

Mutagenicity

For the component(s) tested: Most data indicate that EDTA and its salts are not mutagenic. Minimal effects reported are likely due to trace metal deficiencies resulting from chelating by EDTA.

Aspiration Hazard

Aspiration into the lungs may occur during ingestion or vomiting, causing tissue damage or lung injury.

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

Toxicity

Ammonium hydroxide

Acute toxicity to fish

Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested).

May increase pH of aquatic systems to > pH 10 which may be toxic to aquatic organisms.

LC50, *Lepomis macrochirus* (Bluegill sunfish), 96 Hour, 0.87 mg/l

LC50, *Pimephales promelas* (fathead minnow), 96 Hour, 1.2 mg/l

Tetrammonium salt of ethylenediaminetetraacetic acid

Acute toxicity to fish

Material is practically non-toxic to fish on an acute basis (LC50 > 100 mg/L).

LC50, *Lepomis macrochirus* (Bluegill sunfish), Static, 96 Hour, 705 mg/l, Other guidelines

Persistence and degradability

Ammonium hydroxide

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

Biodegradation rate may increase in soil and/or water with acclimation.

Theoretical Oxygen Demand: 0.76 mg/mg

Tetrammonium salt of ethylenediaminetetraacetic acid

Biodegradability: For this family of materials: Biodegradation under aerobic laboratory conditions is below detectable limits (BOD20 or BOD28/ThOD < 2.5%).

Bioaccumulative potential

Bioaccumulation: No data available.

Mobility in soil

Ammonium hydroxide

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

Tetrammonium salt of ethylenediaminetetraacetic acid

No relevant data found.

13. DISPOSAL CONSIDERATIONS

Disposal methods: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

14. TRANSPORT INFORMATION

TDG

Not regulated for transport

Classification for SEA transport (IMO-IMDG):

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

Not regulated for transport
Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Not regulated for transport

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

National Fire Code of Canada

Not applicable

Canadian Domestic Substances List (DSL)

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

16. OTHER INFORMATION

Hazard Rating System**NFPA**

Health	Flammability	Instability
3	0	0

Revision

Identification Number: 11014100 / Issue Date: 03/02/2021 / Version: 5.0

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

Legend

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
Dow IHG	Dow Industrial Hygiene Guideline
STEL	15-minute occupational exposure limit
STEV	Short-term exposure value
TWA	8-hour time weighted average
TWAEV	Time-weighted average exposure value

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CA