



# SAFETY DATA SHEET

CORTEVA AGRISCIENCE CANADA COMPANY

Product name: ARES™ SN Herbicide

Issue Date: 11/25/2020

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: ARES™ SN 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 not hazardous under the criteria of the Hazardous Products Regulation (HPR) as implemented under the Workplace Hazardous Materials Information System (WHMIS 2015).

### Other hazards

No data available

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CASRN	Concentration
Imazapyr	81334-34-1	1.4%
Imazamox	114311-32-9	3.1%

Poly(oxyethylene) 20 sorbitan monolaurate	9005-64-5	>= 25.0 - < 50.0 %
Balance	Not available	> 40.0 %

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#### **4. FIRST AID MEASURES**

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**Description of first aid measures**

**General advice:**

Wash clothing before reuse.

**Inhalation:** Move person to fresh air; if effects occur, consult a physician.

**Skin contact:** Wash skin thoroughly with soap and water.

**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.

**Ingestion:** Immediately have person drink plenty of water or milk.

**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:** Treat symptomatically. No specific antidote.

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#### **5. FIRE-FIGHTING MEASURES**

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**Suitable extinguishing media:** Water spray Alcohol-resistant foam

**Unsuitable extinguishing media:** None known.

**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: Carbon monoxide. Ammonia. Carbon dioxide. Nitrogen oxides.

**Unusual Fire and Explosion Hazards:** Exposure to combustion products may be a hazard to health. Do not allow run-off from fire fighting to enter drains or water courses.

**Advice for firefighters**

**Fire Fighting Procedures:** 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.

Remove undamaged containers from fire area if it is safe to do so. Evacuate area. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use water spray to cool unopened containers.

**Special protective equipment for firefighters:** Wear self-contained breathing apparatus for firefighting if necessary. Use personal protective equipment.

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## 6. ACCIDENTAL RELEASE MEASURES

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**Personal precautions, protective equipment and emergency procedures:** Ensure adequate ventilation. Use personal protective equipment. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

**Environmental precautions:** If the product contaminates rivers and lakes or drains inform respective authorities. Discharge into the environment must be avoided. Prevent further leakage or spillage if safe to do so. Prevent spreading over a wide area (e.g. by containment or oil barriers). Retain and dispose of contaminated wash water. Local authorities should be advised if significant spillages cannot be contained. Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

**Methods and materials for containment and cleaning up:** Clean up remaining materials from spill with suitable absorbent. Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in. For large spills, provide dyking or other appropriate containment to keep material from spreading. If dyked material can be pumped, recovered material should be stored in a vented container. The vent must prevent the ingress of water as further reaction with spilled materials can take place which could lead to overpressurization of the container. Keep in suitable, closed containers for disposal. Wipe up with absorbent material (e.g. cloth, fleece). Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). See Section 13, Disposal Considerations, for additional information.

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## 7. HANDLING AND STORAGE

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**Precautions for safe handling:** Avoid formation of aerosol. Provide sufficient air exchange and/or exhaust in work rooms. Do not breathe vapours/dust. Handle in accordance with good industrial hygiene and safety practice. Smoking, eating and drinking should be prohibited in the application area. Take care to prevent spills, waste and minimize release to the environment. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

**Conditions for safe storage:** Store in a closed container. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Keep in properly labelled containers. Store in accordance with the particular national regulations.

Do not store with the following product types: Strong oxidizing agents.  
Unsuitable materials for containers: None known.

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## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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### 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.

### Exposure controls

#### Engineering controls:

#### Individual protection measures

**Eye/face protection:** Safety glasses with side-shields. Tightly fitting safety goggles. Wear a faceshield or other full face protection if there is a potential for direct contact to the face with dusts, mists, or aerosols.

#### Skin protection

**Hand protection:** Use gloves chemically resistant to this material.

**Other protection:** Use chemical protective clothing resistant to this material, when there is any possibility of skin contact.

**Respiratory protection:** Use NIOSH approved respiratory protection.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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### Appearance

Physical state	liquid
Color	Yellow to amber
Odor	aliphatic
Odor Threshold	No data available
pH	5 - 7
Melting point/range	No data available
Freezing point	No data available
Boiling point (760 mmHg)	100 °C
Flash point	<b>closed cup</b> not flammable
Evaporation Rate (Butyl Acetate = 1)	No data available
Flammability (solid, gas)	No
Lower explosion limit	No data available
Upper explosion limit	No data available
Vapor Pressure	23.4 hPa at 20 °C
Relative Vapor Density (air = 1)	No data available
Relative Density (water = 1)	No data available
Water solubility	soluble
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	398 °C
Decomposition temperature	No data available
Dynamic Viscosity	83 mPa.s at 20 °C
Kinematic Viscosity	No data available
Explosive properties	No data available
Oxidizing properties	No data available
Liquid Density	1.08 g/cm <sup>3</sup> at 20 °C
Molecular weight	No data available

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

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## 10. STABILITY AND REACTIVITY

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**Reactivity:** Not classified as a reactivity hazard.

**Chemical stability:** No decomposition if stored and applied as directed. Stable under normal conditions.

**Possibility of hazardous reactions:** None known.  
No hazards to be specially mentioned.

**Conditions to avoid:** None known.

**Incompatible materials:** None.

**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: Carbon monoxide. Ammonia. Carbon dioxide. Nitrogen oxides.

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## 11. TOXICOLOGICAL INFORMATION

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*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, male and female, > 5,000 mg/kg OECD Test Guideline 401

#### Acute dermal toxicity

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

As product:

LD50, Rabbit, male and female, > 5,000 mg/kg OECD Test Guideline 402

#### Acute inhalation toxicity

Brief (minutes) exposure to vapor, mist or dust is not likely to cause adverse effects.

As product:

LC50, Rat, male and female, 4 Hour, dust/mist, > 6.8 mg/l OECD Test Guideline 403

### Skin corrosion/irritation

Brief contact may cause slight skin irritation with local redness.

### Serious eye damage/eye irritation

May cause moderate eye irritation.

May cause slight temporary eye irritation.

### Sensitization

For skin sensitization:

For similar material(s):

Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:

No relevant data found.

### Specific Target Organ Systemic Toxicity (Single Exposure)

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

### Specific Target Organ Systemic Toxicity (Repeated Exposure)

Based on available data for the component(s), repeated exposures are not anticipated to cause significant adverse effects.

### Carcinogenicity

As product: No data available

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

**Teratogenicity**

As product: No data available

Based on information for component(s): Did not cause birth defects or any other fetal effects in laboratory animals.

**Reproductive toxicity**

As product: No data available

Based on information for component(s): In animal studies, did not interfere with fertility.

**Mutagenicity**

As product: No data available

Based on information for component(s): Animal genetic toxicity studies were negative.

**Aspiration Hazard**

Based on available information, aspiration hazard could not be determined.

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**12. ECOLOGICAL INFORMATION**

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

**Toxicity****Imazapyr****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).

LC50, *Oncorhynchus mykiss* (rainbow trout), 96 Hour, > 100 mg/l

**Acute toxicity to aquatic invertebrates**

LC50, *Daphnia magna* (Water flea), 48 Hour, > 100 mg/l

**Acute toxicity to algae/aquatic plants**

EC50, *Pseudokirchneriella subcapitata* (green algae), 120 Hour, 71 mg/l

EC50, blue-green alga *Anabaena flos-aquae*, 120 Hour, 11.7 mg/l

**Chronic toxicity to fish**

*Oncorhynchus mykiss* (rainbow trout), 28 d, 43.1 mg/l

**Chronic toxicity to aquatic invertebrates**

*Daphnia magna* (Water flea), 21 d, 97.1 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).

oral LD50, *Colinus virginianus* (Bobwhite quail), > 2150mg/kg bodyweight.

dietary LC50, *Colinus virginianus* (Bobwhite quail), > 5000mg/kg diet.

contact LD50, *Apis mellifera* (bees), > 100µg/bee

**Imazamox**

**Acute toxicity to fish**

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

LC50, Oncorhynchus mykiss (rainbow trout), 96 Hour, > 122 mg/l

**Acute toxicity to aquatic invertebrates**

EC50, Daphnia magna (Water flea), 48 Hour, > 122 mg/l

**Acute toxicity to algae/aquatic plants**

EC50, Scenedesmus capricornutum (fresh water algae), 120 Hour, > 0.037 mg/l

EC50, Lemna gibba, 14 d, 0.011 mg/l

**Chronic toxicity to fish**

Oncorhynchus mykiss (rainbow trout), 96 d, 11.82 mg/l

**Chronic toxicity to aquatic invertebrates**

Daphnia magna (Water flea), 21 d, 137 mg/l

**Toxicity to Above Ground Organisms**

Material is slightly toxic to birds on an acute basis (LD50 between 501 and 2000 mg/kg).

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

oral LD50, Colinus virginianus (Bobwhite quail), > 1846mg/kg bodyweight.

contact LD50, Colinus virginianus (Bobwhite quail), > 5572mg/kg diet.

oral LD50, Apis mellifera (bees), 48 d, > 40µg/bee

contact LD50, Apis mellifera (bees), 48 d, > 58µg/bee

**Poly(oxyethylene) 20 sorbitan monolaurate**

**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).

LL50, Danio rerio (zebra fish), Static, 96 Hour, > 100 mg/l, OECD Test Guideline 203

LC50, Oncorhynchus mykiss (rainbow trout), Static, 96 Hour, 216 mg/l

**Acute toxicity to aquatic invertebrates**

As product:

LC50, Daphnia magna (Water flea), semi-static test, 96 Hour, > 100 mg/l

**Acute toxicity to algae/aquatic plants**

EL50, Pseudokirchneriella subcapitata (green algae), Static, 72 Hour, Growth rate, 58.84 mg/l,

OECD Test Guideline 201

**Toxicity to bacteria**

NOEC, activated sludge, Static, 14 Days, Respiration rates., 100 mg/l

**Chronic toxicity to aquatic invertebrates**

NOEC, Daphnia magna (Water flea), semi-static test, 21 d, number of offspring, 10 mg/l

**Balance**

**Acute toxicity to fish**

No relevant data found.

**Persistence and degradability**

**Imazapyr**

**Biodegradability:** Expected to degrade slowly in the environment.

**Imazamox**

**Biodegradability:** Expected to degrade slowly in the environment.

**Poly(oxyethylene) 20 sorbitan monolaurate**

**Biodegradability:** Material is expected to be readily biodegradable.

10-day Window: Not applicable

**Biodegradation:** 62.5 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 301F

**Balance**

**Biodegradability:** No relevant data found.

**Bioaccumulative potential**

**Imazapyr**

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

**Partition coefficient: n-octanol/water(log Pow):** 0.11 at 22 °C

**Imazamox**

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

**Partition coefficient: n-octanol/water(log Pow):** 0.7 at 25 °C

**Poly(oxyethylene) 20 sorbitan monolaurate**

**Bioaccumulation:** No relevant data found.

**Balance**

**Bioaccumulation:** No relevant data found.

**Mobility in soil**

**Imazapyr**

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

**Partition coefficient (Koc):** 8.81

**Imazamox**

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

**Partition coefficient (Koc):** 5 - 144

**Poly(oxyethylene) 20 sorbitan monolaurate**

No relevant data found.

**Balance**

No relevant data found.



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## 13. DISPOSAL CONSIDERATIONS

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**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.

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## 14. TRANSPORT INFORMATION

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### TDG

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

### Classification for SEA transport (IMO-IMDG):

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

### Classification for AIR transport (IATA/ICAO):

<b>Proper shipping name</b>	Environmentally hazardous substance, liquid, n.o.s.(Imazamox)
<b>UN number</b>	UN 3082
<b>Class</b>	9
<b>Packing group</b>	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.

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## 15. REGULATORY INFORMATION

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### 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: 33167

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.

This product is toxic to:

Non-target terrestrial plants

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## 16. OTHER INFORMATION

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### Revision

Identification Number: 97073294 / Issue Date: 11/25/2020 / Version: 3.0

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

### 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.

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