SAFETY DATA SHEET

CORTEVA AGRISCIENCE NEW ZEALAND LIMITED

Product name: Tordon™ Brushkiller XT **Issue Date:** 11.10.2021

CORTEVA AGRISCIENCE NEW ZEALAND LIMITED 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. PRODUCT AND COMPANY IDENTIFICATION

Product name: Tordon™ Brushkiller XT
Identified uses: End use herbicide

COMPANY IDENTIFICATION
CORTEVA AGRISCIENCE NEW ZEALAND LIMITED
Private Bag 2017
NEW PLYMOUTH 4342
NEW ZEALAND

Customer Information Number: 0800-803-939
NZCustomerservice@corteva.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: +64 6 751 2407
Local Emergency Contact: 0800 844 455

For medical advice, contact the New Zealand Poisons Information Centre:
0800 POISON (0800 764 766)
Transport Emergency Only Dial: 111

This SDS may not provide exhaustive guidance for all the controls assigned to this substance. The NZ EPA website www.epa.govt.nz should be consulted for a full list of triggered controls and cited regulations

2. HAZARDS IDENTIFICATION

Hazard classification
NEW ZEALAND HAZARDOUS SUBSTANCES CLASSIFICATION: Classified as hazardous according to criteria in the New Zealand Hazardous Substances (Minimum Degrees of Hazard) Notice 2017, and the Hazardous Substances (Classification) Notice 2017. Refer to Section 15 for EPA Approval Number.

GHS classifications:
Flammable liquid - Category 4
Acute oral toxicity - Category 4
Eye irritation - Category 2
Skin sensitisation - Category 1
Specific target organ toxicity (repeated exposure) - Category 2
Hazardous to soil organisms
Hazardous to terrestrial vertebrates

Hazardous to the aquatic environment acute - Category 1
Hazardous to the aquatic environment chronic - Category 1

Hazard pictograms

Signal word: **WARNING!**

Hazards
Combustible liquid
Harmful if swallowed
Harmful if inhaled
Causes mild skin irritation.
May cause an allergic skin reaction
Causes serious eye irritation.
May cause damage to organs (Kidney. Liver. Gastrointestinal tract) through prolonged or repeated exposure.
Very toxic to aquatic life
Very toxic to the soil environment
Harmful to terrestrial vertebrates

Prevention
Keep away from open flames / hot surfaces
Read label before use.
Do not breathe fumes/vapours/spray
Use only outdoors or in a well-ventilated area.
Do not eat, drink or smoke when using this product
Wear protective gloves/ protective clothing/ eye and face protection
Wash skin thoroughly after handling
Contaminated clothing should not be allowed out of the workplace.

Response
In case of fire: Use water fog or fine spray, dry chemical or carbon dioxide fire extinguishers, or alcohol resistant foam. See section 5: Fire-fighting measures for further details.
IF SWALLOWED: Call a POISON CENTRE or doctor/physician if you feel unwell.
Rinse mouth.
IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
Specific treatment – Rinse skin with soap and water. See Section 4: First Aid.
Wash contaminated clothing before re-use.
IF ON SKIN: Wash with plenty of soap and water.
If skin irritation occurs: Get medical advice/attention.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.
If skin irritation or rash occurs: Get medical advice/attention
Call a POISON CENTER or doctor/physician if you feel unwell.
Collect spillage.

Storage
Store in a well ventilated place. Keep cool
Store locked up.

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

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CASRN	Concentration
Triclopyr-2-butoxyethyl ester Picloram	64700-56-7 1918-02-1	36.0 % 8.7 %
Aminopyralid	150114-71-9	0.7%
Diethylene glycol monoethyl ether	111-90-0	30 – 35 %
Balance	Not available	19 - 25 %

4. FIRST AID MEASURES

Consult the National Poisons Information Centre (0800 POISON (0800 764 766)) or a doctor in every case of suspected chemical poisoning. Never give fluids or induce vomiting if a patient is unconscious or convulsing regardless of cause of injury. If breathing difficulties occur seek medical attention immediately.

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 re-use. 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 after the first 5 minutes, then continue rinsing eyes. Call a poison control centre of doctor for treatment advice. Suitable emergency eye wash facility should be available in the 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: Skin contact may aggravate pre-existing dermatitis. 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 centre of doctor, of going for treatment.

5. FIREFIGHTING MEASURES

Hazchem code: ●3Z

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: No data available

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. Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: Container may rupture from gas generation in a fire situation. Violent stream 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. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of re-ignition 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 discolouration 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. No smoking in area. 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 Corteva Agriscience for clean-up assistance. See Section 13: Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling: Keep away from heat, sparks and flame. Containers, even those that have been emptied, can contain vapours. Do not cut, drill, grind, weld or perform similar operations on or near empty containers. Keep out of reach of children. Avoid prolonged or repeated contact with skin. Avoid contact with eyes, skin and clothing. 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.

This substance is subject to a requirement for an emergency management plan, secondary containment and signage, whenever it is held in quantities of 100 L or more, either alone or in aggregate with other hazardous substances. See Hazardous Substances Emergency Management and Identification Regulations.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Triclopyr-2-butoxyethyl ester	Dow IHG	TWA	2 mg/m^3 Skin, DSEN, BEI
Picloram	Dow IHG	TWA	10 mg/m^3
	NZ OEL	WES-TWA	10 mg/m^3
Aminopyralid	Dow IHG	TWA	10 mg/m^3
Diethylene glycol monoethyl ether	US WEEL	TWS	25ppm

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 levels 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 safety glasses (with side shields).

Hand protection: Use chemical resistant gloves classified under standard AS/NZS 2161.10: Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Butyl rubber. Chlorinated polyethylene. Neoprene. Polyethylene. Ethyl vinyl alcohol laminate (“EVAL”).

Examples of acceptable glove barrier materials include: Natural rubber ("latex"). Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). Viton. When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to AS/NZS 2161.10) is recommended. When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to AS/NZS 2161.10) is recommended.
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.

Other Information: Selection and use of personal protective equipment should be in accordance with the recommendations in one or more of the relevant Australian/New Zealand Standards, including:
AS/NZS 1336: Recommended practices for occupational eye protection.
AS/NZS 1337: Personal eye protection - Eye and face protectors for occupational applications.
AS/NZS 1715: Selection, use and maintenance of respiratory protective equipment.
AS/NZS 2161: Occupational protective gloves.
AS/NZS 2210: Occupational protective footwear.
AS/NZS 4501: Occupational protective clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance - Physical state	Liquid.
- Colour	Brown
Odour	Ester.
Odour Threshold	No data available
pH	No data available
Melting point/range	Not applicable
Freezing point	No test data available
Boiling point (760 mmHg)	200^0c
Flash point - closed cup	82^0c
Evaporation Rate (Butyl Acetate = 1)	No data available
Flammability (solid, gas)	No data available
Lower explosion limit	No data available
Upper explosion limit	No data available
Vapour Pressure	No data available
Relative Vapour Density (air = 1)	No data available
Relative Density (water = 1)	No data available
Water solubility	Emulsifiable.

Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Dynamic Viscosity	No data available
Kinematic Viscosity	No data available
Explosive properties	No data available
Oxidizing properties	No data available
Liquid density	1.148 g/ml
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: Thermally stable at recommended temperatures and pressures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Active ingredient decomposes at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible materials: Avoid contact with: Acids. Bases. Oxidizers..

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. Carbon dioxide. Hydrogen fluoride. Nitrogen oxides. Toxic gases are released during decomposition.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Acute oral toxicity

Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.
For similar materials: LD50, Rat, male and female > 2,000 mg/kg. No deaths occurred at this concentration.

Acute dermal toxicity

Prolonged skin contact is unlikely to result in absorption of harmful amounts.
For similar materials: LD50, Rat, male and female > 4,000 mg/kg. No deaths occurred at this concentration.

Acute inhalation toxicity

Prolonged excessive exposure to mist may cause adverse effects. Mist may cause irritation of upper respiratory tract (nose and throat).
For the product: The LC50 has not been determined.

Skin corrosion/irritation

Brief contact may cause slight skin irritation with local redness. May cause drying and flaking of the skin.

Serious eye damage/eye irritation
May cause moderate eye irritation. May cause slight corneal injury.

Sensitization
For skin sensitization: For the active ingredients: Has cause allergic skin reactions when tested in guinea pigs.
For respiratory sensitization: No relevant data 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 ingredients: In animals, effects have been reported on the following organs: Kidney. Liver. Gastrointestinal tract.
For the solvents: Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

Carcinogenicity
For the active ingredient: Picloram. Did not cause cancer in laboratory animals.
For similar active ingredients: Triclopyr. Did not cause cancer in laboratory animals.
For the solvent: Did not cause cancer in laboratory animals.

Teratogenicity
For the active ingredient: Triclopyr butoxyethyl ester. Has been toxic to the foetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.
For the active ingredient: Picloram. Did not cause birth defects or other effects in the foetus even at doses which caused toxic effects in the mother.
For the solvent(s): Did not cause birth defects or any other foetal effects in laboratory animals.

Reproductive toxicity
For similar active ingredient(s). Triclopyr. In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.
For the active ingredient: Picloram. In animal studies, did not interfere with reproduction.
For the solvent(s): Studies in laboratory animals indicate that diethylene glycol monoethyl ether (DEGEE) is not a reproductive toxicant even when given in large amounts (a few percent in the drinking water). However, at the highest doses, it caused some toxic effects in offspring of treated animals: increased liver weight, decreased brain weight, reduced sperm motility.

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

Aspiration Hazard
Based on physical properties, not likely to be an aspiration hazard.

COMPONENTS INFLUENCING TOXICOLOGY:
Acute inhalation toxicity
Triclopyr-2-butoxyethyl ester
Prolonged exposure is not expected to cause adverse effects. Based on the available data, narcotic effects were not observed. Based on the available data, respiratory irritation was not observed.

LC50, Rat, 4 Hour, dust/mist > 4.8 mg/l. The LC50 value is greater than the Maximum Attainable Concentration.

Picloram

Vapours are unlikely due to physical properties. Prolonged excessive exposure to dust may cause adverse effects. Excessive exposure may cause irritation to upper respiratory tract (nose and throat). LC50, Rat, male and female, 4 Hour, dust/mist > 0.035 mg/l. Maximum attainable concentration. No deaths occurred at this concentration.

Aminopyralid

No adverse effects are anticipated from single exposure to dust. Based on the available data, narcotic effects were not observed. Based on the available data, respiratory irritation was not observed.

LC50, Rat, male and female, 4 Hour, Dust > 5.5 mg/l

Diethylene glycol monoethyl ether

No adverse effects are anticipated from single exposure to vapor. Based on the available data, respiratory irritation was not observed. Based on the available data, narcotic effects were not observed.

LC0, Rat, 8 Hour, vapour, 0.025 mg/l. No deaths occurred following exposure to a saturated atmosphere.

Balance

The LC50 has not been determined.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Triclopyr-2-butoxyethyl ester

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, *Lepomis macrochirus* (Bluegill sunfish), flow-through test, 96 Hour, 0.36 mg/l
LC50, Fish, 96 Hour, 0.310 mg/l

Acute toxicity to aquatic invertebrates

EC50, *Daphnia magna* (Water flea), 48 Hour, 2.9 mg/l, OECD Test Guideline 202. The EC50 value is above the water solubility.

Acute toxicity to algae/aquatic plants

ErC50, *Pseudokirchneriella subcapitata* (green algae), 96 Hour, Growth rate inhibition > 3.0 mg/l. OECD Test Guideline 201
ErC50, *Myriophyllum spicaturn*, 14 d, 0.0473 mg/l
NOEC, *Myriophyllum spicaturn*, 14 d, 0.00722 mg/l

Chronic toxicity to fish

NOEC, *Oncorhynchus mykiss* (Rainbow trout), 0.0263 mg/l

Chronic toxicity to aquatic invertebrates

NOEC, *Daphnia magna* (Water flea), 21 d, number of offspring, 1.6 mg/l

LOEC, *Daphnia magna* (Water flea), 21 d, number of offspring, 5.1 mg/l
MATC (Maximum Acceptable Toxicant Level), *Daphnia magna* (Water flea), 21 d, number of offspring, 2.9 mg/l

Toxicity to Above Ground Organisms
Material is slightly toxic to birds on an acute basis (LD50 between 501 and 2,000 mg/kg).
oral LD50, *Colinus virginianus* (Bobwhite quail), 21 d, 735 mg/kg bodyweight.

Material is slightly toxic to birds on a dietary basis (LC50 between 1,001 and 5,000 ppm).
dietary LC50, *Colinus virginianus* (Bobwhite quail), 8 d, 1,890 mg/kg bodyweight.

oral LD50, *Apis mellifera* (bees), 48 Hour, mortality > 110 µg/bee
contact LD50, *Apis mellifera* (bees), 48 Hour, mortality > 100 µg/bee

Toxicity to soil-dwelling organisms
LC50, *Eisenia fetida* (earthworms), 14 d > 1,042 mg/kg

Picloram

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), static test, 96 Hour, 8.8 mg/l

Acute toxicity to aquatic invertebrates
EC50, *Daphnia magna* (Water flea), 48 Hour, 44.2 mg/l

Acute toxicity to algae/aquatic plants
ErC50, *Pseudokirchneriella subcapitata* (green algae), 72 Hour, Growth rate inhibition > 78.7 mg/l
EC50, *Lemna gibba*, Growth inhibition, 14 d, 102 mg/l
ErC50, *Myriophyllum spicaturn*, 14 d, 0.558 mg/l
NOEC, *Myriophyllum spicaturn*, 14 d, 0.0095 mg/l

Toxicity to bacteria
EC50, activated sludge, 3 Hour > 100 mg/l

Chronic toxicity to fish
Oncorhynchus mykiss (Rainbow trout), flow-through test, 70 d, 0.55 mg/l

Chronic toxicity to aquatic invertebrates
NOEC, *Daphnia magna* (Water flea), static test, 21 d, number of offspring, 6.79 mg/l
LOEC, *Daphnia magna* (Water flea), static test, 21 d, number of offspring, 13.5 mg/l
MATC (Maximum Acceptable Toxicant Level), *Daphnia magna* (Water flea), static test, 21 d, number of offspring, 9.57 mg/l

Toxicity to Above Ground Organisms
Material is practically non-toxic to birds on an acute basis (LD50 > 2,000 mg/kg).
oral LD50, *Anas platyrhynchos* (Mallard duck), 14 d > 2,510 mg/kg bodyweight.

Material is practically non-toxic to birds on a dietary basis (LC50 > 5,000 ppm).
dietary LC50, *Anas platyrhynchos* (Mallard duck) > 5,000 mg/kg diet.

contact LD50, *Apis mellifera* (bees), 48 Hour > 100 micrograms/bee
oral LD50, *Apis mellifera* (bees), 48 d > 74 micrograms/bee

Toxicity to soil-dwelling organisms
LC50, *Eisenia fetida* (earthworms), 14 d, survival > 5,000 mg/kg

Aminopyralid

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 > 100 mg/l

Acute toxicity to aquatic invertebrates
EC50, *Daphnia magna* (Water flea), 48 Hour > 100 mg/l. OECD Test Guideline 202 or Equivalent
EC50, Crassostrea virginica (eastern oyster), 96 Hour > 89 mg/l

Acute toxicity to algae/aquatic plants
ErC50, diatom *Navicula* sp., 72 Hour, 18 mg/l
EC50, *Lemna gibba*, 14 d > 88 mg/l
ErC50, *Myriophyllum spicaturn*, 14 d, 0.363 mg/l
NOEC, *Myriophyllum spicaturn*, 14 d, 0.0639 mg/l

Toxicity to bacteria
Bacteria > 1,000 mg/l

Chronic toxicity to fish
NOEC, *Pimephales promelas* (fathead minnow), flow-through test, 36 d, growth, 1.36 mg/l
NOEC, *Cyprinodon variegatus* (sheepshead minnow), 0.1 mg/l

Chronic toxicity to aquatic invertebrates
NOEC, *Daphnia magna* (water flea), 100 mg/l

Toxicity to Above Ground Organisms
Material is practically non-toxic to birds on an acute basis (LD50 > 2,000 mg/kg).
oral LD50, *Colinus virginianus* (Bobwhite quail) > 2,250 mg/kg bodyweight.

Material is practically non-toxic to birds on a dietary basis (LC50 > 5,000 ppm).
dietary LC50, *Colinus virginianus* (Bobwhite quail) > 5,620 mg/kg diet.

oral LD50, *Apis mellifera* (bees), 48 Hour > 120 micrograms/bee
contact LD50, *Apis mellifera* (bees), 48 Hour > 100 micrograms/bee

Toxicity to soil-dwelling organisms
LC50, *Eisenia fetida* (earthworms), 14 d > 1,000 mg/kg

Diethylene glycol monoethyl ether

Acute toxicity to fish
Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).
LC50, *Ictalurus catus* (catfish), flow-through test, 96 Hour, 6,010 mg/l. OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates
LC50, *Daphnia magna* (Water flea), static test, 48 Hour, 1,982 mg/l. OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
Based on information for a similar material:
ErC50, *Desmodesmus subspicatus* (green algae), static test, 96 Hour, Growth rate inhibition > 100 mg/l. OECD Test Guideline 201 or Equivalent

Toxicity to bacteria
EC10, Bacteria, 16 Hour, 4,000 mg/l

Balance

Acute toxicity to fish
No relevant data found.

Persistence and degradability

Triclopyr-2-butoxyethyl ester

Biodegradability: Chemical degradation (hydrolysis) is expected in the environment. Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.
10-day Window: Fail
Biodegradation: 18 %
Exposure time: 28 d
Method: OECD Test Guideline 301B or Equivalent

Theoretical Oxygen Demand: 1.39 mg/mg
Stability in Water: Hydrolysis, half-life, 8.7 d, pH 7, Half-life Temperature 25 °C

Photodegradation: Atmospheric half-life: 5.6 Hour. Estimated

Picloram

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. Biodegradation may occur under aerobic conditions (in the presence of oxygen). Surface photodegradation is expected with exposure to sunlight.
10-day Window: Fail
Biodegradation: 1.95 %
Exposure time: 28 d
Method: OECD Test Guideline 301

Stability in Water: Hydrolysis, half-life > 1.8 year, pH 5 - 9, Half-life Temperature 45 °C. Measured
Photodegradation: Half-life (indirect photolysis), OH radicals, Atmospheric half-life: 12.5 Hour

Aminopyralid

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: 19.5 %
Exposure time: 28 d
Method: OECD Test Guideline 301

Stability in Water: Hydrolysis, pH 5 - 9, Half-life Temperature 20 °C, Stable
Hydrolysis, pH 5 - 9, Half-life Temperature 50 °C, Stable

Photodegradation: Half-life (indirect photolysis), OH radicals, 6.4 d. Estimated

Diethylene glycol monoethyl ether

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Material is ultimately biodegradable (reaches > 70% mineralization in OECD test(s) for inherent biodegradability).
10-day Window: Pass
Biodegradation: 90 %
Exposure time: 28 d
Method: OECD Test Guideline 301E or Equivalent
10-day Window: Not applicable
Biodegradation: > 90 %
Exposure time: 5.5 d
Method: OECD Test Guideline 302B or Equivalent

Theoretical Oxygen Demand: 1.91 mg/mg
Chemical Oxygen Demand: 1.84 mg/mg
Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	5 - 17 %
10 d	31 - 71 %
20 d	49 - 87 %

Photodegradation: Half-life (indirect photolysis), OH radicals, 4.093 Hour, Estimated.

Balance

Biodegradability: No relevant data found.

Bioaccumulative potential

Triclopyr-2-butoxyethyl ester

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3,000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water (log Pow): 4.62
Bioconcentration factor (BCF): 110 Fish

Picloram

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water (log Pow): -1.92
Bioconcentration factor (BCF): 0.54 *Lepomis macrochirus* (Bluegill sunfish)

Aminopyralid

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water (log Pow): -2.87

Diethylene glycol monoethyl ether

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water (log Pow): -0.54 Measured

Balance

Bioaccumulation: No relevant data found.

Mobility in Soil

Triclopyr-2-butoxyethyl ester

Calculation of meaningful sorption data was not possible due to very rapid degradation in the soil. For the degradation product: Triclopyr. Potential for mobility in soil is very high (Koc between 0 and 50).

Picloram

Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient (Koc): 35

Aminopyralid

Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient (Koc): 14

Diethylene glycol monoethyl ether

Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient (Koc): 20 Estimated.

Balance

No relevant data found.

Results of PBT and vPvB assessment

Triclopyr-2-butoxyethyl ester

This substance is not considered to be persistent, bioaccumulating and toxic (PBT) or very persistent and very bioaccumulating (vPvB).

Picloram

This substance is not considered to be persistent, bioaccumulating and toxic (PBT) or very persistent and very bioaccumulating (vPvB).

Aminopyralid

This substance is not considered to be persistent, bioaccumulating and toxic (PBT) or very persistent and very bioaccumulating (vPvB).

Diethylene glycol monoethyl ether

This substance is not considered to be persistent, bioaccumulating and toxic (PBT) or very persistent and very bioaccumulating (vPvB).

Balance

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

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.

Waste handling, treatment and disposal practices must be in compliance with the New Zealand Hazardous Substances (Disposal) Notice 2017. Additional local requirements may be applicable in accordance with planning controls under the Resource Management Act. Regulations concerning waste management may vary in different locations.

14. TRANSPORT INFORMATION

PUBLIC PASSENGER VEHICLE TRANSPORT: To be transported ONLY in the sealed original container.
Maximum amount permitted to be transported in a passenger vehicle: 100 mL

Classification for ROAD and Rail transport:

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(Triclopyr-2-butoxyethyl ester, Picloram)
UN number	UN 3082
Class	9
Packing group	III
Environmental hazards	Triclopyr-2-butoxyethyl ester, Picloram

Classification for SEA transport (IMO-IMDG):

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(Triclopyr-2-butoxyethyl ester, Picloram)
UN number	UN 3082
Class	9
Packing group	III
Marine pollutant	Triclopyr-2-butoxyethyl ester, Picloram
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.(Triclopyr-2-butoxyethyl ester, Picloram)
UN number	UN 3082
Class	9
Packing group	III

Hazchem code: ●3Z

Matters needing attention for transportation
Marine Pollutants 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 and IATA special provision A197. If the product meets these special provisions, it may be shipped in New Zealand as a non-dangerous goods under provisions in NZS 5433 code which accepts IMDG and IATA classification.

This information is not intended to convey all specific regulatory or operational requirements/ information relating to this product. 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

ACVMG APPROVAL NUMBER: P7545
EPA Approval Code: HSR007630

ADVICE TO PRODUCT USERS REGARDING GHS CONTROLS: Users of this product should make reference to the New Zealand Hazardous Substances and New Organisms Act and Regulations, and the Health and Safety at Work Act for relevant risk management controls. Additional local requirements may be applicable in accordance with planning controls under the Resource Management Act. Refer to Environment Protection Authority for more information http://www.epa.govt.nz

16. OTHER INFORMATION

Revision
Identification Number: 101205028 / A157 / Issue Date: 11.10.2021 / Version: Replaces 31.10.2019
Sections amended: 2, 5, 13, 14, 15

Legend

ACGIH	American Conference of Governmental Industrial Hygienists
Dow IHG	Dow Industrial Hygiene Guideline
NZ OEL	New Zealand Workplace Exposure Standards for Atmospheric Contaminants
Skin, DSEN, BEI	Absorbed via Skin, Skin Sensitizer, Biological Exposure Indice
TWA	8-hr Time weighted average
US WEEL	USA. Workplace Environmental Exposure
WES-TWA	Workplace Exposure Standard – Time weighted average

Full text of other abbreviations
AICS - Australian Inventory of Chemical Substances; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR -

(Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

CORTEVA AGRISCIENCE NEW ZEALAND LIMITED urges each customer or recipient of this SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this 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 SDS's, we are not and cannot be responsible for SDS's obtained from any source other than ourselves. If you have obtained an SDS from another source or if you are not sure that the SDS you have is current, please contact us for the most current version.