

**Product name:** Tordon™ Brushkiller XT**Issue Date:** 15.09.2016

DOW AGROSCIENCES (NZ) LIMITED encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

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## 1. PRODUCT AND COMPANY IDENTIFICATION

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

DOW AGROSCIENCES (NZ) LIMITED  
89 PARITUTU ROAD  
4342 NEW PLYMOUTH  
NEW ZEALAND

**Customer Information Number:**

0800-803-939

[fnpcust@dow.com](mailto:fnpcust@dow.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 HSNO controls assigned to this substance. The NZ EPA website [www.epa.govt.nz](http://www.epa.govt.nz) should be consulted for a full list of triggered controls and cited regulations

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## 2. HAZARDS IDENTIFICATION

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**Hazard classification**

NEW ZEALAND HAZARDOUS SUBSTANCES CLASSIFICATION: Classified as hazardous according to criteria in the New Zealand Hazardous Substances (Minimum Degrees of Hazard) Regulations 2001.

**HSNO classifications:** 3.1D, 6.1D, 6.3B, 6.4A, 6.5B, 6.9B, 9.1A, 9.2A, 9.3C**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: Firefighting 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.

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**3. COMPOSITION/INFORMATION ON INGREDIENTS**

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

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## 4. FIRST AID MEASURES

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**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 or 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 or doctor, or going for treatment.

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## 5. FIREFIGHTING MEASURES

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**Hazchem code:** ●2X

**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.

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## 6. ACCIDENTAL RELEASE MEASURES

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**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 Dow AgroSciences for clean-up assistance. See Section 13: Disposal Considerations, for additional information.

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## 7. HANDLING AND STORAGE

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**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 <sup>3</sup> Skin, DSEN, BEI
Picloram	Dow IHG	TWA	10 mg/m <sup>3</sup>
	NZ OEL	WES-TWA	10 mg/m <sup>3</sup>
Aminopyralid	Dow IHG	TWA	10 mg/m <sup>3</sup>
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.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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<b>Appearance - Physical state</b>	Liquid.
<b>- Color</b>	Brown
<b>Odour</b>	Ester.
<b>Odour Threshold</b>	No data available
<b>pH</b>	No data available
<b>Melting point/range</b>	Not applicable
<b>Freezing point</b>	No test data available
<b>Boiling point (760 mmHg)</b>	200 <sup>o</sup> c
<b>Flash point - closed cup</b>	82 <sup>o</sup> c
<b>Evaporation Rate (Butyl Acetate = 1)</b>	No data available
<b>Flammability (solid, gas)</b>	No data available
<b>Lower explosion limit</b>	No data available
<b>Upper explosion limit</b>	No data available
<b>Vapor Pressure</b>	No data available
<b>Relative Vapor Density (air = 1)</b>	No data available
<b>Relative Density (water = 1)</b>	No data available
<b>Water solubility</b>	Emulsifiable.
<b>Partition coefficient: n-octanol/water</b>	No data available
<b>Auto-ignition temperature</b>	No data available
<b>Decomposition temperature</b>	No data available
<b>Dynamic Viscosity</b>	No data available
<b>Kinematic Viscosity</b>	No data available
<b>Explosive properties</b>	No data available
<b>Oxidizing properties</b>	No data available
<b>Liquid density</b>	1.148 g/ml
<b>Molecular weight</b>	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:** 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.

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## 11. TOXICOLOGICAL INFORMATION

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### 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.

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## **12. ECOLOGICAL INFORMATION**

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### **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 spicatum*, 14 d, 0.0473 mg/l

NOEC, *Myriophyllum spicatum*, 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 spicatum*, 14 d, 0.558 mg/l

NOEC, *Myriophyllum spicatum*, 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 spicatum*, 14 d, 0.363 mg/l

NOEC, *Myriophyllum spicatum*, 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).

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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.

Waste handling, treatment and disposal practices must be in compliance with the New Zealand Hazardous Substances (Disposal) Regulations 2001. 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.

This product when disposed of in its unused and uncontaminated state should be treated as a hazardous waste.

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## 14. TRANSPORT INFORMATION

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**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:**

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

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

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

**Hazchem code:** 2X

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.

Compliance with the above land, rail, marine and air requirements is deemed to comply with the applicable requirements of the Hazardous substances Identification and Emergency Management Regulations.

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## 15. REGULATORY INFORMATION

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**ACVMG APPROVAL NUMBER:** P7545

**HSNO Approval Code:** HSR007630

**ADVICE TO PRODUCT USERS REGARDING HSNO CONTROLS:** Users of this product should make reference to the New Zealand Hazardous Substances and New Organisms Act and Regulations 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 publication; User Guide to the HSNO Controls Regulations. <http://www.epa.govt.nz>

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## 16. OTHER INFORMATION

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### Revision

Identification Number: 101205028 / A157 / Issue Date: 15.09.2016 / Version: Replaces 08.04.2013

**Sections amended:** All

### 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

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