



SAFETY DATA SHEET

DOW AGROSCIENCES (NZ) LIMITED

Agriculture Division of DowDuPont

Product name: Tordon™ PastureBoss™ Herbicide

Issue Date: 16.12.2016

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.

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Tordon™ PastureBoss™ Herbicide

Identified uses: End use herbicide product

COMPANY IDENTIFICATION

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

Customer Information Number:

0800-803-939

fncust@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 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) Regulations 2001. Refer to Section 15 for HSNO Approval Number.

HSNO Hazard classification: 6.1E, 6.5B, 6.9B, 8.1A, 8.3A, 9.1A, 9.2A, 9.3C.

Hazards

May be harmful if swallowed

May cause an allergic skin reaction.

Causes serious eye damage

May cause damage to organs: kidneys, liver and gastrointestinal tract, through prolonged or repeated exposure.

May be corrosive to metals.

Very toxic to aquatic life, with long lasting effects

Very toxic to the soil environment
Harmful to terrestrial vertebrates.

Prevention

Keep out of reach of children.
Read label before use.
Keep only in original container
Do not breathe mist/vapour/spray.
Wash hands and face thoroughly after handling.
Do not eat, drink or smoke when using this product.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves/protective clothing and eye/face protection.
Avoid release to the environment.

Response

If medical advice is needed, have product container or label at hand.
IF exposed or if you feel unwell: Call a POISON CENTRE or doctor/physician
Specific treatment, see First Aid instructions on this SDS.
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.
Wash contaminated clothing before re-use.
Absorb spillage to prevent material damage.
Collect spillage.

Disposal

Store locked up.
Store in corrosive resistant container with a resistant inner liner.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CASRN	Concentration
Triclopyr Triethylamine Salt	57213-69-1	25.2%
Aminopyralid Triisopropanolamine Salt	566191-89-7	5.2 %
Triethylamine	121-44-8	< 5 %
Triethanolamine	102-71-6	< 5 %
Ethanol; ethyl alcohol	64-17-5	< 2 %
Balance	Not available	> 58 %

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. If breathing is difficult, oxygen should be administered by qualified personnel.

Skin contact: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. Suitable emergency safety shower facility should be available in manufacturing work area.

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

Ingestion: Never give anything by mouth to an unconscious person. Do not induce vomiting. Call a physician and/or transport to emergency facility immediately.

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

Indication of any immediate medical attention and special treatment needed

Notes to physician: Maintain adequate ventilation and oxygenation of the patient. Chemical eye burns may require extended irrigation. Obtain prompt consultation, preferably from an ophthalmologist. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. The decision of whether to induce vomiting or not should be made by a physician. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

5. FIREFIGHTING MEASURES

Hazchem Code: ●2X

Suitable extinguishing media: To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. General purpose synthetic foams (including AFFF type) or protein foams are preferred if available. Alcohol resistant foams (ATC type) may function.

Unsuitable extinguishing media: 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 chloride. Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: This material will not burn until the water has evaporated. Residue can burn. May produce flash fire. If exposed to fire from another source and water is evaporated, exposure to high temperatures may cause toxic fumes.

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. Consider feasibility of a controlled burn to minimize environment damage. To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam. 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: Evacuate area. Refer to section 7: Handling, for additional precautionary measures. Only trained and properly protected personnel must be involved in clean-up operations. Keep up-wind of spill. Ventilate area of leak or spill. Use appropriate safety equipment. For additional information, refer to Section 8: Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12: Ecological Information.

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.

7. HANDLING AND STORAGE

Precautions for safe handling: Keep out of reach of children. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Do not get in eyes. Avoid contact with skin and clothing. Do not swallow. Avoid breathing vapour or mist. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. See Section 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION.

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

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 Triethylamine Salt	Dow IHG	TWA	2 mg/m ³ SKIN, DSEN, BEI
Triethylamine	ACGIH	TWA	0.5 ppm Absorbed via skin
	ACGIH	STEL	1 ppm Absorbed via skin
	NZ OEL	WES-TWA	12 mg/m ³ 3 ppm SKIN
	NZ OEL	WES-STEL	20 mg/m ³ 5 ppm SKIN
	Dow IHG	TWA	1 ppm SKIN
	Dow IHG	STEL	3 ppm SKIN
Triethanolamine	ACGIH	TWA	5 mg/m ³
	NZ OEL	WES-TWA	5 mg/m ³
Ethanol; ethyl alcohol	ACGIH	TWA	1,000 ppm
	ACGIH	STEL	1,000 ppm
	NZ OEL	WES-TWA	1,880 mg/m ³ 1,000 ppm

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

Exposure controls

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

Individual protection measures

Eye/face protection: Use chemical goggles.

Skin protection

Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. 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. Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl chloride ("PVC" or "vinyl"). 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: Wear clean, body-covering clothing.

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 (SCBA). In confined or poorly ventilated areas, use an approved self-contained breathing apparatus or positive pressure air line with auxiliary self-contained air supply.

The following should be effective types of air-purifying respirators: 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: Eye and face protection - Guidelines.
 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	Blue
Odour	Amine.
Odour Threshold	No test data available
pH	7.3 <i>pH Electrode</i>
Melting point/range	Not applicable
Freezing point	No test data available
Boiling point (760 mmHg)	No test data available
Flash point – closed cup	> 100 °C <i>Pensky-Martens Closed Cup ASTM D 93</i>
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammability (solid, gas)	Not Applicable
Lower explosion limit	No test data available
Upper explosion limit	No test data available
Vapour Pressure	Not determined for product. 9.5×10^{-6} mPa at 20°C (Aminopyralid); 0.168 mPa at 25°C (Triclopyr acid)
Relative Vapour Density (air = 1)	No test data available
Relative Density (water = 1)	1.105 g/mL at 20 °C <i>EC Method A3</i>
Water solubility	Soluble
Partition coefficient: n-octanol/water	Not determined for product.
Auto-ignition temperature	No test data available
Decomposition temperature	No test data available
Dynamic Viscosity	4.6 mPa.s at 20 °C; 3.1 mPa.s at 40 °C
Kinematic Viscosity	No data available
Explosive properties	No data available
Oxidizing properties	No significant increases (> 5°C) in temperature were observed
Liquid Density	1.105 g/cm ³ at 20 °C <i>Digital density meter</i>
Molecular weight	Triclopyr Triethylamine = 357.7; Aminopyralid = 207.03 g/mol

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

10. STABILITY AND REACTIVITY

Reactivity: No data available

Chemical stability: Thermally stable at recommended temperatures and pressures.

Possibility of hazardous reactions: Polymerization will not occur.

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

Incompatible materials: Avoid contact with: 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: Hydrogen chloride. Nitrogen oxides. Toxic gases are released during decomposition.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Acute oral toxicity

Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. Swallowing may result in irritation of the mouth, throat, and gastrointestinal tract.

As product: Single dose oral LD50 has not been determined.
Based on information for component(s): LD50 > 2,000 mg/kg. *Estimated*

Acute dermal toxicity

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

As product: The dermal LD50 has not been determined.
Based on information for component(s): LD50 > 2,000 mg/kg. *Estimated*.

Acute inhalation toxicity

Vapour concentrations are attainable which could be hazardous on single exposure. Mist may cause irritation of upper respiratory tract (nose and throat). Prolonged excessive exposure to mist may cause adverse effects.

As product: The LC50 has not been determined.

Skin corrosion/irritation

Prolonged contact may cause skin irritation with local redness. Repeated contact may cause skin burns. Symptoms may include pain, severe local redness, swelling and tissue damage.

Serious eye damage/eye irritation

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

Sensitization

For the active ingredient: Triclopyr triethylamine salt. Prolonged or frequently repeated skin contact may cause allergic skin reactions in some individuals.

For the active ingredient: Aminopyralid. Did not cause allergic reactions when tested in guinea pigs.
For respiratory sensitization: No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)

Product test data not available. Individual constituents are described under Components influencing toxicology below.

Specific Target Organ Systemic Toxicity (Repeated Exposure)

For the active ingredient: Triclopyr triethylamine salt. In animals, effects have been reported on the following organs: Kidney

For similar active ingredient(s). Aminopyralid. Effects have been reported on the following organs: Gastrointestinal tract.

For the minor component(s): Ethanol. In humans, effects have been reported on the following organs: Central nervous system. Liver. In humans, symptoms may include: dizziness and drowsiness; headache, Central nervous system depression.

Carcinogenicity

For the active ingredients: Triclopyr and Aminopyralid. Did not cause cancer in laboratory animals.

For minor component(s): Triethanolamine. Findings from a chronic skin painting study by NTP include liver tumours in mice. Mechanistic studies indicate that tumour formation is of questionable relevance to humans. Is not classified as a human carcinogen.

Ethanol when not consumed in an alcoholic beverage is not classifiable as a human carcinogen. Epidemiology studies provide evidence that drinking of alcoholic beverages (containing ethanol) is associated with cancer, and IARC has classified alcoholic beverages as carcinogenic to humans.

Teratogenicity

For the active ingredient(s): Triclopyr triethylamine salt. Has been toxic to the foetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.

For similar active ingredient(s). Aminopyralid. Did not cause birth defects or other effects in the foetus even at doses which caused toxic effects in the mother.

For the minor component(s): Ethanol. Has caused birth defects in lab animals at high doses. Has been toxic to the foetus in laboratory animals at doses toxic to the mother. Dose levels producing these effects were many times higher than any dose levels expected from exposure due to use.

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.

Aminopyralid. In animal studies, did not interfere with reproduction.

For the minor component(s): Ingestion of large amounts of ethanol has been shown to interfere with fertility in human males. In animal studies, ethanol has been shown to interfere with fertility in males.

Mutagenicity

For the active ingredient(s): Triclopyr triethylamine salt. In vitro genetic toxicity studies were negative.

For similar active ingredient(s). Aminopyralid. In vitro genetic toxicity studies were predominantly negative. Animal genetic toxicity studies were negative.

For the minor component(s): Animal genetic toxicity studies were negative in some cases and positive in other cases.

Aspiration Hazard

Aspiration into the lungs may occur during ingestion or vomiting, causing lung damage or even death due to chemical pneumonia.

COMPONENTS INFLUENCING TOXICOLOGY:**Triclopyr Triethylamine Salt****Acute inhalation toxicity**

Maximum achievable concentration. LC50, Rat, 4 Hour, dust/mist > 2.6 mg/l. No deaths occurred at this concentration.

Specific Target Organ Systemic Toxicity (Single Exposure)

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

Aminopyralid Triisopropanolamine Salt**Acute inhalation toxicity**

No adverse effects are anticipated from single exposure to dust. Based on the available data, respiratory irritation was not observed. The LC50 has not been determined. For similar material(s): LC50, Rat, 4 Hour, dust/mist > 5.79 mg/l.

Specific Target Organ Systemic Toxicity (Single Exposure)

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

Triethylamine**Acute inhalation toxicity**

Vapour concentrations are attainable which could be hazardous on single exposure. Prolonged excessive exposure may cause serious adverse effects, even death. Vapour may cause irritation of the upper respiratory tract (nose and throat). In humans, symptoms may include: Headache.

LC50, Rat, 1 Hour, vapour, 14.4 mg/l

Specific Target Organ Systemic Toxicity (Single Exposure)

May cause respiratory irritation.

Route of Exposure: Inhalation

Target Organs: Respiratory Tract

Triethanolamine**Acute inhalation toxicity**

Based on the available data, respiratory irritation was not observed. No deaths occurred following exposure to a saturated atmosphere.

Specific Target Organ Systemic Toxicity (Single Exposure)

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

Ethanol; ethyl alcohol**Acute inhalation toxicity**

LC50, Rat, 4 Hour, vapour, 124.7 mg/l

Specific Target Organ Systemic Toxicity (Single Exposure)

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

Balance**Acute inhalation toxicity**

The LC50 has not been determined.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Triclopyr Triethylamine Salt

For similar materials: 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).

Acute toxicity to fish

LC50, *Cyprinus carpio* (Carp), 96 Hour, 350 mg/l

LC50, *Lepomis macrochirus* (Bluegill sunfish), semi-static test, 96 Hour > 100 mg/l

Acute toxicity to aquatic invertebrates

EC50, *Crassostrea virginica* (eastern oyster), static test, 48 Hour, 56 - 87 mg/l

EC50, *Daphnia magna* (Water flea), static test, 48 Hour > 448 mg/l

Acute toxicity to algae/aquatic plants

ErC50, *Pseudokirchneriella subcapitata* (green algae), 72 Hour, Growth rate inhibition, 107 mg/l

ErC50, *Anabaena flos-aquae* (blue-green alga), Growth inhibition, 72 Hour > 100 mg/l

EC50, *Lemna gibba*, Growth inhibition, 7 d > 1,000 mg/l

Based on information for a similar material: ErC50, *Myriophyllum spicatum*, 14 d, 0.241 mg/l

NOEC, *Myriophyllum spicatum*, 14 d, 0.0191 mg/l

Toxicity to Above Ground Organisms

Material is practically non-toxic to birds on a dietary basis (LC50 > 5,000 ppm).

Oral LD50, *Colinus virginianus* (Bobwhite quail), 300 mg/kg bodyweight.

Material is moderately toxic to birds on an acute basis (LD50 between 51 and 500 mg/kg).

Dietary LC50, *Colinus virginianus* (Bobwhite quail), 11,622 mg/kg diet.

Contact LD50, *Apis mellifera* (bees), 48 Hour > 100 µg/bee

Aminopyralid Triisopropanolamine Salt

Acute toxicity to fish

For similar material(s): 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, *Oncorhynchus mykiss* (rainbow trout), 96 Hour, 360 mg/l

Acute toxicity to aquatic invertebrates

For similar material(s): EC50, *Daphnia magna* (Water flea), 48 Hour > 460 mg/l

Acute toxicity to algae/aquatic plants

For similar material(s): ErC50, *Pseudokirchneriella subcapitata* (green algae), 72 Hour > 1,000 mg/l

Toxicity to Above Ground Organisms

For similar material(s): Material is practically non-toxic to birds on an acute basis (LD50 > 2,000 mg/kg).

Material is practically non-toxic to birds on a dietary basis (LC50 > 5,000 ppm).

Triethylamine

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, Rainbow trout (*Oncorhynchus mykiss*), flow-through test, 96 Hour, 36 mg/l. OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates

LC50, *Ceriodaphnia dubia* (water flea), semi-static test, 48 Hour, 17 mg/l. OECD Test Guideline 202 or Equivalent

Toxicity to bacteria

EC10, *Pseudomonas putida*, Static, 17 Hour, Growth inhibition, 71 mg/l

EC50, *Pseudomonas putida*, Static, 17 Hour, Growth inhibition, 95 mg/l

Chronic toxicity to fish

LOEC, Rainbow trout (*Oncorhynchus mykiss*), semi-static test, 60 d, mortality > 100 mg/l

Chronic toxicity to aquatic invertebrates

NOEC, *Ceriodaphnia dubia* (water flea), semi-static test, 7 d, mortality, 7.1 mg/l

LOEC, *Ceriodaphnia dubia* (water flea), semi-static test, 7 d, mortality, 14 mg/l

Triethanolamine**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).

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

LC50, *Pimephales promelas* (fathead minnow), flow-through test, 96 Hour, 11,800 mg/l. OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates

EC50, *Ceriodaphnia dubia* (water flea), static test, 48 Hour, 609.9 mg/l. OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants

ErC50, *Scenedesmus* sp. (alga), static test, 72 Hour, Growth rate inhibition, 512 mg/l. OECD Test Guideline 201 or Equivalent, Test substance: Neutralised product

Toxicity to bacteria

EC50, activated sludge, 3 Hour > 1,000 mg/l. OECD 209 Test

Chronic toxicity to aquatic invertebrates

NOEC, *Daphnia magna* (Water flea), semi-static test, 21 d, number of offspring, 16 mg/l

LOEC, *Daphnia magna* (Water flea), semi-static test, 21 d, number of offspring, 31 mg/l

Ethanol: ethyl alcohol**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, *Oncorhynchus mykiss* (rainbow trout), flow-through test, 96 Hour, 11,200 - 13,000 mg/l, Method Not Specified.

Acute toxicity to aquatic invertebrates

EC50, *Daphnia magna* (Water flea), 48 Hour, 5,414 mg/l. OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants

EbC50, *Skeletonema costatum*, 5 d, Biomass, 10,943 - 11,619 mg/l. OECD Test Guideline 201 or Equivalent

Balance**Acute toxicity to fish**

No relevant data found.

Persistence and degradability**Triclopyr Triethylamine Salt**

Biodegradability: For similar active ingredient(s). Triclopyr. 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 under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%).

Aminopyralid Triisopropanolamine Salt

Biodegradability: For similar material(s): Aminopyralid. Material is not readily biodegradable according to OECD/EEC guidelines.

Triethylamine

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Material is inherently biodegradable (reaches > 20% biodegradation in OECD test(s) for inherent biodegradability).

10-day Window: Pass

Biodegradation: 96 %

Exposure time: 21 d

Method: OECD Test Guideline 301A or Equivalent

10-day Window: Not applicable

Biodegradation: 25 - 34 %

Exposure time: 28 d

Method: OECD Test Guideline 302C or Equivalent

Theoretical Oxygen Demand: 3.49 mg/mg

Photodegradation: Atmospheric Half-life (indirect photolysis) Sensitizer: OH radicals. 0.116 d *Estimated.*

Triethanolamine

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: 97 %

Exposure time: 28 d

Method: OECD Test Guideline 301A or Equivalent

10-day Window: Not applicable

Biodegradation: 89 %

Exposure time: 14 d

Method: OECD Test Guideline 302B or Equivalent

Theoretical Oxygen Demand: 2.04 mg/mg

Photodegradation: Atmospheric Half-life (indirect photolysis). Sensitizer: OH radicals. 0.097 d *Estimated.*

Ethanol; ethyl alcohol

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

10-day Window: Pass

Biodegradation: > 70 %

Exposure time: 5 d

Method: OECD Test Guideline 301D or Equivalent

Theoretical Oxygen Demand: 2.08 mg/mg

Photodegradation: Atmospheric Half-life (indirect photolysis). Sensitizer: OH radicals. 2.99 d *Estimated*.

Balance

Biodegradability: No relevant data found.

Bioaccumulative potential**Triclopyr Triethylamine Salt**

Bioaccumulation: For similar active ingredient(s). Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Aminopyralid Triisopropanolamine Salt

Bioaccumulation: For similar active ingredient(s). Aminopyralid. Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Triethylamine

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

Partition coefficient: n-octanol/water (log Pow): 1.45 *Measured*

Bioconcentration factor (BCF): < 4.9 *Cyprinus carpio (Carp) 42 d Measured*

Triethanolamine

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

Partition coefficient: n-octanol/water (log Pow): -2.3 at 25 °C *Measured*

Bioconcentration factor (BCF): < 3.9 *Cyprinus carpio (Carp) 42 d Measured*

Ethanol; ethyl alcohol

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

Partition coefficient: n-octanol/water (log Pow): -0.31 *Measured*

Balance

Bioaccumulation: No relevant data found.

Mobility in Soil**Triclopyr Triethylamine Salt**

For similar active ingredient(s). Potential for mobility in soil is very high (Koc between 0 and 50).

Aminopyralid Triisopropanolamine Salt

For similar active ingredient(s). Aminopyralid. Potential for mobility in soil is very high (Koc between 0 and 50).

Triethylamine

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

Partition coefficient (Koc): 11 - 146 *Estimated*.

Triethanolamine

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

Partition coefficient (Koc): 10 *Estimated*.

Ethanol; ethyl alcohol

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

Partition coefficient (Koc): 1.0 *Estimated*.

Balance

No relevant data found.

Results of PBT and vPvB assessment**Triclopyr Triethylamine Salt**

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

Aminopyralid Triisopropanolamine Salt

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

Triethylamine

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

Triethanolamine

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

Ethanol; ethyl alcohol

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

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) 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.

14. TRANSPORT INFORMATION

PUBLIC PASSENGER VEHICLE TRANSPORT: NOT to be transported in a passenger service vehicle. To be transported ONLY in the sealed original container.

Classification for ROAD and Rail transport:

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(TRICLOPYR, AMINOPYRALID)
UN number	UN 3082
Class	9
Packing group	III
Environmental hazards	Triclopyr, Aminopyralid

Classification for SEA transport (IMO-IMDG):

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

15. REGULATORY INFORMATION

HSNO Approval Number: HSR100379

ACVMG Approval Number: P8205

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>

16. OTHER INFORMATION

Revision

Identification Number: 101198346 / A157 / Issue Date: / Version: 16.12.2016 Replaces 17.06.2015
DAS Code: GF-2574

Legend

Absorbed via skin	Absorbed via skin
ACGIH	American Conference of Governmental Industrial Hygienists. Threshold Limit Values (TLV)
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 Indices
STEL	Short-term exposure limit
TWA	8-hour, time-weighted average
WES-STEL	Workplace Exposure Standard - Short-Term Exposure Limit
WES-TWA	Workplace Exposure Standard - Time Weighted average

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