



SAFETY DATA SHEET

Section 1. Identification of the material and the supplier

Product: **Leopard 200 EC Herbicide**
Item Code:
Product Use: Agricultural herbicide for use as described on the product label.
Restriction of Use: Refer to Section 15

New Zealand Supplier: ADAMA New Zealand Ltd
Address: Level 1/93 Bolt Road
Tahunanui, Nelson
Telephone: +64 3 543 8275
Fax Number: +64 3 543 8274

Emergency Telephone: 0800 764 766 (National Poison Centre)

Date of SDS Preparation: 4 October 2018

Section 2. Hazards Identification

This substance is hazardous according to the *Hazardous Substances (Classification) Notice 2017*

EPA Approval No: HSR 101045

Pictograms



Toxic/Irritant



Chronic



Ecotoxic

Signal Word: **DANGER**

HSNO Classification	Hazard Code	Hazard Statement	GHS Category
3.1D	H227	Combustible liquid.	Flam. Liq.4
6.1E (oral)	H303	May be harmful if swallowed.	Acute Tox. 5
6.1E(aspiration hazard)	H304	May be fatal if swallowed and enters airways.	Asp. Tox. 1
6.3B	H316	Causes mild skin irritation.	Skin Irrit. 3
6.4A	H319	Causes eye irritation	Eye Irrit. 2
6.7B	H351	Suspected of causing cancer.	Carc. 2
6.9B	H373	May cause damage to organs through prolonged or repeated exposure.	STOT RE 2
9.1B	H411	Toxic to aquatic life with long lasting effects.	Aquatic Chronic 2
9.3C	H443	Harmful to terrestrial vertebrates	NA

Prevention Code	Prevention Statement
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P102	Keep out of reach of children.
P103	Read label before use.
P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat, sparks, open flames or hot surfaces. No smoking.
P272	Contaminated work clothing should not be allowed out of the workplace.
P273	Avoid release to the environment.
P280	Wear protective clothing. Cotton overalls, over normal clothing, buttoned to the neck and wrist; impervious, elbow-length PVC/Nitrile gloves and goggles or face shield.

Response Code	Response Statement
P101	If medical advice is needed, have product container or label at hand.
P310	Immediately call a POISON CENTER or doctor/physician.
P314	Get medical advice/attention if you feel unwell.
P331	DO NOT induce vomiting.
P362	Take off contaminated clothing and wash before re-use.
P391	Collect spillage.
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P305 + P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332 + P313	If skin irritation occurs: Get medical advice/attention.
P370 + P378	In case of fire: Use carbon dioxide, dry chemical, foam or water fog for extinction.

Storage Code	Storage Statement
P405	Store locked up.
P403 + P235	Store in a well-ventilated place. Keep cool.

Disposal Code	Disposal Statement
P501	Dispose of according to Local Regulations or Authorities

Section 3. Composition / Information on Ingredients

Ingredients	Wt%	CAS NUMBER.
Quizalofop-p-ethyl technical	19.2	100646-51-3
Emulsifiers	10-15	Proprietary
Heavy aromatic, naphthalene hydrocarbon solvent	60-70	64742-94-5
Hydrocarbon solvent	5-10	140-11-4
Other Non-Hazardous Ingredients	Balance	NA

Section 4. First Aid Measures

Routes of Exposure:

If in Eyes	Rinse cautiously with water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice.
If on Skin	Wash with plenty of soap and water. Take off contaminated clothing and wash before re-use. If skin irritation or rash occurs: get medical advice/attention.
If Swallowed	DO NOT induce vomiting. Never give anything to the mouth of an unconscious person. If vomiting occurs, place victim face downwards, with the head turned to the side and lower than the hips to prevent vomit entering the lungs. Immediately call a POISON CENTER or doctor/physician.
If Inhaled	Remove person to fresh air. Remove contaminated clothing and loosen remaining clothing. Allow person to assume most comfortable position and keep warm. Keep at rest until fully recovered. Get medical advice if breathing becomes difficult.

Most important symptoms and effects, both acute and delayed

Symptoms:

Inhaled:	Not applicable.
Ingestion:	May be harmful if swallowed.
Skin:	Causes mild skin irritation.
Eyes:	Causes serious eye irritation.
Chronic:	May be fatal if swallowed and enters airways. Suspected of causing cancer. May cause damage to organs through repeated or prolonged contact.

Section 5. Fire Fighting Measures

Hazard Type	Combustible. There is little risk of an explosion from this product under normal circumstances if it is involved in a fire.
Hazards from combustion products	Violent steam generation or eruption may occur upon application of direct water stream on hot liquids. Vapours from this product are heavier than air and may accumulate in sumps, pits and other low-lying spaces, forming potentially explosive mixtures. They may also flash back considerable distances. Fire decomposition products from this product may be toxic if inhaled. Take appropriate protective measures.
Suitable Extinguishing media	In case of fire, use carbon dioxide, dry chemical, foam, water fog. Contain spillage. Do not allow to enter waterways.
Precautions for firefighters and special protective clothing	If a significant quantity of this product is involved in a fire, call the fire brigade. There is little danger of a violent reaction or explosion if significant quantities of this product are involved in a fire. Recommended personal protective equipment is full fire kit and breathing apparatus.
HAZCHEM CODE	3Z

Section 6. Accidental Release Measures

In the event of a major spill, prevent spillage from entering drains or water courses. Wear full protective clothing including eye/face protection. All skin areas should be covered. Suitable materials for protective clothing include rubber, PVC, Viton. Eye/face protective equipment should comprise as a minimum, protective goggles. If there is a significant chance that vapours or mists are likely to build up in the cleanup area, we recommend that you use a respirator. Usually, no respirator is necessary when using this product.

Stop leak if safe to do so, and contain spill. Absorb onto sand, vermiculite or other suitable absorbent material. If spill is too large or if absorbent material is not available, try to create a dike to stop material spreading or going into drains or waterways. Sweep up and shovel or collect recoverable product into labelled containers for recycling or salvage, and dispose of promptly. Recycle containers wherever possible after careful cleaning. Refer to product label for specific instructions. After spills, wash area preventing runoff from entering drains. If a significant quantity of material enters drains, advise emergency services. Full details regarding disposal of used containers, spillage and unused material may be found on the label. If there is any conflict between this MSDS and the label, instructions on the label prevail. Ensure legality of disposal by consulting regulations prior to disposal. Thoroughly launder protective clothing before storage or re-use. Advise laundry of nature of contamination when sending contaminated clothing to laundry.

Section 7. Handling and Storage

Precautions for Handling:

- Read label before use.
- Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.
- Keep away from heat, sparks, open flames or hot surfaces. No smoking.
- Do not breathe fumes, mist, vapours or spray.
- Wash hands thoroughly after handling.
- Do not eat, drink or smoke when using this product.
- Contaminated work clothing should not be allowed out of the workplace.
- Avoid release to the environment.
- Wear protective clothing.
- Use personal protective equipment as required.

Precautions for Storage:

- Store away from incompatible materials listed in Section 10.
- Keep away from children.
- Store locked up
- Store in a well-ventilated place. Keep cool.
- Some liquid preparations settle or separate on standing and may require stirring before use. Check packaging - there may be further storage instructions on the label.

Section 8 Exposure Controls / Personal Protection

WORKPLACE EXPOSURE STANDARDS (provided for guidance only)

Substance	TWA		STEL	
	ppm	mg/m3	ppm	mg/m3
Liquid Hydrocarbon	-	790	-	-

Workplace Exposure Standard – Time Weighted Average (WES-TWA). The time-weighted average exposure standard designed to protect the worker from the effects of long-term exposure. Workplace Exposure Standard – Short-Term Exposure Limit (WESSTEL). The 15-minute average exposure standard. Applies to any 15- Minute period in the working day and is designed to protect the worker against adverse effects of irritation, chronic or irreversible tissue change, or narcosis that may increase the likelihood of accidents. The WES-STEL is not an alternative to the WES-TWA; both the short-term and time-weighted average exposures apply. Workplace Exposure Standards and Biological Exposure Indices NOV 2017 9TH EDITION.

Engineering Controls

This product should only be used in a well ventilated area. If natural ventilation is inadequate, use of a fan is suggested.

Personal Protection Equipment



Eyes	Protective glasses or goggles should be worn when this product is being used. Failure to protect your eyes may cause them harm. Emergency eye wash facilities are also recommended in an area close to where this product is being used. Eyebaths or eyewash stations and safety deluge showers should be provided near to where this product is being handled commercially.
Hands and Skin	Prevent skin contact by wearing impervious gloves, clothes and, preferably, apron. Make sure that all skin areas are covered. We suggest that protective clothing be made from the following materials: Overalls: Cotton overalls, over normal clothing, buttoned to the neck and wrist. Gloves: PVC, Nitrile or rubber.
Respiratory	Usually, no respirator is necessary when using this product.

Section 9 Physical and Chemical Properties

Appearance	Clear amber coloured liquid
Odour	Characteristic
Odour Threshold	Not applicable
pH	Not applicable
Boiling Point	Expected to be low at 100°C.
Melting Point	Liquid at normal temperatures.
Freezing Point	Liquid at normal temperatures.
Flash Point	Not applicable
Flammability	Not applicable
Upper and Lower Exposure Limits	Not applicable
Vapour Pressure	Not applicable
Vapour Density	Not applicable
Specific Gravity	approx 1.04
Solubilities	Emulsifiable.
Partition Coefficient:	Not applicable

Auto-ignition Temperature	Not applicable
Decomposition Temperature	Not applicable
Kinematic Viscosity	Not applicable
Particle Characteristics	Not applicable

Section 10. Stability and Reactivity

Stability of Substance	This product is stable under normal conditions.
Conditions to Avoid	Protect this product from light. Store in the closed original container in a dry, cool, well-ventilated area out of direct sunlight.
Incompatible Materials	Strong oxidising agents.
Hazardous Decomposition Products	Combustion forms carbon dioxide, and if incomplete, carbon monoxide and possibly smoke. Water is also formed. May form nitrogen and its compounds, and under some circumstances, oxides of nitrogen. Occasionally hydrogen cyanide gas in reducing atmospheres. May form oxides of sulfur (sulfur dioxide is a respiratory hazard) and other sulfur compounds. Most will have a foul odour. May form hydrogen fluoride gas and other compounds of fluorine. Carbon monoxide poisoning produces headache, weakness, nausea, dizziness, confusion, dimness of vision, disturbance of judgment, and unconsciousness followed by coma and death.

Section 11 Toxicological Information

Acute Effects:

Swallowed	May be harmful if swallowed.
Dermal	Not applicable.
Inhalation	Not applicable.
Eye	Causes serious eye damage.
Skin	Causes mild skin irritation.

Chronic Effects:

Carcinogenicity	Suspected of causing cancer.
Reproductive Toxicity	Not applicable.
Germ Cell Mutagenicity	Not applicable.
Aspiration	May be fatal if swallowed and enters airways.
STOT/SE	Not applicable.
STOT/RE	Not applicable.

Toxicity: Acute toxicity: Pure Quizalofop-p-ethyl is harmful by oral exposure. The reported oral LD₅₀ values of the compound are 1210 to 1670 mg/kg in male rats, and 1182 to 1480 mg/kg in female rats. Mice are only slightly less susceptible to the compound. Quizalofop-p-ethyl has reported LD₅₀ values of 1753 to 2350 mg/kg in male mice and 1805 to 2360 mg/kg in female mice. For a formulated product, the reported oral LD₅₀ values are 6600 mg/kg in male rats and 5700 in female rats. Exposure of the skin of rabbits to the compound indicated that the compound is not harmful by this route. The acute percutaneous (absorbed through the skin) LD₅₀ for quizalofop-p-ethyl in mice, rats, and rabbits is greater than 2000 mg/kg. For the formulated product, the reported dermal LD₅₀ in rabbits is greater than 5000 mg/kg. Quizalofop-p-ethyl is slightly to practically nontoxic via inhalation, both in technical form and formulation. Reported 4-hour inhalation LC_{50s} values are 5.8 mg/L for technical quizalofop-p-ethyl and 75 mg/L for formulated product in rats. Quizalofop-p-ethyl is nonirritating to the skin and only slightly irritating to the eyes in rabbits. It is nonsensitizing to the skin of guinea pigs. The formulated product, however, is severely irritating to rabbit eyes.

Chronic toxicity: In a 1-year feeding study on dogs, doses of up to 10 mg/kg/day (the highest dose tested in that study) caused no observed effects. In a 90-day feeding study in rats, doses of 6.4 mg/kg/day and higher produced liver lesions and increased liver weight. In a 2-year study of rats, doses of 5 mg/kg/day produced no observed effects.

Reproductive effects: Data from reproductive studies indicated only decreased body weight gains, and did not report findings of impaired reproductive function in test animals. A 6-month study in dogs found atrophy of the semeniferous tubules at doses of 2.5 mg/kg/day, but was unclear whether this was extensive enough to result in impaired reproductive function. These data are insufficient to draw conclusions regarding the

likely reproductive effects of quizalofop-p-ethyl in animals, but suggest that effects on human reproduction are unlikely under normal circumstances.

Teratogenic effects: In a two-generational study in rats, doses of 2.5 mg/kg/day and higher produced increased liver weights in offspring. No teratogenic effects were observed in another study in rats at doses of up to 300 mg/kg/day (the highest doses tested) over an unspecified period, although maternal decreases in body weight, food consumption, and corpora lutea were observed at doses of 100 mg/kg/day. These data suggest that teratogenic or developmental effects are unlikely in humans.

Mutagenic effects: The results of many assays for mutagenicity and genotoxicity of quizalofop-p-ethyl show no mutagenic or genotoxic activity. Quizalofop-p-ethyl was not found to be mutagenic in the Ames assay, either with or without metabolic activation, nor was mutagenic activity seen in Chinese hamster ovary cell culture tests. Assays for chromosome structural aberrations and alterations in DNA damage repair capacity were also negative.

Carcinogenic effects: In an 18-month carcinogenicity study on mice, increased liver weights, changes in blood chemistry, and some changes in liver tissue structure were detected, but no carcinogenic or tumour-causing activity was reported. This study suggests that this compound is not carcinogenic.

Organ toxicity: Available data show that the target organ in test animals has consistently been the liver in rats and dogs. It is possible that testes may be a target organ in some species; e.g. dogs.

Section 12. Ecotoxicological Information

HSNO Classes: 9.1B = Toxic to aquatic life with long lasting effects.
9.3C = Harmful to terrestrial vertebrates.

Toxic to aquatic organisms, may cause long-term adverse effects to the aquatic environment. This product is biodegradable. It will not accumulate in the soil or water or cause long term problems.

Effects on birds: Quizalofop-p-ethyl is practically nontoxic to birds. The reported 8-day feeding (dietary) LC₅₀ is greater than 5000 ppm in bobwhite quail and mallard ducks. The reported LD₅₀ for quizalofop-p-ethyl is greater than 2000 mg/kg in mallard ducks.

Effects on aquatic organisms: Quizalofop-p-ethyl is highly to very highly toxic to fish. Reported 96-hour LC₅₀ values are 10.7 mg/L in rainbow trout and 0.46 to 2.8 mg/L in bluegill sunfish.

Effects on other organisms: Quizalofop-p-ethyl is practically nontoxic to bees, with a 48-hour contact LD₅₀ of greater than 100 mg/bee.

Environmental Fate:

Breakdown in soil and groundwater: Quizalofop-p-ethyl is moderately persistent in soils, with a reported half-life of 60 days. It may be more rapidly broken down in soil with high microbial activity. It is moderately to strongly sorbed to soils, and studies indicate very low soil mobility. It should not leach significantly into water.

Breakdown in water: No data are currently available.

Breakdown in vegetation: No data are available regarding the breakdown of the compound; however, it is absorbed from the leaf surface and translocated throughout the plant. It accumulates in the active growing regions of stems and roots.

Do not allow to enter waterways.

Section 13. Disposal Considerations

Disposal Method: Wherever possible completely use material by using according to label instructions. Dispose of unwanted product and wastes from spillages as hazardous substances in accordance with local and national regulations using a licensed waste disposal company. Triple rinse containers and add rinsate to spray tank before puncturing and offering for recycling or landfill.



Precautions: Do not allow product to enter waterways.

Disposal methods to avoid: Do not burn product or container.

Section 14**Transport Information**

This product is classified as a Dangerous Good for transport in NZ; NZS 5433:2012

Road and Rail Transport

UN No: 3082
 Class-primary 9
 Packing Group III
 Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID

Air Transport

UN No: 3082
 Class-primary 9
 Packing Group III
 Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID

Marine Transport

UN No: 3082
 Class-primary 9
 Packing Group III
 Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID

Special Provisions:

If the product's individual container is below 5L, it can be transported as a non-DG as long as the product packaging is still labelled as per DG requirements and the driver is given safety information in accordance with Chapter 3.4 of the UNRTDG.

National transport regulations: Do not carry this product on a passenger service vehicle.

Section 15**Regulatory Information**

This substance is hazardous according to the *Hazardous Substances (Classification) Notice 2017*

EPA Approval Code: HSR101045

HSNO Classification: 3.1D, 6.1E (oral), 6.1E (aspiration), 6.3B, 6.4A, 6.7B, 6.9B, 9.1B, 9.3C

HSW (HS) Regulations 2017	Trigger Quantity
Certified Handlers	Not required
Location Certificate	Not required
Signage Trigger Quantities (Schedule 3)	1000L(9.1B)
Fire Extinguishers (Schedule 4)	500L – 2 extinguishers
Emergency Response Plan (Schedule 5)	1000L(9.1B)
Secondary Containment (Schedule 5)	1000L(9.1B)
Tracking (Schedule 26)	Not required
Record Keeping	Records of use must be kept under certain circumstances – see The New Zealand Standards for Management of Agrichemicals (NZS8409) for details.
HSNO Additional Controls (Restrictions of use)	
77A	a). This substance must not be applied onto or into water.
Hazardous Property Controls Notice 2017	
HPC Notice Part 4 Clause 47	Equipment for class 9 substances must be appropriate
HPC Notice Part 4 Clause 48	Records of application of class 9 pesticides and plant growth regulators
HPC Notice Part 3	Hazardous substances in a place other than a workplace.

Product Name: Leopard 200 EC Herbicide
 Date of SDS: 4 October 2018

Issued by: Technical Compliance Consultants (NZ) Ltd
 Tel: 64 9 475 5240 www.techcomp.co.nz

HPC Notice Part 4 Subpart A	Site and storage controls for class 9 substances
HPC Notice Part 4 Subpart C	Qualifications required for application of class 9 pesticides
For all further controls:	Refer to EPA website www.epa.govt.nz for controls document - HSR101045
ACVM Act and Regulations	
ACVM Approval No	P009137
See www.foodsafety.govt.nz for registration conditions.	

Section 16 Other Information

Glossary

EC50	Median effective concentration.
EEL	Environmental Exposure Limit.
EPA	Environmental Protection Authority
HSNO	Hazardous Substances and New Organisms.
LC50	Lethal concentration that will kill 50% of the test organisms inhaling or ingesting it.
LD50	Lethal dose to kill 50% of test animals/organisms.
LEL	Lower explosive level.
OSHA	American Occupational Safety and Health Administration.
TEL	Tolerable Exposure Limit.
TLV	Threshold Limit Value-an exposure limit set by responsible authority.
UEL	Upper Explosive Level
WES	Workplace Exposure Limit

References:

1. EPA Hazardous Substances (Safety Data Sheets) Notice 2017
2. Workplace Exposure Standards and Biological Exposure Indices Nov 2017 edition.
3. Assigning a hazardous substance to a HSNO Approval (Aug 2013).
4. Transport of Dangerous goods on land NZS 5433:2012
5. HSW (Hazardous Substances) Regulations 2017

Disclaimer

This document has been issued by TCC (NZ) Ltd and serves as their Safety Data Sheet ('SDS'). It is based on information concerning the product which has been provided to TCC (NZ) Ltd or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer. While TCC (NZ) have taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, TCC (NZ) Ltd accept no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS

The information herein is given in good faith, but no warranty, express or implied is made.

Please contact the New Zealand distributor, if further information is required.

Issue Date: 4 October 2018 Review Date: 4 October 2023