

Section 1 - Identification of Chemical Product and Company

Farnoz Pty Ltd, Suite 1, Level 4, Building B
207 Pacific Highway St Leonards, NSW 2068
ACN 050 328 973

Telephone (02)9431 7800 (24 hours)
Fax (02)9431 7700

Substance: Active ingredient is a 4-aryloxyphenoxy propionic acid derivative.
Trade Name: Farnoz Leopard Herbicide
Product Use: Agricultural herbicide for use as described on the product label.
Creation Date: January, 2004
Revision Date: January, 2004

Section 2 - Hazards Identification

Statement of Hazardous Nature

This product is classified as: Hazardous according to the criteria of NOHSC Australia.

Dangerous according to the Australian Dangerous Goods (ADG) Code.

Risk Phrases: R65. Harmful: May cause lung damage if swallowed.

Safety Phrases: S46. If swallowed, contact a doctor or Poisons Information Centre immediately and show this container or label.

SUSDP Classification: S6

ADG Classification: Class 9 (ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.)

UN Number: 3082

Emergency Overview

Physical Description & colour: Clear, amber liquid.

Odour: Mild odour.

Major Health Hazards: 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. If aspirated, may cause lung damage.

Potential Health Effects

See section 11 for Chronic exposure studies.

Inhalation

Short term exposure: Available data indicates that this product is not harmful. In addition product is unlikely to cause any discomfort or irritation.

Skin Contact:

Short term exposure: Available data indicates that this product is not harmful. It should present no hazards in normal use. However product is believed to be mildly irritating, but is unlikely to cause anything more than mild transient discomfort.

Eye Contact:

Short term exposure: This product is believed to be mildly irritating, to eyes, but is unlikely to cause anything more than mild transient discomfort.

Ingestion:

Short term exposure: Significant oral exposure is considered to be unlikely. Because of the low viscosity of this product, it may directly enter the lungs if swallowed, or if subsequently vomited. Once in the lungs, it is very difficult to remove and can cause severe injury or death. This product is unlikely to cause any irritation problems in the short or long term.

Carcinogen Status:

NOHSC: No significant ingredient is classified as carcinogenic by NOHSC.

NTP: No significant ingredient is classified as carcinogenic by NTP.

IARC: No significant ingredient is classified as carcinogenic by IARC.

MATERIAL SAFETY DATA SHEET

Section 3 - Composition/Information on Ingredients

Ingredients	CAS No	Conc, %	TWA (mg/m ³)	STEL (mg/m ³)
Quizalofop-p-ethyl	100646-51-3	10	not set	not set
Aromatic hydrocarbons	64742-94-5	81.2	not set	not set
Other non hazardous ingredients	secret	to 100	not set	not set

This is a commercial product whose exact ratio of components may vary slightly. Minor quantities of other non hazardous ingredients are also possible.

The TWA exposure value is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week. The STEL (Short Term Exposure Limit) is an exposure value that should not be exceeded for more than 15 minutes and should not be repeated for more than 4 times per day. There should be at least 60 minutes between successive exposures at the STEL. The term "peak" is used when the TWA limit, because of the rapid action of the substance, should never be exceeded, even briefly.

Section 4 - First Aid Measures

General Information:

You should call The Poisons Information Centre if you feel that you may have been poisoned, burned or irritated by this product. The number is 13 1126 from anywhere in Australia (0800 764 766 in New Zealand) and is available at all times. Have this MSDS with you when you call.

Inhalation: First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

Skin Contact: Blot or brush away excess chemical. Wash gently and thoroughly with water (use non-abrasive soap if necessary) for 10 minutes or until chemical is removed. Under running water, remove contaminated clothing, shoes and leather goods (e.g. watchbands and belts). If irritation persists, repeat flushing and obtain medical advice.

Eye Contact: Quickly and gently blot or brush product away. Flush the contaminated eye(s) with lukewarm, gently flowing water until the product is removed or until irritation has ceased, while holding the eyelid(s) open. Obtain medical advice if irritation becomes painful or lasts more than a few minutes.

Ingestion: If swallowed, do NOT induce vomiting. Wash mouth with water and contact a Poisons Information Centre, or call a doctor.

Section 5 - Fire Fighting Measures

Fire and Explosion Hazards: This product is classified as a C1 combustible product. There is a slight risk of an explosion from this product if commercial quantities are involved in a fire. 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.

Extinguishing Media: Preferred extinguishing media are carbon dioxide, dry chemical, foam, water fog. Water fog or fine spray is the preferred medium for large fires.

Fire Fighting: When fighting fires involving significant quantities of this product, wear a splash suit complete with self contained breathing apparatus.

Flash point: Not flammable.

Upper Flammability Limit: No data.

Lower Flammability Limit: No data.

Autoignition temperature: No data.

Flammability Class: C1 (calculated)

Section 6 - Accidental Release Measures

Accidental release: In the event of a major spill, prevent spillage from entering drains or water courses.

Immediately call the Fire Brigade. Wear full protective clothing including eye/face protection. All skin areas should be covered. See above under Personal Protection regarding Australian Standards relating to personal protective equipment. No special recommendations for clothing materials. 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. However, if you have any doubts consult the Australian Standard mentioned above.

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. Because of the environmentally hazardous nature of this product, special care should be taken to restrict release to waterways or drains. Sweep up and shovel or collect recoverable product into labelled containers for recycling or salvage, and dispose of promptly. After spills, wash area preventing runoff from entering drains. If a

MATERIAL SAFETY DATA SHEET

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

Handling: Keep exposure to this product to a minimum, and minimise the quantities kept in work areas. Check Section 8 of this MSDS for details of personal protective measures, and make sure that those measures are followed. The measures detailed below under "Storage" should be followed during handling in order to minimise risks to persons using the product in the workplace. Also, avoid contact or contamination of product with incompatible materials listed in Section 10.

Storage: This product is a Scheduled Poison. Observe all relevant regulations regarding sale, transport and storage of this class of poison. Check packaging - there may be further storage instructions on the label.

Section 8 - Exposure Controls and Personal Protection

The following Australian Standards will provide general advice regarding safety clothing and equipment:

Respiratory equipment: **AS/NZS 1715**, Protective Gloves: **AS 2161**, Industrial Clothing: **AS2919**, Industrial Eye Protection: **AS1336** and **AS/NZS 1337**, Occupational Protective Footwear: **AS/NZS2210**.

Exposure Limits	TWA (mg/m ³)	STEL (mg/m ³)
-----------------	--------------------------	---------------------------

Exposure limits have not been established by NOHSC for any of the significant ingredients in this product.

Ventilation: No special ventilation requirements are normally necessary for this product. However make sure that the work environment remains clean and that vapours and mists are minimised.

Eye Protection: Eye protection such as protective glasses or goggles is recommended when this product is being used.

Skin Protection: You should avoid contact even with mild skin irritants. Therefore you should wear suitable impervious elbow-length gloves and facial protection when handling this product. See below for suitable material types.

Protective Material Types: We suggest that protective clothing be made from the following materials: PVC.

Respirator: Usually, no respirator is necessary when using this product. However, if you have any doubts consult the Australian Standard mentioned above.

Section 9 - Physical and Chemical Properties:

Physical Description & colour:	Clear, amber liquid.
Odour:	Mild odour.
Boiling Point:	Not available.
Freezing/Melting Point:	No specific data. Liquid at normal temperatures.
Volatiles:	No specific data. Expected to be low at 100°C.
Vapour Pressure:	No data.
Vapour Density:	No data.
Specific Gravity:	1.02 approx
Water Solubility:	Emulsifiable.
pH:	No data.
Volatility:	No data.
Odour Threshold:	No data.
Evaporation Rate:	No data.
Coeff Oil/water distribution:	No data
Autoignition temp:	No data.

Section 10 - Stability and Reactivity

Reactivity: This product is unlikely to react or decompose under normal storage conditions. However, if you have any doubts, contact the supplier for advice on shelf life properties.

Conditions to Avoid: Store in the closed original container in a dry, cool, well-ventilated area out of direct sunlight.

Incompatibilities: strong acids, strong bases, strong oxidising agents.

Fire Decomposition: Carbon dioxide, and if combustion is incomplete, carbon monoxide and smoke. Nitrogen and its compounds, and under some circumstances, oxides of nitrogen. Occasionally hydrogen cyanide gas. Hydrogen chloride gas, other compounds of chlorine. Water. Carbon monoxide poisoning produces headache, weakness,

nausea, dizziness, confusion, dimness of vision, disturbance of judgment, and unconsciousness followed by coma and death.

Polymerisation: This product is unlikely to undergo polymerisation processes.

Section 11 - Toxicological Information

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 only 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 LC₅₀s 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 tumor-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.

Fate in humans and animals: Quizalofop-p appears to be rapidly broken down in mammals. More than

Section 12 - Ecological Information

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.

Section 13 - Disposal Considerations

Disposal: Instructions concerning the disposal of this product and its containers are given on the product label. These should be carefully followed.

Section 14 - Transport Information

ADG Code: 3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

Hazchem Code: 2X

Special Provisions: SP179, SP274

Dangerous Goods Class: Class 9, Miscellaneous Dangerous Goods.

Packaging Group: III

Packaging Method: 3.8.9

Class 9 Miscellaneous Dangerous Goods shall not be loaded in the same vehicle or packed in the same freight container with Classes 1 (Explosives), 5.1 (Oxidising Agents where the Miscellaneous Dangerous Goods are Fire Risk Substances), 5.2 (Organic Peroxides where the Miscellaneous Dangerous Goods are Fire Risk Substances). They may however be loaded in the same vehicle or packed in the same freight container with Classes 2.1 (Flammable Gases), 2.2 (Non-Flammable, Non-Toxic Gases), 2.3 (Toxic Gases), 3 (Flammable liquids), 4.1 (Flammable Solids), 4.2 (Spontaneously Combustible Substances), 4.3 (Dangerous When Wet Substances), 5.1 (Oxidising Agents except where the Miscellaneous Dangerous Goods are Fire Risk Substances), 5.2 (Organic Peroxides except where the Miscellaneous Dangerous Goods are Fire Risk Substances), 6 (Toxic Substances), 7 (Radioactive Substances), 8 (Corrosive Substances), Foodstuffs and foodstuff empties.

Section 15 - Regulatory Information

AICS: All of the significant ingredients in this formulation are to be found in the public AICS Database.

The following ingredients: Quizalofop-p-ethyl, liquid hydrocarbons are mentioned in the SUSDP.

Section 16 - Other Information

This MSDS contains only safety-related information. For other data see product literature.

Acronyms:

ADG Code	Australian Code for the Transport of Dangerous Goods by Road and Rail
AICS	Australian Inventory of Chemical Substances
CAS number	Chemical Abstracts Service Registry Number
Hazchem Number	Emergency action code of numbers and letters that provide information to emergency services especially firefighters
IARC	International Agency for Research on Cancer
NOHSC	National Occupational Health and Safety Commission
NOS	Not otherwise specified
NTP	National Toxicology Program (USA)
R-Phrase	Risk Phrase
SUSDP	Standard for the Uniform Scheduling of Drugs & Poisons
UN Number	United Nations Number

Contact Points:

Call Farnoz on (02)9431 7800

Fax: (02)9431 7700 and ask for the technical manager.

Police and Fire Brigade:

Dial 000

Emergency contact:

1800 024 973 (24 hours)

If ineffective:

**Dial Poisons Information Centre
(13 1126 from anywhere in Australia)**

The information contained in this Material Safety Data Sheet is provided in good faith and is believed to be correct at the date hereof. However, it is expected that individuals receiving the information will exercise their independent judgement in determining its appropriateness for a particular purpose. Farnoz Pty Ltd makes no representation as to the accuracy or comprehensiveness of the information and to the full extent allowed by law excludes all liability whatsoever, whether with respect to negligence or otherwise, for any loss or damage arising from or connection with the supply or use of the information in this Material Safety Data Sheet.

Please read all labels carefully before using product.

This MSDS is prepared in accord with the NOHSC document "National Code of Practice for the Preparation of Material Safety Data Sheets" 2nd Edition [NOHSC:2011(2003)]

Copyright © Kilford & Kilford Pty Ltd, January, 2004.

<http://www.kilford.com.au/> Phone (02)9251 4532

MATERIAL SAFETY DATA SHEET