

MATERIAL SAFETY DATA SHEET

Product Name: Genfarm Fluazifop Post-Emergence Selective Herbicide

This revision issued: November, 2005

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Section 1 - Identification Of Chemical Product And Company

Genfarm Crop Protection Pty Ltd
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Substance: Active ingredient is a 2-(4-aryloxyphenoxy)propionic acid derivative.
Trade Name: Genfarm Fluazifop Post-Emergence Selective Herbicide
Product Use: Agricultural herbicide for use as described on the product label.
Creation Date: February, 2005
Revision Date: November, 2005

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, R66. Harmful: May cause lung damage if swallowed. Repeated exposure may cause skin dryness or cracking.

Safety Phrases: S46, S24/25, S36/37. If swallowed, contact a doctor or Poisons Information Centre immediately and show this container or label. Avoid contact with skin and eyes. Wear suitable protective clothing and gloves.

SUSDP Classification: S6

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

UN Number: 3082

Emergency Overview

Physical Description & colour: Clear, dark amber coloured liquid.

Odour: Characteristic liquid hydrocarbon odour.

Major Health Hazards: if aspirated, may cause lung damage. Fluazifop-p-butyl is not harmful orally or dermally. It is reported to cause only slight skin and mild eye irritation in rabbits, and no skin sensitization in guinea pigs.

Potential Health Effects

See section 11 for long term Health effects

Inhalation

Short term exposure: Significant inhalation exposure is considered to be unlikely. Available data indicates that this product is not harmful. However product may be mildly irritating, although unlikely to cause anything more than mild transient discomfort.

Skin Contact:

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

Eye Contact:

Short term exposure: Exposure via eyes is considered to be unlikely. This product may be 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.

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

Section 3 - Composition/Information on Ingredients

Ingredients	CAS No	Conc,%	TWA (mg/m ³)	STEL (mg/m ³)
Fluazifop-p (present as butyl ester)	79241-46-6	212g/L	not set	not set
Solvent naphtha (petroleum), light arom.	64742-95-6	685g/L	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: No first aid measures normally required. However, if inhalation has occurred, and irritation has developed, remove to fresh air and observe until recovered. If irritation becomes painful or persists more than about 30 minutes, seek medical advice.

Skin Contact: Irritation is unlikely. However, if irritation does occur, flush with lukewarm, gently flowing water for 5 minutes or until chemical is removed. If in doubt obtain medical advice.

Eye Contact: No effects expected. If irritation does occur, flush contaminated eye(s) with lukewarm, gently flowing water for 5 minutes or until the product is removed. 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 are likely to be toxic and corrosive 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. Ensure that no spillage enters drains or water courses.

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

Flash point:	70°C
Upper Flammability Limit:	7%
Lower Flammability Limit:	0.6%
Autoignition temperature:	260°C
Flammability Class:	C1

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. As a minimum, wear overalls, goggles and gloves. Suitable materials for protective clothing include rubber, PVC. 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. It should be fitted with a type G cartridge, suitable for agricultural chemicals. Otherwise, not normally necessary.

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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. 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

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/m³)

STEL (mg/m³)

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

The ADI for Fluazifop-p butyl ester is set at 0.003mg/kg/day. The corresponding NOEL is set at 0.3mg/kg/day. ADI means Acceptable Daily Intake and NOEL means No-observable-effect-level. Values taken from Australian ADI List, Dec 2004.

No special equipment is usually needed when occasionally handling small quantities. The following instructions are for bulk handling or where regular exposure in an occupational setting occurs without proper containment systems.

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: rubber, PVC.

Respirator: Usually, no respirator is necessary when using this product. However, if you have any doubts consult the Australian Standard mentioned above. Otherwise, not normally necessary.

Safety deluge showers should, if practical, be provided near to where this product is being used.

Section 9 - Physical and Chemical Properties:

Physical Description & colour:

Clear, dark amber coloured liquid.

Odour:

Characteristic liquid hydrocarbon odour.

Boiling Point:

Solvent boils about 230-280°C at 100kPa

Freezing/Melting Point:

No specific data. Liquid at normal temperatures.

Volatiles:

No specific data. Expected to be low at 100°C but up to 80% at higher temperatures.

Vapour Pressure:

Negligible at normal ambient temperatures.

Vapour Density:

No data.

Specific Gravity:

1.04 at 20°C

Water Solubility:

Emulsifiable.

pH:

No data.

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Volatility: No data.
Odour Threshold: No data.
Evaporation Rate: No data.
Coeff Oil/water distribution: 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: Protect this product from light. Store in the closed original container in a dry, cool, well-ventilated area out of direct sunlight.

Incompatibilities: 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 fluoride gas and other compounds of fluorine. 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 will not undergo polymerisation reactions.

Section 11 - Toxicological Information

The reported acute oral LD₅₀ values for technical fluazifop-p-butyl are 3680 to 4096 mg/kg in male rats, and 2451 to 2721 mg/kg in female rats. The reported acute oral LD₅₀ values for one formulated product (Fusilade DX) are higher, indicating practically no toxicity orally. A single large oral dose of a formulated compound (Fusilade 2000) can cause severe stomach and intestine disturbance. Ingestion of large quantities may also cause problems in the central nervous system such as drowsiness, dizziness, loss of coordination, and fatigue. Fluazifop-p-butyl is not harmful via the dermal route as well. The reported dermal LD₅₀ for the compound is greater than 2400 mg/kg in rabbits. The formulation Fusilade DX is reported to have similar acute toxicity via the dermal route, and does not cause skin sensitization in guinea pigs, but may cause moderate skin and mild eye irritation in rabbits. The formulation Fusilade DX is reported to have a 4-hour inhalation LC₅₀ of greater than 0.54 mg/L in male rats and 0.77 mg/L in female rats, indicating moderate toxicity via the inhalation route. Breathing small amounts of the product Fusilade 2000 may cause vomiting and severe lung congestion; larger amounts may ultimately lead to laboured breathing, coma, and death.

Chronic toxicity: Rats fed small amounts of fluazifop-p-butyl for 90 days developed no compound-induced effects at doses at or below 10 mg/kg/day.

Reproductive effects: No data are currently available.

Teratogenic effects: No data are currently available.

Mutagenic effects: Numerous tests have shown the compound to be nonmutagenic.

Carcinogenic effects: No data are currently available.

Organ toxicity: Organ toxicity has not been seen in experimental animals.

Fate in humans and animals: No data are currently available.

Section 12 - Ecological Information

Effects on birds: Fluazifop-p-butyl is practically nontoxic to bird species; the reported acute oral LD₅₀ for the technical product in mallards is greater than 3528 mg/kg. The reported 5-day dietary LC₅₀ in mallard duck is greater than 4321 ppm, and in bobwhite quail is greater than 4659 ppm.

Effects on aquatic organisms: Fluazifop-p-butyl may be highly to moderately toxic to fish, but only slightly toxic to other aquatic species, such as invertebrates. The reported 96-hour LC₅₀ values for the technical product in fish species are 0.53 mg/L in bluegill sunfish and 1.37 mg/L in rainbow trout, indicating very high to high toxicity. The 48-hour LC₅₀ in *Daphnia magna* (an aquatic invertebrate) is reported as greater than 10 mg/L, indicating only slight toxicity.

Effects on other organisms: The compound is of low toxicity to bees. Oral and contact LD₅₀ values for bees are greater than 0.20 mg/bee.

Environmental Fate:

Breakdown in soil and groundwater: Fluazifop-p-butyl is of low persistence in moist soil environments, with a reported half-life in these conditions of less than 1 week. Fluazifop-p-butyl breaks down rapidly in moist soils to the fluazifop acid, which is also of low persistence. Fluazifop-p-butyl and fluazifop-p are both reported to be of low mobility in soils and not to present appreciable risks for groundwater contamination. The reported soil adsorption coefficient for fluazifop-p indicates a moderate to low affinity for soil.

Breakdown in water: Fluazifop-p-butyl is rapidly hydrolysed (cleaved apart by water) under most conditions to the fluazifop acid. It is relatively stable to breakdown by UV or sunlight, and nonvolatile.

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Breakdown in vegetation: After uptake by the leaves of plants, Fluazifop-p-butyl is rapidly broken down in the presence of water to fluazifop-p, which is translocated throughout the plant. The compound accumulates in the actively growing regions of the plant (meristems of roots and shoots, root rhizomes and stolons of grass), where it interferes with energy (ATP) production and cell metabolism in susceptible species.

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.

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
IARC	International Agency for Research on Cancer
NOHSC	National Occupational Health and Safety Commission
NTP	National Toxicology Program (USA)
R-Phrase	Risk Phrase
SUSDP	Standard for the Uniform Scheduling of Drugs & Poisons
UN Number	United Nations Number

THIS MSDS SUMMARISES OUR BEST KNOWLEDGE OF THE HEALTH AND SAFETY HAZARD INFORMATION OF THE PRODUCT AND HOW TO SAFELY HANDLE AND USE THE PRODUCT IN THE WORKPLACE. EACH USER MUST REVIEW THIS MSDS IN THE CONTEXT OF HOW THE PRODUCT WILL BE HANDLED AND USED IN THE WORKPLACE.

IF CLARIFICATION OR FURTHER INFORMATION IS NEEDED TO ENSURE THAT AN APPROPRIATE RISK ASSESSMENT CAN BE MADE, THE USER SHOULD CONTACT THIS COMPANY SO WE CAN ATTEMPT TO OBTAIN ADDITIONAL INFORMATION FROM OUR SUPPLIERS. OUR RESPONSIBILITY FOR PRODUCTS SOLD IS SUBJECT TO OUR STANDARD TERMS AND CONDITIONS, A COPY OF WHICH IS SENT TO OUR CUSTOMERS AND IS ALSO AVAILABLE ON REQUEST.

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)]

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