

MATERIAL SAFETY DATA SHEET



Date of Issue: May 17, 2006

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product name Tigrex[®] Selective Herbicide

Other names None

Product codes and pack sizes 4208187 (5 L), 4208152 (20 L), 6418449 (110 L)

Chemical group Phenoxy + nicotinilide

Recommended use Agricultural herbicide

Formulation Emulsifiable concentrate

Supplier Bayer CropScience Pty Ltd ABN 87 000 226 022

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2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

HAZARDOUS SUBSTANCE (see Risk phrases below) – **NON DANGEROUS GOOD** (road/rail)
Combustible liquid. Dangerous to the aquatic environment.

Hazard classification Hazardous (National Occupational Health and Safety Commission - NOHSC)

Risk phrases R20/21/22 - Harmful by inhalation, in contact with skin and if swallowed.
R38 - Irritating to skin.
R41 – Risk of serious damage to eyes.

Safety phrases See Sections 4, 5, 6, 7, 8, 10, 12, 13

ADG classification Not a "Dangerous good" for transport by road or rail according to the Australian Code for the Transport of Dangerous Goods by Road and Rail. Class 9 Dangerous Good, Marine Pollutant if shipped by sea. See Section 14.

SUSDP classification (Poison Schedule) Schedule 5 (Standard for the Uniform Scheduling of Drugs and Poisons)

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients	CAS Number	Concentration (g/L)
MCPA ethyl hexyl ester	[29450-45-1]	390 (≡ 250 g/L MCPA)
Diflufenican	[83164-33-4]	25
Hydrocarbon solvent	[90438-79-2]	325
N-methyl-2-pyrrolidone	[872-50-4]	150
Non-ionic emulsifiers	(proprietary blend)	105

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4. FIRST AID MEASURES

If poisoning occurs, immediately contact a doctor or Poisons Information Centre (telephone 13 11 26), and follow the advice given. Show this Material Safety Data Sheet to the doctor.

Inhalation	If inhaled, remove to fresh air and keep at rest. Obtain medical advice if at all worried. If breathing stops or shows signs of failing, start artificial respiration. Call for prompt medical attention.
Skin contact	Carefully remove contaminated clothing. Wash affected areas with soap and water. Seek medical aid if symptoms persist.
Eye contact	Rinse eyes immediately with plenty of clean water and obtain urgent medical aid.
Ingestion	Wash out mouth with water. Do NOT induce vomiting. Give water to drink. Keep patient at rest and seek medical advice. DO NOT attempt to give anything by mouth to a semi-conscious or unconscious person.
First Aid facilities	Provide eyewash and safety shower facilities in the workplace.
Medical attention	Tigrex will damage eyes and may irritate the skin. For local contamination, treatment should be symptomatic after decontamination. See First Aid. Symptoms of MCPA poisoning include headache, vomiting, lethargy, muscular twitching, liver and kidney function disturbance, hypotension/hypertension. Ingestion of large amounts may cause central nervous system depression, stupor, coma and respiratory failure. As this product contains a hydrocarbon solvent small amounts of liquid aspirated into the respiratory system during ingestion or from vomiting may cause bronchopneumonia or pulmonary oedema. For MCPA poisoning, the following measures are recommended: Monitor respiratory, cardiac, kidney, liver and CNS functions. Observe blood pressure, MCPA plasma level, urinary MCPA level and pH. Gastric lavage and charcoal administration Endotracheal intubation and artificial respiration, as necessary Elimination by dialysis – forced alkaline diuresis Anticonvulsant therapy as necessary. If required, give diazepam 5-10 mg i.v. for adults (<i>pro rata</i> for children) as necessary until fully sedated. There is no specific antidote and no contraindications. Recovery is expected to be spontaneous.

5. FIRE FIGHTING MEASURES

Extinguishing media	Water spray, alcohol-resistant foam, carbon dioxide, dry agent
Hazards from combustion products	Compounds of chlorine, hydrogen fluoride and oxides of carbon and nitrogen may be generated in a fire.

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5. FIRE FIGHTING MEASURES – continued

Precautions for fire fighters Combustible liquid. N-methyl-2-pyrrolidone vapours are heavier than air. Fire fighters should wear full protective gear, including self-contained breathing apparatus (AS/NZS 1715/1716). Toxic decomposition products may be produced in a fire. If possible and without risk, remove intact containers from exposure to fire. Otherwise, spray unopened containers with water to keep cool. Keep unnecessary people away. Bund area to prevent contamination of water sources. Dispose of fire control water and spillage safely later.

Hazchem code Not applicable

6. ACCIDENTAL RELEASE MEASURES

Avoid contact with spilled material or contaminated surfaces. Extinguish or remove possible sources of ignition. When dealing with spills do not eat, drink or smoke and wear protective clothing and equipment as described in Section 8 – PERSONAL PROTECTION. Keep people and animals away and upwind. Prevent spilled material from entering drains or watercourses. Contain spill and absorb with earth, sand, clay, or other absorbent material. Collect and store in properly labelled, sealed drums for safe disposal. Deal with all spillages immediately. If contamination of drains, streams, watercourses, etc. is unavoidable, warn the local water authority.

7. HANDLING AND STORAGE

Handling Keep out of reach of children. Will damage eyes. May irritate the skin. Avoid contact with eyes and skin, and do not inhale vapour. If product in eyes, wash it out immediately with water. After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, face shield or goggles, and contaminated clothing. Keep away from all ignition sources.

Storage Store in the closed, original container in a cool, well-ventilated area. Do not store for prolonged periods in direct sunlight.

Flammability Combustible liquid, Class C1 – flashpoint between 61° C and 150° C.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure standards The NOHSC exposure standard for N-methyl-2-pyrrolidone is:
TWA 25 ppm (103 mg/m³); STEL 75 ppm (309 mg/m³). Skin notation.
The manufacturer of the hydrocarbon solvent recommends the following occupational exposure limit:
TWA: 50 ppm (323 mg/m³), as vapour.

Definitions:

Exposure standard – Time Weighted Average (TWA) means the average airborne concentration of a particular substance when calculated over a normal eight-hour working day, for a five-day working week.

Exposure standard – Short term exposure limit (STEL) means a 15 minute TWA exposure which should not be exceeded at any time during the working day.

Skin notation – Absorption through the skin may be a significant source of exposure.

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8. EXPOSURE CONTROLS / PERSONAL PROTECTION - continued

Biological limit values	None allocated
Engineering controls	Control process conditions to avoid contact. Use local exhaust ventilation during manufacturing operations. Use in a well-ventilated area only.
Personal Protective Equipment	<ul style="list-style-type: none">▪ Face-shield or goggles.▪ Cotton overalls buttoned to the neck and wrist and a washable hat.▪ Elbow-length PVC gloves▪ If inhalation exposure is likely to exceed the exposure levels above, an AS/NZS 1715/1716 approved respirator suitable for organic vapours should be worn.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Dark brown liquid
Odour:	Strong ester odour
pH:	Not available
Vapour pressure:	0.34 kPa (hydrocarbon solvent)
Vapour density:	Not available
Boiling point:	176 - 200° C (hydrocarbon solvent)
Freezing/melting point:	Not available
Solubility:	Emulsifies in water
Specific Gravity:	0.995 at 20° C
Flash Point:	> 66° C – closed cup, which is the flash point of the hydrocarbon solvent
Flammability (explosive) limits:	LEL: 0.8; UEL: 6.7 Vol. % in air (hydrocarbon solvent)
Auto-ignition temperature:	321° C (hydrocarbon solvent)
Partition coefficient (octanol/water):	Diflufenican: Log P _{ow} = 4.2

10. STABILITY AND REACTIVITY

Chemical stability	Stable under normal conditions of use.
Conditions to avoid	Avoid sources of ignition and extreme heat.
Incompatible materials	Incompatible with acids, bases, oxidising and reducing agents. The rubber components present in some spraying units may be affected by exposure to the solvents in Tigrex.
Hazardous decomposition products	Compounds of chlorine, hydrogen fluoride and oxides of carbon and nitrogen may be generated under extreme heat conditions or in a fire.
Hazardous reactions	May produce an exothermic reaction with strong acids or alkalis.

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11. TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

Note: The ester form of MCPA is generally less toxic and irritating to mammals than MCPA (acid form).

Inhalation	Harmful if inhaled. May irritate mucous membranes of nose and mouth. Vapours of the solvent in this product may cause drowsiness and dizziness.
Skin contact	Will irritate the skin. Harmful in contact with skin, as this product can be absorbed through the skin. Repeated exposure to the solvent in this product may cause skin dryness or cracking.
Eye contact	Will damage eyes.
Ingestion	Harmful if swallowed. Symptoms of poisoning include headache, vomiting, diarrhoea, lethargy, muscular twitching, liver and kidney function disturbance, hypotension/hypertension. Ingestion of large amounts may cause central nervous system depression, stupor, coma and respiratory failure. As this product contains a hydrocarbon solvent small amounts of liquid aspirated into the respiratory system during ingestion or from vomiting may cause bronchopneumonia or pulmonary oedema.

ANIMAL TOXICITY DATA

Acute:

Oral toxicity	LD ₅₀ rat: 1580 mg/kg (<i>similar product</i>)
Dermal toxicity	LD ₅₀ rat: > 2040 mg/kg (<i>similar product</i>)
Inhalation toxicity	Inhalation LC ₅₀ rat: > 5.11 mg/L (4 h) (<i>MCPA-2-ethyl hexyl ester</i>) Inhalation LC ₅₀ rat: > 5.12 mg/L (4 h) (<i>diflufenican</i>)
Skin irritation	Slightly to moderately irritating (rabbit) (<i>similar product</i>)
Eye irritation	Slightly irritating (rabbit) (<i>similar product</i>)
Sensitisation	* Sensitising (guinea pig) (<i>similar product</i>) * Although the similar product produced a sensitising reaction in this test, the individual components of Tigrex were not sensitisers in a similar test.

Chronic:

In long term toxicity studies with MCPA (acid) at high doses, the target organs were the liver, kidneys and skin. Diflufenican is not mutagenic, teratogenic or oncogenic. In animal studies, N-methyl-2-pyrrolidone showed a developmental toxic effect in high doses which were maternally toxic.

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12. ECOLOGICAL INFORMATION

Dangerous to fish. Low hazard to bees and earthworms. Sprayed weeds may become more palatable to stock and a higher intake of some weeds may result in stock poisoning and death from causes such as nitrate poisoning. DO NOT contaminate streams, rivers or waterways with the chemical or used containers.

Ecotoxicity

MCPA: *Note:* The ester form of MCPA is generally less toxic to birds and mammals than the MCPA (acid form), but the ester form is more toxic to fish.

Fish toxicity: LC₅₀ (96 h) (technical MCPA 2-ethyl hexyl ester) rainbow trout 3.2 mg/L

Bird toxicity: LC₅₀ (96 h) (technical MCPA) bobwhite quail 377 mg/kg

Other:

LC₅₀ (technical MCPA) Daphnia > 100 mg/L

EC₅₀ (technical MCPA) Algae (*Selenastrum capricornutum*) > 392 mg/L

Diflufenican:

Fish toxicity: LC₅₀ (96 h) rainbow trout > 0.109 mg/L

Bird toxicity: Acute oral LD₅₀ mallard duck > 4000 mg/kg

Acute oral LD₅₀ quail > 2150 mg/kg

Other:

EC₅₀ (48 h) water flea (*Daphnia magna*) > 0.24 mg/L

EC₅₀ (72 h) algae (*Senedesmus subspicatus*) 0.25 µg/L

Environmental fate, persistence and degradability, mobility

DT₅₀ in soil < 7 days after initial lag phase (MCPA).

DT₅₀ for diflufenican varies from 15 to 30 days depending on soil type.

The solvents in Tigrex are readily biodegradable.

13. DISPOSAL CONSIDERATIONS

When returnable container is empty or contents no longer required return it to the point of purchase. For non-returnable containers, triple or (preferably) pressure rinse them before disposal. Add rinsings to spray tank. Do not dispose of undiluted chemicals on-site. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush or puncture and bury empty containers in a local authority landfill. If no landfill is available, bury the containers below 500 mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots. Empty containers and product should not be burnt. Dispose of waste material via a reputable waste disposal contractor.

14. TRANSPORT INFORMATION

UN number	Not applicable (road/rail)
Proper shipping name	Not applicable (road/rail)
Class and Subsidiary Risk	Not applicable (road/rail)
Packing Group	Not applicable (road/rail)
EPG	Not applicable (road/rail)
Hazchem code	Not applicable (road/rail)
Marine Pollutant	Yes. If Tigrex is shipped by sea, it is classified as a Class 9, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains diflufenican, MCPA-2-ethylhexyl ester), Packing Group III, UN 3082, Marine Pollutant.

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15. REGULATORY INFORMATION

Registered according to the Agricultural and Veterinary Chemicals Act 1988.
Australian Pesticides and Veterinary Medicines Authority approval number: 31525
See also Section 2.

16. OTHER INFORMATION

Trademark information Tigrex® is a Registered Trademark of Bayer.

Preparation information Replaces March 16, 2005 MSDS.
Reasons for revision: Section 3 - formulation change – re-introduction of hydrocarbon liquid with decrease in N-methyl-2-pyrrolidone content, Medical attention, Exposure standards, PPE – gloves, Physical and chemical properties, Potential health effects, Class 9 Marine Pollutant if shipped by sea.

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 should read this MSDS and consider the information in the context of how the product will be handled and used in the workplace including in conjunction with other products.

If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact this company.

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.

END OF MSDS