

MATERIAL SAFETY DATA SHEET



Date of Issue: April 1, 2004

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product name Decision™ Selective Herbicide

Other names None

Product codes 4911546 (20 L)

Chemical group Aryloxyphenoxypropionate + cyclohexanedione oxime + pyrazoline dicarboxylate safener

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
Combustible liquid. Dangerous to the aquatic environment.

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

Risk phrases R65 - Harmful: May cause lung damage if swallowed.

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. For transport by sea this product is a SEVERE MARINE POLLUTANT.

SUSDP classification Schedule 6 (Standard for the Uniform Scheduling of Drugs and Poisons)

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients	CAS Number	Concentration (g/L)
Diclofop-methyl	[51338-27-3]	200
Sethoxydim	[74051-80-2]	20
Mefenpyr-diethyl (crop safener)	[135590-91-9]	20
Hydrocarbon solvent	[64742-94-5]	595
Naphthalene (in hydrocarbon solvent)	[91-20-3]	(< 59)
Other ingredients including emulsifiers	(non hazardous)	162

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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 at all worried.
Eye contact	Rinse eyes immediately with clean water for at least 15 minutes and obtain medical aid.
Ingestion	Wash out mouth with water. Do NOT induce vomiting. Give a glass of water. Keep patient at rest and seek medical advice as above. 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	<u>Symptoms</u> <i>Local:</i> Irritation of eyes and respiratory tract. Skin dryness or cracking from repeated exposure. <i>Systemic:</i> Headache, dizziness, drowsiness, nausea, confusion, anaesthesia and other central nervous system effects, lung damage if swallowed. <u>Treatment</u> For <i>local contamination</i> treatment should be symptomatic after decontamination. In case of skin or eye contamination, treat as above under First Aid Measures. <i>If a large amount has been ingested, the following measures should be considered:</i> Monitor kidney and liver function and red blood cell count. Observe blood lipids and cholesterol for hyperlipidemia and lowered cholesterol. Gastric lavage followed by charcoal administration Elimination by dialysis - forced alkaline diuresis Anticonvulsant therapy is not appropriate. There is no specific antidote, and no contraindications. As this product contains a hydrocarbon liquid, care should be taken to prevent pulmonary aspiration. Small amounts of liquid aspirated into the respiratory system during ingestion or from vomiting may cause bronchopneumonia or pulmonary oedema.

5. FIRE FIGHTING MEASURES

Extinguishing media	Water fog, fine water spray, foam, carbon dioxide or dry agent.
Hazards from combustion products	In a fire, irritant and toxic fumes containing compounds of chlorine and oxides of carbon, nitrogen and sulphur may be generated.
Precautions for fire fighters	The product is a Class C1 Combustible liquid. Firefighters should wear full protective gear, including self-contained breathing apparatus (AS/NZS 1715/1716). Keep unnecessary people away. If it can be done safely, remove intact containers from the fire. Otherwise, use water spray to cool them. Bund area with sand or earth to prevent contamination of drains or waterways. Dispose of fire control water or other extinguishing agent and spillage safely later.
Hazchem code	Not applicable

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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. 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 irritate the eyes and skin. Avoid contact with eyes and skin. Do not inhale vapour. If product in eyes, wash it out immediately with water. If product on skin, immediately wash area with soap and 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.
Storage	Store in the closed, original container in a cool, well-ventilated area. Do not store for prolonged periods in direct sunlight. Keep away from ignition sources.
Flammability	Combustible liquid, Class C1 - flashpoint between 61° C and 150° C.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure standards	<p>Bayer CropScience recommends an exposure limit of 0.1 mg/m³ for diclofop-methyl. The manufacturer of the solvent recommends an Occupational Exposure Limit for solvent naphtha (petroleum), heavy aromatic: TWA: 100 mg/m³ (17 ppm). For the small amount of naphthalene present in the solvent the NOHSC Occupational Exposure Limits are: TWA: 10 ppm (52 mg/m³, STEL: 15 ppm (79 mg/m³). Skin notation.</p> <p><u>Definitions</u> <i>Exposure standard – Time Weighted Average (TWA)</i> means the average airborne concentration of a particular substance when calculated over a normal eight-hour working day, for a five-day working week. <i>Exposure standard – Short term exposure limit (STEL)</i> means a 15 minute TWA exposure which should not be exceeded at any time during the working day. <i>Skin notation</i> – Absorption through the skin may be a significant source of exposure.</p>
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">Wear face shield or goggles to protect eyes.Wear cotton overalls buttoned to the neck and wrist and a washable hat.Wear elbow-length nitrile 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.

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9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear amber liquid
Odour:	Aromatic hydrocarbon
pH:	5.0 to 6.0 (1% aqueous emulsion)
Vapour pressure:	0.3 kPa (at 38° C) – solvent
Vapour density:	> 1.00 – solvent
Boiling point:	179 - 213° C (boiling point range of solvent)
Freezing/melting point:	Not available
Solubility:	Emulsifies in water
Specific Gravity:	0.997 at 20° C
Flash Point:	> 63° C (Closed Cup)
Flammability (explosive) limits:	LEL: 0.6; UEL: 7.0 Vol. % in air (hydrocarbon solvent)
Auto-ignition temperature:	> 400° C (hydrocarbon solvent)
Partition coefficient (octanol/water):	<i>Diclofop-methyl</i> : $K_{ow} \log P = 4.5$ <i>Sethoxydim</i> : $K_{ow} \log P = 4.51$ (pH 5), 1.65 (pH 7) <i>Mefenpyr-diethyl</i> : $K_{ow} \log P = 3.83$ (pH 6.3, 21° C)

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 strong oxidising agents, acids and bases, organic and inorganic copper compounds.
Hazardous decomposition products	Hydrogen chloride, nitrogen oxides, sulphur dioxide and carbon monoxide may be released in a fire.
Hazardous reactions	None

11. TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

Inhalation	Product is expected to have low toxicity by the inhalation route. High vapour concentrations may be irritating to the respiratory tract, may cause headaches, drowsiness and dizziness, could be anaesthetic and may have other central nervous system effects.
Skin contact	Will irritate the skin. The product is expected to have low acute dermal toxicity. Repeated exposure may cause skin dryness or cracking.
Eye contact	Will irritate the eyes.

11. TOXICOLOGICAL INFORMATION - continued

Ingestion Harmful if swallowed. 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 LD₅₀ rat: 512 mg/kg (*diclofop-methyl*)
 LD₅₀ rat (M): 3200 mg/kg (*sethoxydim*)
 LD₅₀ rat (F): 2676 mg/kg (*sethoxydim*)
 LD₅₀ rat: > 5000 mg/kg (*mefenpyr-diethyl*)

Dermal toxicity LD₅₀ rat: > 2000 mg/kg (*diclofop-methyl*)
 LD₅₀ rat: > 5000 mg/kg (*sethoxydim*)
 LD₅₀ rat: > 4000 mg/kg (*mefenpyr-diethyl*)

Inhalation toxicity LC₅₀ rat (4 h): > 1.36 mg/L (*diclofop-methyl*)
 LC₅₀ rat (4 h): > 6.28 mg/L (*sethoxydim*)
 LC₅₀ rat (4h): > 1.32 mg/L (*mefenpyr-diethyl*)

Skin irritation Non irritating (rabbit) (*diclofop-methyl*)
 Non irritating (rabbit) (*sethoxydim*)
 Non irritating (rabbit) (*mefenpyr-diethyl*)

Eye irritation Non irritating (rabbit) (*diclofop-methyl*)
 Non irritating (rabbit) (*sethoxydim*)
 Non irritating (rabbit) (*mefenpyr-diethyl*)

Sensitisation Sensitising in one test; not in another (guinea pig) (*diclofop-methyl*)
 Non-sensitising (guinea pig) (*sethoxydim*)
 Non-sensitising (guinea pig) (*mefenpyr-diethyl*)

Chronic:

Diclofop-methyl was not mutagenic or teratogenic. An increased incidence of liver tumours was noted in long-term studies with diclofop-methyl in rodents. As the mechanism involved is not relevant to humans, and the dose levels were very high, the potential oncogenic risk to humans is considered negligible.

Sethoxydim is not mutagenic or carcinogenic, did not cause reproductive toxicity and was not teratogenic in animal studies.

Mefenpyr-diethyl showed no mutagenicity, reproductive toxicity, teratogenicity or carcinogenicity in animal studies. This product contains naphthalene. The International Agency for Research on Cancer evaluated naphthalene and concluded that there was sufficient evidence for carcinogenicity in experimental animals, but inadequate evidence for cancer in exposed humans. Accordingly, IARC classified naphthalene as a possible human carcinogen (Group 2B). Frequent or prolonged contact with the hydrocarbon solvent in this product may defat and dry the skin, leading to discomfort and dermatitis.

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12. ECOLOGICAL INFORMATION

Dangerous to fish and other aquatic organisms. Low toxicity to birds, bees and earthworms. DO NOT contaminate streams, rivers or waterways with Decision or the used containers.

Ecotoxicity

Diclofop-methyl:

Fish toxicity: LC₅₀ (96 h) for *Lepomis macrochirus* 0.24 mg/L

Daphnia toxicity: EC₅₀ (48 h) for *Daphnia magna* 0.23 mg/L

Bird toxicity: Acute oral LD₅₀ for Japanese quail > 10000 mg/kg

Algae toxicity: EC₅₀ (72 h) for *Scenedesmus subspicatus* 1.5 mg/L

Sethoxydim:

Sethoxydim poses no significant hazard to bees.

Fish toxicity: LC₅₀ (48 h) for carp 153 mg/L, for trout 38 mg/L

Daphnia toxicity: LC₅₀ (3 h) for *Daphnia magna* 1.5 mg/L

Bird toxicity: Acute oral LD₅₀ for Japanese quail > 5000 mg/kg

Mefenpyr-diethyl:

Fish toxicity: LC₅₀ (96 h) for carp 2.4 mg/L, for rainbow trout 4.2 mg/L

Daphnia toxicity: EC₅₀ (48 h) for *Daphnia magna* 53 mg/L

Bird toxicity: Acute oral LD₅₀ for Japanese quail > 2000 mg/kg

Algae toxicity: EC₅₀ (72 h) for *Navicula pelliculosa* 1.65 mg/L

E_bC₅₀ (72 h) for *Scenedesmus subspicatus* 5.8 mg/L

Environmental fate, persistence and degradability, mobility

Diclofop-methyl degrades in soil due to microbial activity, moisture, sunlight and air. In various soils in field trials: DT₅₀ 1 – 57 days, DT₉₀ 30 to 281 days. Irrigation studies indicate low levels of leaching. From model calculations, a hazard to groundwater or to drinking water supplies can be excluded, even in sandy soil. Soil adsorption K_{oc} 14000 to 24400 mg/kg.

Sethoxydim - ready/inherent biodegradability (28 d) < 70%

Mefenpyr-diethyl – abiotic hydrolysis DT₅₀ > 365 d (pH 5), 40.9 d (pH 7), 0.35 d (pH 9) at 25° C. Photodegradation DT₅₀ 2.9 d. Completely mineralised in soil by hydrolysis, microbial and photolytic degradation processes; DT₅₀ < 10 d. Not leached.

The solvent is expected to degrade at a moderate rate and be “inherently” biodegradable.

13. DISPOSAL CONSIDERATIONS

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 product via a reputable disposal contractor to an approved landfill.

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14. TRANSPORT INFORMATION

UN number	Not applicable
Proper shipping name	Not applicable
Class and Subsidiary Risk	Not applicable
Packing Group	Not applicable
EPG	Not applicable
Hazchem code	Not applicable
Marine Pollutant	Yes. Diclofop-methyl is classified as a severe marine pollutant Class "PP".

15. REGULATORY INFORMATION

Registered according to the Agricultural and Veterinary Chemicals Act 1988.
Australian Pesticides and Veterinary Medicines Authority approval number: 56166
See also Section 2.

16. OTHER INFORMATION

Trademark information	Decision™ - trademark applied for (Bayer)
Preparation information	Reasons for change: Product code, typographical error in TOXICOLOGY section, NRA to APVMA in Section 15, added "severe" to marine pollutant in Sections 2 and 14.

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