

MATERIAL SAFETY DATA SHEET



Date of Issue: November 26th, 2009

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
Address 391 - 393 Tooronga Road, East Hawthorn
Victoria 3123, Australia
Telephone (03) 9248 6888
Facsimile (03) 9248 6800
Website www.bayercropscience.com.au
Contact Development Manager (03) 9248 6888
Emergency
Telephone Number 1800 033 111 – Orica SH&E Shared Services

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
R36/38 – Irritating to eyes and skin
R43 – May cause sensitisation by skin contact
Safety phrases See Sections 4, 5, 6, 7, 8, 10, 12, 13
ADG classification See Section 14.
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)
Tetrapropylene benzenesulfonate	[11117-11-6]	25 – 45
Fatty alcohol polyglycol ether	-	4 – 13
Other ingredients	(non hazardous)	105 – 135

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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.
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	<p><u>Symptoms of poisoning</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. May cause lung damage if swallowed, with symptoms including cough, tachypnoea (rapid breathing), breathlessness, cyanosis (blueness of the skin) and fever.</p> <p><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.</p> <p><u>Note for physicians</u> 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.</p> <p>Due to the low oral toxicity, and the risk of aspiration into the lung, gastric lavage is not recommended. In case of ingestion of large amounts, it may be considered after adequate airway protection (intubation with block), as the risk of spontaneous vomiting with aspiration might be higher. Activated charcoal and cathartics (magnesium or sodium) should be given. Treatment should be supportive and symptomatic. In case of acute respiratory distress syndrome, the use of PEEP-ventilation has been suggested. Monitor kidney, liver and pancreas function.</p> <p>Contraindications: Catecholamines should be avoided due to an increased risk of ventricular fibrillation.</p>

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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 hydrogen 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

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. Harmful if swallowed. 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	Bayer CropScience recommends an exposure limit of 0.1 mg/m ³ for diclofop-methyl. The manufacturer of the solvent recommends an Occupational Exposure Limit for solvent naphtha (petroleum), heavy aromatic: TWA: 100 mg/m ³ (17 ppm). For the small amount of naphthalene present in the solvent the NOHSC Occupational Exposure Limits are: TWA: 10 ppm (52 mg/m ³), STEL: 15 ppm (79 mg/m ³). <u>Definitions</u> <i>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>Short term exposure limit (STEL)</i> means a 15 minute TWA exposure which should not be exceeded at any time during the working day.
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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">Wear face shield or goggles to protect eyes.Wear cotton overalls buttoned to the neck and wrist and a washable hat.Wear elbow-length PVC or 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.

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> : $K_{ow} \log P = 4.58$ <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.
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	LD ₅₀ rat: 481 – 693 mg/kg (<i>diclofop-methyl</i>) LD ₅₀ rat (m): 3200 mg/kg (<i>sethoxydim</i>) LD ₅₀ rat (f): 2676 mg/kg (<i>sethoxydim</i>) LD ₅₀ rat: > 5000 mg/kg (<i>mefenpyr-diethyl</i>)
Dermal toxicity	LD ₅₀ rat: > 5000 mg/kg (<i>diclofop-methyl</i>) LD ₅₀ rat: > 5000 mg/kg (<i>sethoxydim</i>) LD ₅₀ rat: > 4000 mg/kg (<i>mefenpyr-diethyl</i>)
Inhalation toxicity	LC ₅₀ rat (4 h): > 1.36 mg/L (<i>diclofop-methyl</i>) LC ₅₀ rat (4 h): > 6.28 mg/L (<i>sethoxydim</i>) LC ₅₀ rat (4h): > 1.32 mg/L (<i>mefenpyr-diethyl</i>)
Skin irritation	Non irritating (rabbit) (<i>diclofop-methyl</i>) Non irritating (rabbit) (<i>sethoxydim</i>) Non irritating (rabbit) (<i>mefenpyr-diethyl</i>)
Eye irritation	Non irritating (rabbit) (<i>diclofop-methyl</i>) Non irritating (rabbit) (<i>sethoxydim</i>) Non irritating (rabbit) (<i>mefenpyr-diethyl</i>)
Sensitisation	Sensitising in one test; not in another (guinea pig) (<i>diclofop-methyl</i>) Non-sensitising (guinea pig) (<i>sethoxydim</i>) Non-sensitising (guinea pig) (<i>mefenpyr-diethyl</i>)

11. TOXICOLOGICAL INFORMATION - continued

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.

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) rainbow trout 0.23 mg/L
Daphnia toxicity: LC₅₀ (48 h) for *Daphnia magna* 0.23 mg/L
Bird toxicity: LD₅₀ Japanese quail > 10000 mg/kg
Algae toxicity: EC₅₀ (72 h) *Scenedesmus subspicatus* 1.5 mg/L

Sethoxydim:

Fish toxicity: LC₅₀ (48 h) carp 153 mg/L; trout 38 mg/L
Daphnia toxicity: LC₅₀ (3 h) *Daphnia magna* 1.5 mg/L
Bird toxicity: LD₅₀ Japanese quail > 5000 mg/kg
Bees: No significant hazard

Mefenpyr-diethyl:

Fish toxicity: LC₅₀ (96 h) carp 2.4 mg/L; rainbow trout 4.2 mg/L
Daphnia toxicity: EC₅₀ (48 h) *Daphnia magna* 53 mg/L
Bird toxicity: LD₅₀ Japanese quail > 2000 mg/kg
Algae toxicity: EC₅₀ (72 h) *Navicula pelliculosa* 1.65 mg/L
 E_bC₅₀ (72 h) *Scenedesmus subspicatus* 5.8 mg/L
Bees: LD₅₀ (oral, 48 h) > 900 µg/bee; (contact) > 700 µg/bee
Worms: LC₅₀ (14 d) *Eisenia foetida* > 1000 mg/kg soil

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 – 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 mL/g.

Sethoxydim – DT₅₀ in soil < 1 d at 15 °C. Metabolism involves molecular rearrangement, oxidation and conjugation processes.

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.

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13. DISPOSAL CONSIDERATIONS

Triple or (preferably) pressure rinse containers 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.

14. TRANSPORT INFORMATION

UN number	UN 3082
Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S (contains diclofop-methyl)
Class and Subsidiary Risk	Class 9
Packing Group	Packing Group III
Hazchem code	•3Z
Marine Pollutant	Yes
Note for Road and Rail Transport	According to AU01, Environmentally Hazardous Substances in packagings, IBCs or any other receptacle not exceeding 500 kg or 500 L are not subject to the ADG Code

15. REGULATORY INFORMATION

Registered according to the Agricultural and Veterinary Chemicals Code Act 1994.
Australian Pesticides and Veterinary Medicines Authority approval number: 56166
See also Section 2.

16. OTHER INFORMATION

Trademark information	Decision [®] is a Registered Trademark of Bayer
Preparation information	Replaces July 4 th , 2008 edition. Reasons for change: Transport information.

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