

MATERIAL SAFETY DATA SHEET



Date of Issue: April 4, 2007

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product name Cheetah[®] Gold Selective Herbicide

Other names None

Product codes and pack sizes 6171117 (20 L)

Chemical group Aryloxyphenoxypropionates + 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** (road/rail)
Combustible liquid. Dangerous to the aquatic environment.

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

Risk phrases R21 – Harmful in contact with skin.
R36/38 – Irritating to eyes and skin.
R43- May cause sensitisation by skin contact.
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. See Section 14.

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

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3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients	CAS Number	Concentration (g/L)
Diclofop-methyl	[51338-27-3]	200
Sethoxydim	[74051-80-2]	20
Fenoxaprop-p-ethyl	[71283-80-2]	13.6
Mefenpyr-diethyl (crop safener)	[135590-91-9]	25
Hydrocarbon solvent	[64742-94-5]	577
Naphthalene (in hydrocarbon solvent)	[91-20-3]	(< 57)
Other ingredients including emulsifiers	(non hazardous)	168

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 symptoms persist. 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 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**
Symptoms
Local: Irritation of eyes and respiratory tract. Skin dryness or cracking from repeated exposure.
Systemic: Headache, dizziness, drowsiness, nausea, confusion, anaesthesia and other central nervous system effects, lung damage if swallowed.
Treatment
For *local contamination* treatment should be symptomatic after decontamination.
If a large amount has been ingested, the following measures should be considered:
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.

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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 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. Fire fighters 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	3Z

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 absorbed by skin contact, inhaled or swallowed. Will irritate the eyes and skin. Repeated exposure may cause allergic disorders. Avoid contact with eyes and skin. Do not inhale vapour or spray mist. If clothing becomes contaminated with product or wet with spray, remove clothing immediately. If product or spray on skin, immediately wash area with soap and water. If product or spray in eyes, wash it out immediately with water. Wash hands after use. After each day's use, wash gloves, 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	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). Skin notation. <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.
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8. EXPOSURE CONTROLS / PERSONAL PROTECTION

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 goggles to protect eyes.Wear cotton overalls buttoned to the neck and wrist and a washable hat.Wear elbow-length PVC or nitrile gloves.Wear a disposable mist face mask covering mouth and nose.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear brown liquid
Odour:	Aromatic hydrocarbon
pH:	Not applicable
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:	1.004 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>Fenoxaprop-p-ethyl</i> : $K_{ow} \log P = 4.58$ <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, oxides of nitrogen, sulphur and carbon and other toxic substances 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. However, 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. A similar product was not sensitising in the test with guinea pigs. Two of the active ingredients in this product, diclofop-methyl and fenoxaprop-p-ethyl, were sensitising to the skin in one test, but not in another. 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: 512 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: 3150 - 4000 mg/kg (<i>fenoxaprop-p-ethyl</i>) LD ₅₀ rat: > 5000 mg/kg (<i>mefenpyr-diethyl</i>)
Dermal toxicity	LD ₅₀ rat: > 2000 mg/kg (<i>diclofop-methyl</i>) LD ₅₀ rat: > 5000 mg/kg (<i>sethoxydim</i>) LD ₅₀ rat: > 2000 mg/kg (<i>fenoxaprop-p-ethyl</i>) LD ₅₀ rat: > 5000 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): > 0.6 mg/L (<i>fenoxaprop-p-ethyl</i>) – highest attainable concentration 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>fenoxaprop-p-ethyl</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>fenoxaprop-p-ethyl</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>) Sensitising in one test; not in another (guinea pig) (<i>fenoxaprop-p-ethyl</i>) Non-sensitising (guinea pig) (<i>mefenpyr-diethyl</i>)

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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.

Fenoxaprop-p-ethyl showed no mutagenicity in *in vitro* and *in vivo* tests. There was no indication of developmental, reproductive or carcinogenic effects 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 Cheetah Gold 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

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

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

Sethoxydim:

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

Sethoxydim poses no significant hazard to bees.

Fenoxaprop-p-ethyl:

Fish toxicity: LC₅₀ (96 h) for rainbow trout 0.39 mg/L

Daphnia toxicity: EC₅₀ (48 h) for *Daphnia magna* > 1.058 mg/L

Algae toxicity: EC₅₀ (72 h) for *Selenastrum capricornutum* 0.54 mg/L

Bird toxicity: Acute oral LD₅₀ for bobwhite quail > 2000 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

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

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

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

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12. ECOLOGICAL INFORMATION - continued

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%

Fenoxaprop-p-ethyl is moderately / partially biodegradable.

No leaching potential for fenoxaprop-p-ethyl or its metabolites.

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 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. Do not re-use empty container for any other purpose. Dispose of waste product via a reputable disposal contractor to an approved landfill.

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 3Z

Marine Pollutant Yes.

Diclofop-methyl and fenoxaprop-p-ethyl are classified as a severe marine pollutants Class “PP”.

If transported by sea, the product must be shipped as a Class 9, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains diclofop-methyl, fenoxaprop-p-ethyl), Packing Group III, UN 3082. SEVERE MARINE POLLUTANT.

15. REGULATORY INFORMATION

Registered according to the Agricultural and Veterinary Chemicals Act 1988.

Australian Pesticides and Veterinary Medicines Authority approval number: 60928

See also Section 2.

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16. OTHER INFORMATION

Trademark information Cheetah® – registered trademark of Bayer

Preparation information New MSDS

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