

MATERIAL SAFETY DATA SHEET



Date of Issue: September 24, 2002

1. IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND SUPPLIER

Product name Tristar® Advance Selective Herbicide
Other names None
Product code AE F023408 34 EC25 A1
Chemical group Aryloxyphenoxypropionate + 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 designation Hazardous (National Occupational Health and Safety Commission - NOHSC)

Risk phrases R22 - Harmful if swallowed.
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 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]	250
Fenoxaprop-p-ethyl	[71283-80-2]	13
Mefenpyr-diethyl (crop safener)	[135590-91-9]	7.4
Hydrocarbon solvent	[64742-94-5]	392
Naphthalene (in hydrocarbon solvent)	[91-20-3]	(11 – 24)
Other ingredients (emulsifiers, etc.)	(non hazardous)	377

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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	<p><u>Symptoms</u> <i>Local:</i> Irritation of skin, eyes and respiratory tract. Potential for skin sensitisation - no cases reported. Repeated exposure may cause skin dryness or cracking. <i>Systemic:</i> Headache, dizziness, anaesthesia or other CNS effects.</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. <i>If a large amount (more than one mouthful) 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 hypolipidaemia 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. There have been no documented cases of poisoning with the active ingredients or crop safener in this product.</p>

5. FIRE FIGHTING MEASURES

Extinguishing media	Water fog, fine water spray, foam or dry agent.
Hazards from combustion products	In a fire, irritant and toxic fumes containing oxides of carbon and nitrogen, hydrogen chloride and other toxic substances may be generated.

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5. FIRE FIGHTING MEASURES - continued

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. Avoid spraying directly into containers due to danger of boilover. 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.

6. ACCIDENTAL RELEASE MEASURES

Avoid contact with the spilled material or contaminated surfaces. Extinguish or remove all 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. 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, 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 all ignition sources.

Flammability Combustible liquid, Class C1 - flashpoint between 61° C and 150° C. The fire point of 126° C is less than the boiling point of 178° C.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure standards Bayer recommends exposure limits of 0.1 mg/m³ for diclofop-methyl and 1.4 mg/m³ for fenoxaprop-p-ethyl. The manufacturer of the solvent recommends an Occupational Exposure Limit for solvent naphtha (petroleum), heavy aromatic: TWA: 100 mg/m³ (17 ppm). For the 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.

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

- Engineering controls** Control process conditions to avoid contact. Use in a well-ventilated area only.
- Personal Protective Equipment**
- Wear face shield or goggles
 - Wear cotton overalls buttoned to the neck and wrist and a washable hat.
 - Wear elbow-length PVC gloves.
 - If working in a poorly ventilated area or if occupational exposure levels are likely to be exceeded, wear a respirator suitable for organic vapours - AS/NZS 1715/1716 approved.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Dark brown liquid
Odour:	Aromatic hydrocarbon
pH:	4.5 to 6.5 (5% aqueous emulsion)
Vapour pressure:	0.3 kPa (at 38° C) (hydrocarbon solvent)
Vapour density:	> 1.00 (hydrocarbon solvent)
Boiling point:	179 - 213° C (hydrocarbon solvent)
Freezing/melting point:	Not available
Solubility:	Emulsifies in water
Specific Gravity:	1.04 at 20° C
Flash Point:	> 65° C (Pensky Martens Closed Cup)
Flammability (explosive) limits:	LEL: 0.6; UEL: 7.0 Vol. % in air (hydrocarbon solvent)
Fire Point:	126° C
Auto-ignition temperature:	> 400° C (hydrocarbon solvent)
Partition coefficient (octanol/water):	<i>Diclofop-methyl</i> : $K_{ow} \log P = 4.58$ <i>Fenoxaprop-p-ethyl</i> : $K_{ow} \log P = 4.58$ <i>Mefenpyr-diethyl</i> : $\log P_{ow} = 3.83$

10. STABILITY AND REACTIVITY

Chemical stability	Stable under normal conditions of use.
Hazardous polymerisation	Will not polymerise.
Conditions to avoid	Avoid sources of ignition and extreme heat.
Incompatible materials	Incompatible with strong oxidising agents.
Hazardous decomposition products	Hydrogen chloride, nitrogen oxides and other toxic compounds may be released in a fire.

11. TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

Inhalation	The product is expected to be of low inhalation toxicity. However, avoid inhaling vapour. High vapour concentrations may be irritating to the respiratory tract and may cause headaches, dizziness, drowsiness, anaesthesia, and other central nervous system effects.
Skin contact	Will irritate the skin. The product had low acute dermal toxicity in the rat, and was not sensitising in the test with guinea pigs. The active ingredients diclofop-methyl and fenoxaprop-p-ethyl were sensitising to the skin in one test, but not in another. Dermal sensitising studies (guinea pig) with a 5% emulsion of the product in saline showed it to be non-sensitising. Repeated exposure may cause skin dryness or cracking.
Eye contact	Will irritate the eyes.
Ingestion	Harmful if swallowed. May cause lung damage if swallowed.

ANIMAL TOXICITY DATA – PRODUCT

Acute:

Oral toxicity	LD ₅₀ rat: > 4107 mg/kg (<i>similar product</i>)
Dermal toxicity	LD ₅₀ rat: > 2000 mg/kg (<i>similar product</i>)
Inhalation toxicity	No data
Skin irritation	Non-irritating (rabbit) (<i>similar product</i>)
Eye irritation	Irritating (rabbit) (<i>similar product</i>)
Sensitisation	Non-sensitising (guinea pig) (<i>similar product</i>)

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. Fenoxaprop-p-ethyl and mefenpyr-diethyl showed no mutagenicity, reproductive toxicity or carcinogenicity in animal studies. This product contains naphthalene. A National Toxicology Program (NTP) report states that lifetime inhalation exposure to naphthalene resulted in increases in tumours of the nose in rats. In a previous NTP study, lifetime inhalation exposure to naphthalene increased lung tumours in female mice. The relevance of the rodent findings to humans is questionable.

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12. ECOLOGICAL INFORMATION

Dangerous to the aquatic environment. Low toxicity to birds, bees and earthworms.
DO NOT contaminate streams, rivers or waterways with Tristar Advance 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

Fenoxaprop-p-ethyl:

Fish toxicity: LC₅₀ (96 h) for rainbow trout 0.57 mg/L

Daphnia toxicity: EC₅₀ (48 h) for *Daphnia magna* 0.56 mg/L

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

Algae toxicity: LC₅₀ (72 h) for *Scenedesmus subspicatus* 0.51 mg/L

Mefenpyr-diethyl:

Fish toxicity: LC₅₀ (96 h) for carp 2.4 mg/L

Daphnia toxicity: EC₅₀ (48 h) for *Daphnia magna* 52 mg/L

Algae toxicity: EC₅₀ (72 h) for *Scenedesmus subspicatus* 5.8 mg/L

Environmental fate, persistence and degradability

Diclofop-methyl degrades in soil due to microbial activity, moisture, sunlight and air.

Fenoxaprop-p-ethyl is moderately / partially biodegradable.

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

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. Dispose of waste product through a reputable waste contractor.

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

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15. REGULATORY INFORMATION

Registered according to the Agricultural and Veterinary Chemicals Act 1988

National Registration Authority approval number: 51485

See also Section 2.

16. OTHER INFORMATION

Trademark information Tristar® is a Registered Trademark of Bayer.

Preparation information Replaces August 1, 2002 MSDS.
Reasons for revision: Updated MSDS for solvent, 16 heading format

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