

MATERIAL SAFETY DATA SHEET



Date of Issue: May 30, 2007

1. IDENTIFICATION OF MATERIAL AND SUPPLIER

Product name **Bayfidan[®] 250 EC Fungicide**

Other names None

Product codes and pack sizes 4952501 (1 L), 4952528 (5 L)

Chemical group Triazole

Recommended use Agricultural fungicide

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.

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

Risk phrases R36/38 – Irritating to eyes and skin.

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

ADG classification Not classified as a "Dangerous good" for transport by road or rail according to the Australian Code for the Transport of Dangerous Goods by Road and Rail.

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

3. COMPOSITION / INFORMATION ON INGREDIENTS

| Ingredients | CAS Number | Concentration (g/L) |
|--|---------------|---------------------|
| Triadimenol | [55219-65-3] | 250 |
| N-methyl-2-pyrrolidone | [872-50-4] | 602 |
| Other ingredients, including emulsifiers | Non-hazardous | 238 |

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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 warm and at rest. Seek medical advice as above immediately. |
| Skin contact | Carefully remove contaminated clothing. Wash affected areas with soap and water. Seek medical advice if symptoms persist. |
| Eye contact | Rinse eyes immediately with clean lukewarm water for at least 15 minutes, holding eyes open. Consult an eye specialist. |
| Ingestion | Obtain immediate medical advice as above. If swallowed, do NOT induce vomiting. Rinse mouth and give a glass of water. Never give anything by mouth to a person who is unconscious or semi-conscious. |
| First aid facilities | Provide eye wash and safety shower in the workplace. |
| Medical attention | The product is an irritant. Triadimenol is a triazole compound. There are no cases of human poisonings published. Symptoms of exposure to N-methyl-2-pyrrolidone include headache, eye redness and pain, blurred vision. Ingestion causes gastric disturbances such as nausea and vomiting. Therapeutic measures: Basic aid, decontamination, symptomatic treatment. There is no antidote. Care should be taken to prevent pulmonary aspiration, as 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 spray, foam, carbon dioxide, sand, dry extinguishing powder. |
| Hazards from combustion products | Can react with oxidising materials. In a fire, formation of hydrogen chloride, hydrogen cyanide, carbon monoxide and nitrogen oxides can be expected. |
| Precautions for fire fighters | The product is a combustible liquid. Vapours of N-methyl-2-pyrrolidone are heavier than air and can travel to an ignition source and flash back. 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. Do not release contaminated water into the environment. |
| Hazchem code | Not applicable |

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6. ACCIDENTAL RELEASE MEASURES

Avoid contact with the spilled material or contaminated surfaces. Extinguish or remove any ignition sources. When dealing with spills do not eat, drink or smoke and wear protective clothing and equipment as described in Section 8 - PERSONAL PROTECTION. 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. Clean floor and all contaminated objects with damp cloth. Place used cleaning materials into the drum for 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 spray mist. 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. Keep away from ignition sources. |
| Storage | Store in the closed, original container in a dry, cool, well-ventilated area. Do not store for prolonged periods in direct sunlight. |
| Flammability | Combustible liquid Class C1 – flash point between 61 and 150° C |

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure standards The NOHSC exposure standards for N-methyl-2-pyrrolidone are:
TWA: 25 ppm (103 mg/m³); STEL: 75 ppm (309 mg/m³). Skin.

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.

Biological limit values None allocated.

Engineering controls Control process conditions to avoid contact. Use in a well-ventilated area only.

Personal protective equipment

- Wear safety goggles.
- Wear cotton overalls buttoned to the neck and wrist and a washable hat.
- Wear elbow-length butyl rubber or neoprene gloves.
- Wear an AS/NZS 1715/1716 approved respirator suitable for organic vapour/mist if exposure to vapours or mists is likely or ventilation is inadequate.

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9. PHYSICAL AND CHEMICAL PROPERTIES

| | |
|--|--|
| Appearance: | Clear amber liquid |
| Odour: | Aromatic |
| pH: | 6.0 to 8.0 (1% in water) |
| Vapour pressure: | 0.32 mbar at 20 °C (air =1) (N-methyl-2-pyrrolidone) |
| Vapour density: | 3.4 (N-methyl-2-pyrrolidone) |
| Boiling point: | Not available |
| Freezing/melting point: | Not available |
| Solubility: | Emulsifies in water |
| Density: | 1.09 g/mL at 20° C |
| Flash point: | 93° C |
| Flammability (explosive) limits: | Lower: 1.3 vol. %; upper 9.5 vol. % (N-methyl-2-pyrrolidone) |
| Auto-ignition temperature: | 245° C (N-methyl-2-pyrrolidone) |
| Partition coefficient (octanol/water): | <i>Triadimenol</i> : Log P _{ow} = 3.08 – 3.28 (25° C) <i>N-methyl-2-pyrrolidone</i> : Log P _{ow} = - 0.46 |

10. STABILITY AND REACTIVITY

| | |
|----------------------------------|--|
| Chemical stability | Stable under normal conditions of use. |
| Conditions to avoid | Extreme heat. |
| Incompatible materials | Acids, bases, oxidising and reducing agents. |
| Hazardous decomposition products | Hydrogen chloride, hydrogen cyanide, carbon monoxide and oxides of nitrogen may be evolved upon heating. |
| Hazardous reactions | Exothermic reaction with strong acids or strong alkalis. |

11. TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

| | |
|--------------|--|
| Inhalation | May be harmful if inhaled. May produce respiratory irritation. |
| Skin contact | Will irritate skin. Redness and dermatitis from prolonged contact. Can be absorbed through the skin. |
| Eye contact | Will irritate eyes. May cause temporary corneal clouding. |
| Ingestion | Harmful if swallowed. |

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11. TOXICOLOGICAL INFORMATION - continued

ANIMAL TOXICITY DATA – SIMILAR PRODUCT

Acute:

| | |
|---------------------|--|
| Oral toxicity | LD ₅₀ rat: > 2000 mg/kg |
| Dermal toxicity | LD ₅₀ rat: > 5000 mg/kg |
| Inhalation toxicity | > 0.412 mg/L, aerosol (4 h) (highest attainable concentration) |
| Skin irritation | Not irritating (rabbit) |
| Eye irritation | Slightly irritating (rabbit) |
| Sensitisation | Triadimenol and N-methyl-2-pyrrolidone were not sensitising in animal studies. |

Chronic:

Triadimenol is not mutagenic. Results of animal studies with triadimenol showed it is not carcinogenic or teratogenic. N-methyl-2-pyrrolidone is not mutagenic. Animal studies with N-methyl-2-pyrrolidone indicated that it is not carcinogenic and gave no indication of a fertility impairing effect. Indications of a developmental toxic / teratogenic effect were seen in animal studies.

12. ECOLOGICAL INFORMATION

Harmful to aquatic organisms and may cause long term adverse effects in the aquatic environment. It is non toxic to honey bees. DO NOT contaminate streams, rivers or waterways with the product or used containers.

Ecotoxicity

Bayfidan 250 EC:

Fish toxicity:

LC₅₀: 42 mg/L (96 h); trout (*Oncorhynchus mykiss*)

Aquatic invertebrate toxicity:

EC₅₀: 253 mg/L (48 h) *Daphnia magna*

Algae toxicity:

EC₅₀ growth rate: 41.13 mg/L (72 h); *Pseudokirchneriella subcapitata*

Triadimenol:

Fish toxicity:

LC₅₀: 21.3 mg/L (96 h); rainbow trout (*Oncorhynchus mykiss*)

LC₅₀: 17.4 mg/L (96 h); golden orfe (*Leuciscus melanotis*)

Aquatic invertebrate toxicity:

EC₅₀: 51 mg/L (48 h) *Daphnia magna*

Algae toxicity:

EC₅₀: 3.7 mg/L *Scenedesmus subspicatus*

EC₅₀ growth rate: 38 mg/L (72 h); *Pseudokirchneriella subcapitata*

Bird toxicity:

Acute oral LD₅₀: > 2000 mg/kg; bobwhite quail

Environmental fate, persistence and degradability, mobility

Triadimenol: Degradation in soil depends on microbial activity. DT₅₀ in sandy loam 110-375 days; in loam 240-270 days. Biodegradability: ≤ 70%. Exposure time 28 days.
N-methyl-2-pyrrolidone: Readily biodegradable.

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13. DISPOSAL CONSIDERATIONS

(1 L container only)

Rinse container before disposal. Add rinsings to spray tank. Do not dispose of undiluted chemicals on site. Dispose of at a local authority landfill. If no landfill is available, bury the container 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.

(5 L container only)

Triple or preferably pressure rinse container 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 | No |

15. REGULATORY INFORMATION

Registered according to the Agricultural and Veterinary Chemicals Act 1988.
Australian Pesticides and Veterinary Medicines Authority approval number: 30515

See also Section 2.

16. OTHER INFORMATION

Trademark information Bayfidan® is a Registered Trademark of Bayer.

Preparation information Replaces November 1, 2002 MSDS. Reasons for update: MSDS headings, Product codes and pack sizes, Risk phrases, Fire Fighting Measures, Storage, Exposure standards, Physical and Chemical Properties, Acute oral toxicity data, Ecological Information, Disposal.

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