

# MATERIAL SAFETY DATA SHEET



Date of Issue: September 2, 2004

## 1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

**Product name** **Ziram Granuflo™ Fungicide**

**Other names** None

**Product codes and pack sizes** 6315186 (10 kg), 4952498 (20 kg)

**Chemical group** Dithiocarbamate

**Recommended use** Fungicide for agricultural use

**Formulation** Water dispersible granule (WG)

**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](http://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) – DANGEROUS GOOD**  
**Very toxic to aquatic organisms**

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

**Risk phrases** R40 (R68) – Possible risks of irreversible effects.  
R22 – Harmful if swallowed.  
R36/37/38 – Irritating to eyes, respiratory system and skin.

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

**ADG classification** Classified as “Dangerous goods” according to the Australian Code for the Transport of Dangerous Goods by Road and Rail. Class 9, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (ziram 76%), UN 3077, PG III, Marine Pollutant.

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

## 3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients	CAS Number	Concentration (g/kg)
Ziram	[137-30-4]	760
Other ingredients, including wetting / dispersing agents	(non hazardous)	240

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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.**

<b>Inhalation</b>	If inhaled remove to fresh air and keep at rest. If breathing is difficult administer oxygen. If not breathing give artificial respiration and get medical attention as soon as possible.
<b>Skin contact</b>	Carefully remove contaminated clothing. Wash affected areas thoroughly with soap and water. Obtain medical attention. Wash clothing before re-use.
<b>Eye contact</b>	Rinse eyes immediately with clean water for at least 15 minutes and obtain prompt medical attention.
<b>Ingestion</b>	Wash out mouth with water. Keep patient at rest, contact a doctor or Poisons Information Centre (as above) immediately and transport patient to hospital as soon as possible. Prevent consumption of alcohol.
<b>First Aid Facilities</b>	Ensure washing facilities are available, including an eyewash station.
<b>Medical attention</b>	Ziram is a zinc dimethyl dithiocarbamate. Symptoms of over-exposure include dizziness, confusion, drowsiness, lethargy, ataxia, headaches, or coma; abdominal pain, nausea, vomiting, diarrhoea; muscle weakness and ascending paralysis; respiratory paralysis; cough; skin rash and eye irritation. In addition, ziram induces and alcohol intolerance similar to Antabuse (disulfiram), a related dithiocarbamate. <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>Systemic poisoning:</i> There is no specific antidote. Treat symptoms. Gastric lavage, charcoal administration and measures to prevent further absorption are appropriate. Possible mucosal damage may contraindicate gastric lavage. After poisoning with ziram alcohol should be avoided for at least 10 days.

## 5. FIRE FIGHTING MEASURES

<b>Extinguishing media</b>	Carbon dioxide, dry chemical, foam, water spray
<b>Hazards from combustion products</b>	In a fire, formation of carbon disulfide, oxides of nitrogen and sulphur must be expected.
<b>Precautions for fire fighters</b>	Dust explosion hazard. 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. Bund area with sand or earth to prevent contamination of drains or waterways. Dispose of extinguishing agent and spillage safely later. Contamination of water bodies should be avoided. Decontaminate protective equipment after use.
<b>Hazchem code</b>	2X (2Z internationally)

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## 6. ACCIDENTAL RELEASE MEASURES

Avoid contact with spilled material or contaminated surfaces. Do not smoke, eat or drink during the clean up process. Avoid breathing dust. Eliminate all sources of ignition. Wear personal protective clothing and equipment as detailed in Section 8 PERSONAL PROTECTION, including a respirator. Keep people and animals away. Contain spillage. Avoid creating dust by damping down or taking up with dust-binding material. Prevent spilled material from entering drains or watercourses. Shovel or sweep up, and transfer into plastic drums. Clean floor with a damp cloth and place it in the drum. Seal drums and label ready for safe disposal. Deal with all spillages immediately. If contamination of drains, streams, watercourses etc. is unavoidable, warn the local water authority. Decontaminate tools and equipment after use. Calcium hypochlorite solution 15% can aid in cleaning used drums.

## 7. HANDLING AND STORAGE

<b>Handling</b>	Keep out of reach of children. Poisonous if inhaled. Harmful if swallowed. Product is corrosive. Attacks eyes and will irritate the skin. Avoid contact with eyes and skin. Repeated exposure may cause allergic disorders. Do not inhale dust or spray mist. If product in eyes, wash it out with 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 product away from heat and sources of ignition. Prevent formation of dust.
<b>Storage</b>	Store in the tightly closed, original container in a dry, well-ventilated area, as cool as possible. Do not store for prolonged periods in direct sunlight. Store away from sources of ignition.
<b>Flammability</b>	Not defined as flammable or combustible, but if a dust forms, dust / air mixtures can be explosive.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<b>Exposure standards</b>	There are no National Occupational Health and Safety Commission (NOHSC) exposure standards applicable to this product.
<b>Biological limit values</b>	None allocated
<b>Engineering controls</b>	Control process conditions to avoid contact. Use in a well-ventilated area only.
<b>Personal Protective Equipment</b>	Eyes: Goggles Clothing: Cotton overalls buttoned to the neck and wrist and a washable hat Gloves: Elbow-length PVC gloves Respiratory: An AS/NZS 1715/1716 approved respirator should be worn if inhalation is possible.
<b>Other</b>	It is important to avoid alcohol prior to and after handling Ziram Granuflo.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance:</b>	Creamy white to light brown granules
<b>Odour:</b>	Odourless
<b>pH:</b>	5.3 (4% aqueous suspension)
<b>Vapour pressure:</b>	Very low
<b>Vapour density:</b>	Not applicable
<b>Boiling point:</b>	Not applicable
<b>Freezing/melting point:</b>	Not available
<b>Solubility:</b>	Disperses in water. Ziram is practically insoluble in water.
<b>Bulk density:</b>	Not available
<b>Flash Point:</b>	Not flammable
<b>Flammability (explosive) limits:</b>	Not applicable
<b>Auto-ignition temperature:</b>	Not applicable
<b>Partition coefficient (octanol/water):</b>	Ziram: Log $P_{ow}$ = 1.23 at 20° C

## 10. STABILITY AND REACTIVITY

<b>Chemical stability</b>	Stable under normal conditions of use.
<b>Conditions to avoid</b>	Excessive heat, sources of ignition. Prevent formation of dust – may cause dust explosion.
<b>Incompatible materials</b>	Ziram decomposes on heating and in contact with acids. It is incompatible with iron, lime sulphur, copper and mercury.
<b>Hazardous decomposition products</b>	In a fire, formation of carbon disulfide and oxides of nitrogen and sulphur must be expected.
<b>Hazardous reactions</b>	None

## 11. TOXICOLOGICAL INFORMATION

### POTENTIAL HEALTH EFFECTS

Ziram is slowly absorbed from the gastrointestinal tract or through intact skin. It may be absorbed from the respiratory tract as a dust or mist. Symptoms of over-exposure include dizziness, confusion, drowsiness, lethargy, ataxia, headaches, or coma; abdominal pain, nausea, vomiting, diarrhoea; muscle weakness and ascending paralysis; respiratory paralysis; cough; skin rash and eye irritation. Ziram induces alcohol intolerance, resulting in flushing, sweating, headache, weakness and high blood pressure.

<b>Inhalation</b>	Poisonous if inhaled. Irritating to respiratory tract.
<b>Skin contact</b>	Irritating to skin.
<b>Eye contact</b>	Corrosive to eyes.
<b>Ingestion</b>	Poisonous if swallowed.

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## 11. TOXICOLOGICAL INFORMATION - continued

### ANIMAL TOXICITY DATA - *ziram active ingredient*

#### Acute:

<b>Oral toxicity</b>	LD <sub>50</sub> rat: 2700 mg/kg
<b>Dermal toxicity</b>	LD <sub>50</sub> rabbit: > 2000 mg/kg
<b>Inhalation toxicity</b>	LC <sub>50</sub> rat: 0.13 mg/L – 4 hour . Respirable ziram is highly toxic by inhalation. However, this product is a granular solid that will not form respirable dust under normal handling conditions.
<b>Skin irritation</b>	Not irritating (rabbit). Irritating in humans.
<b>Mucous membrane irritation</b>	Highly irritating to eyes and mucous membranes (rabbit)
<b>Sensitisation</b>	Sensitising (guinea pig)

#### Chronic:

Long term or repeated exposure to ziram may affect the central nervous system, may cause metabolic and blood abnormalities, liver damage and dermatitis. Ziram gave positive results in some mutagenicity tests. Some reproductive and teratogenic effects were noted in rats, but are not expected in humans at normal exposure levels. Ziram is not classifiable as a human carcinogen (IARC). The thyroid is a target organ.

## 12. ECOLOGICAL INFORMATION

This product is very toxic to aquatic organisms. Low hazard to bees. Repellent to birds and rodents. Dangerous to fish and wildlife. DO NOT contaminate streams, rivers or waterways with Ziram or the used containers.

<b>Ecotoxicity</b>	<u>Ziram:</u>
	<i>Fish toxicity:</i>
	LC <sub>50</sub> (96 h) rainbow trout 1.9 mg/L
	<i>Daphnia toxicity:</i>
	EC <sub>50</sub> (48 h) <i>Daphnia magna</i> 0.048 mg/L
	<i>Bird toxicity:</i>
	Acute oral LD <sub>50</sub> bobwhite quail 97 mg/kg

<b>Environmental fate, persistence and degradability, mobility</b>	Ziram is unlikely to leach. It does not accumulate in soil. In soil aerobic DT <sub>50</sub> = 42 hours.
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## 13. DISPOSAL CONSIDERATIONS

Rinse containers before disposal. Add rinsings to spray tank. Do not dispose of undiluted chemicals on site. 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. Unwanted product should be disposed of by a reputable waste disposal contractor.

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## 14. TRANSPORT INFORMATION

<b>UN number</b>	3077
<b>Proper shipping name</b>	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (ziram 76%)
<b>Class and Subsidiary Risk</b>	9
<b>Packing Group</b>	III
<b>EPG</b>	47 Dangerous Goods – Initial Emergency Response Guide
<b>Hazchem code</b>	2X (2Z internationally)
<b>Marine Pollutant</b>	Yes – according to European classification. Ziram is not on the IMDG list of Marine Pollutants.

## 15. REGULATORY INFORMATION

Registered according to the Agricultural and Veterinary Chemicals Act 1988

Australian Pesticides and Veterinary Medicines Authority approval number: 47127

See also Section 2.

## 16. OTHER INFORMATION

**Trademark information** Ziram Granuflo™ is a Trademark of Taminco.

**Preparation information** Replaces August 1, 2002 MSDS.  
Reasons for revision: Risk phrases, 16 heading format, Dangerous Goods classification, alcohol intolerance, medical attention, toxicological information, ecological 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