

MATERIAL SAFETY DATA SHEET



Date of Issue: April 10, 2007

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product name Blue Shield[®] DF Copper Fungicide

Other names None

Product codes and pack sizes 4911449 (10 kg)

Chemical group Inorganic

Recommended use Fungicide for agricultural use

Formulation Dry flowable granules (DF)

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)
Toxic to aquatic organisms

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

Risk phrases R41 - Risk of serious damage to eyes.
R22 - Harmful 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. See Section 14.

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

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients	CAS Number	Concentration (g/kg)
Copper, present as copper (cupric) hydroxide	[20427-59-2]	500
Other ingredients, including wetting, suspending and binding agents	(non hazardous)	500

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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, keep warm and at rest. Obtain medical advice. If not breathing give artificial respiration and get medical attention as soon as possible.
Skin contact	Immediately remove all contaminated clothing and footwear. Wash the skin thoroughly with soap and water. Seek medical aid if symptoms persist.
Eye contact	Hold eyes open and flood with water for at least 15 minutes and obtain urgent medical attention.
Ingestion	Seek medical aid immediately if swallowed. Wash out mouth with water. Do NOT induce vomiting. Give a large amount of milk to drink, or if not available, give large quantities of water. Avoid alcohol. Do not give anything by mouth to a person who is unconscious or semi conscious.
First Aid Facilities	Ensure washing facilities are available, including an eyewash station.
Medical attention	<u>Symptoms:</u> Product is severely irritating to eyes and if not removed promptly may cause permanent damage. Eye exposure may produce conjunctivitis / ulceration and corneal turbidity. In the case of skin contact many copper salts can cause itching, eczema and rarely, sensitisation reactions. Copper fumes may be toxic. Repeated or prolonged inhalation of copper / copper salts fumes or mist may cause irritation of the upper respiratory tract and occasionally ulceration and perforation of the nasal septum. Ingestion of copper salts may cause gastrointestinal disorders, damage to intestinal mucosa, haemolysis, liver and renal damage. <u>Treatment:</u> Elevated urinary copper is indication of excess copper exposure. If swallowed, perform gastric lavage. Mucosal damage may contraindicate gastric lavage. Administration of activated charcoal and sodium sulphate is advisable in significant ingestions. In severe ingestions D-penicillamine or DMPS (dimercaptopropane sulphonate) can be used as antidotes. D-penicillamine is the antidote of choice.

5. FIRE FIGHTING MEASURES

Extinguishing media	Use extinguishing media suitable to the environment. Foam, dry chemical, carbon dioxide or water spray.
Hazards from combustion products	In a fire irritating and toxic gases from thermal decomposition or combustion may be released.
Precautions for fire fighters	Fire fighters should wear full protective gear, including self-contained breathing apparatus (AS/NZS 1715/1716). Keep unnecessary people away and upwind. Bund area with sand or earth to prevent contamination of drains or waterways. Dispose of extinguishing agent and spillage safely later.
Hazchem code	2Z

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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. Wear personal protective clothing and equipment as detailed in Section 8 PERSONAL PROTECTION. Keep people and animals away. Contain spillage. Avoid creating dust by damping down. 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.

7. HANDLING AND STORAGE

Handling	Keep out of reach of children. Severely irritating to eyes. Avoid contact with eyes and skin. Avoid inhaling dust or spray. Do not eat, drink or smoke until after washing. Wash thoroughly after handling. Contaminated clothes are to be laundered before re-use.
Storage	Store in the closed, original container in a dry, cool, well-ventilated area, out of direct sunlight.
Flammability	The product is not flammable or combustible, but decomposes on heating. If a dust forms, dust / air mixtures can be explosive.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure standards	The NOHSC exposure standard (TWA) for copper, dusts and mists (as Cu) is 1 mg/m ³ . <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.
Biological limit values	None allocated
Engineering controls	Control process conditions to avoid contact. Use local exhaust ventilation to keep exposure levels below the exposure limit above and in situations where dust may be formed.
Personal Protective Equipment	Eyes: Wear safety goggles. An eye bath should be available. Clothing: Wear suitable protective clothing, such as cotton overalls buttoned to the neck and wrist and rubber boots. Gloves: Wear suitable protective (impervious) gloves. Respiratory: If airborne concentrations are likely to exceed the exposure standard above, an AS/NZS 1715/1716 approved respirator should be worn.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Light blue/green micro granules
Odour:	Practically none
pH:	Not available
Vapour pressure:	Negligible
Vapour density:	Not available
Boiling point:	Not applicable

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9. PHYSICAL AND CHEMICAL PROPERTIES - continued

Freezing/melting point:	Decomposition at 120° C
Solubility:	Dispersible in water
Bulk density:	800 g/L
Flash Point:	Not applicable
Flammability (explosive) limits:	Not available
Auto-ignition temperature:	Not available
Partition coefficient (octanol/water):	<i>Copper hydroxide Cu(OH)₂</i> : Log P _{ow} = 0.44 (estimated, based on relative solubilities in water and n-octanol)

10. STABILITY AND REACTIVITY

Chemical stability	Stable under normal conditions of use.
Conditions to avoid	May decompose if heated. Avoid high moisture conditions for prolonged periods. Prevent formation of dust.
Incompatible materials	Incompatible with acids, dicloran, calcium polysulfide, ammonia or acid vapours. Copper is corrosive to aluminium, especially in aqueous form and at elevated temperatures.
Hazardous decomposition products	None
Hazardous reactions	None

11. TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

Inhalation	Prolonged inhalation may be harmful. Moderately irritating to respiratory tract.
Skin contact	May irritate skin.
Eye contact	Severely irritating or corrosive to the eyes.
Ingestion	Harmful if swallowed.

ANIMAL TOXICITY DATA – PRODUCT

Acute:

Oral toxicity	LD ₅₀ rat: 1300 mg/kg
Dermal toxicity	LD ₅₀ rat: > 2600 mg/kg
Inhalation toxicity	LC ₅₀ rat (4 hour) 0.56 mg/L (copper hydroxide)

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11. TOXICOLOGICAL INFORMATION - continued

Skin irritation	Slightly irritating (rabbit)
Eye irritation	Severely irritating, corrosive (rabbit)
Sensitisation	Non sensitising (guinea pig)

Chronic:

Repeated or prolonged inhalation of copper / copper salts fumes or mist may cause irritation of the upper respiratory tract and occasionally ulceration and perforation of the nasal septum.

Copper hydroxide is not listed as a carcinogen by the International Agency for Research on Cancer (IARC) or the National Toxicology Program (NTP). There was no evidence of mutagenicity in *in vitro* and *in vivo* studies. Copper hydroxide is not known to exhibit reproductive or teratogenic (birth defect) effects.

12. ECOLOGICAL INFORMATION

This product is toxic to fish and aquatic organisms.

DO NOT contaminate streams, rivers or waterways with Blue Shield or the used containers.

Ecotoxicity

Copper hydroxide:

Fish toxicity:

LC₅₀ (96 h) bluegill sunfish 180 ppm

LC₅₀ (96 h) rainbow trout 25 ppm

Daphnia toxicity: *Daphnia magna* EC₅₀ (48 h) 0.0422 mg Cu/L

Algal toxicity: EC₅₀ algae 22.5 mg Cu/L

Bird toxicity:

Acute oral LD₅₀ bobwhite quail 3400 mg/kg

Acute oral LD₅₀ mallard duck > 5000 mg/kg

Environmental fate, persistence and degradability, mobility

Copper is a chemical element and therefore cannot be degraded or transformed into related metabolites. In soil, it is mainly strongly bound, to a wide range of soil substances, therefore limiting the amount of free copper ion in soil solution and so its bioavailability. The amount of free copper ion is primarily controlled by pH and the amount of dissolved organic carbon in the soil. In acid soils, copper ions will be at greater concentration than at neutral or alkaline pH. Copper is not expected to leach to the saturated zone. In water, hydrolysis or photolysis processes will have no action on copper. It is rapidly bound to mineral particles, precipitated as insoluble inorganic salts or bound to organic matter.

13. DISPOSAL CONSIDERATIONS

Single 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. Dispose of waste material via a reputable waste disposal contractor to a regulated landfill.

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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	2Z
Marine Pollutant	Yes. If transported by sea, the product must be shipped as a Class 9, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (contains copper), Packing Group III, UN 3077, Marine Pollutant.

15. REGULATORY INFORMATION

Registered according to the Agricultural and Veterinary Chemicals Act 1988

Australian Pesticides and Veterinary Medicines Authority approval number: 46869

See also Section 2.

16. OTHER INFORMATION

Trademark information Blue Shield® is a Registered Trademark of Bayer.

Preparation information Replaces June 17, 2003 MSDS.
Reasons for revision: 16 heading format, product codes and pack sizes, Composition / Information on Ingredients, Medical Attention, Marine Pollutant, Handling, Toxicological Information, Ecological Information, Regulatory 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