



The miracles of science™

MATERIAL SAFETY DATA SHEET

Date of Issue: 30/05/06

SECTION 1 IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name	DuPont™ ManKocide® DF® fungicide
Product Code	
Product Use	A fine dry flowable fungicide for the control of various diseases of fruits and vegetables as indicated in the Directions for Use table.
Company Name	DuPont Australia Limited
Address	168 Walker Street, North Sydney NSW 2060
Emergency Telephone Number	Transport Emergency 1800 033 111 Medical Emergency 1800 674 415
Telephone Number	02 9923 6111
Product Type	Fungicide

SECTION 2 HAZARDS IDENTIFICATION

Hazard classification:	Classified as hazardous according to the criteria of National Occupational Health & Safety Commission (NOHSC).
Risk phrases:	Xi - Irritant R43 - May cause sensitisation by skin contact.
Safety phrases:	S: (2) - 8 - 24/25 - 46 Keep out of reach of children. Keep container dry. Avoid contact with skin and eyes. If swallowed, seek medical advice immediately and show this container or label.
ADG classification:	9
SUSDP classification:	5

SECTION 3 COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	CAS Number	Concentration
Copper as Copper Hydroxide	20427-59-2	46.1%
Mancozeb*	8018-01-7	15%
Other ingredient		38.9%

*MANCOZEB, a coordination product of zinc ion and manganese ethylenebisdithiocarbamate in which the ingredients are: Manganese 3.0%, Zinc 0.4%, Ethylenebisdithiocarbamate ion 11.6%

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SECTION 4 FIRST AID MEASURES

Inhalation	If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.
Skin contact	In case of contact, immediately wash skin with soap and copious amounts of water.
Eye contact	In case of contact, immediately flush eyes with copious amounts of water for at least 15 minutes and see a doctor. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a Poison Information Centre or doctor for treatment.
Ingestion	If swallowed, call a doctor or Poisons Information Centre. Phone Australia 13 11 26.
First Aid Facilities	General: Consult the Poisons Information Centre (Phone Australia 13 11 26) or a doctor in every case of suspected chemical poisoning. Never give fluids or induce vomiting if a patient is unconscious or convulsing regardless of cause of injury. If breathing difficulties occur seek medical attention immediately
Advice to Doctor:	Treat symptomatically. Acute oral over-exposure to copper hydroxide, a major component of this product, may cause hypertension, hemolysis, and rarely, methemoglobinemia. Severe intoxication is associated with serum copper levels greater than 500 mcg/dl. Copper hydroxide is an emetic, however, dilution with fluids, adsorption with activated charcoal, or lavage may be indicated. Chelation therapy with BAL or D-penicillamine has proved useful in cases of acute over-exposure. Unless extensive vomiting has occurred, empty the stomach by gastric lavage with water, milk, sodium bicarbonate solution of a 0.1% solution of potassium ferrocyanide. (Gosselin, Clinical Toxicology of Commercial Products, 5 th Ed.). Administration of gastric lavage should be performed by qualified medical personnel. Probable mucosal damage may contraindicate use of gastric lavage.

SECTION 5 FIRE FIGHTING MEASURES

Extinguishing media	Suitable: Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.
Hazards from combustion products	Specific Hazard(s): Emits toxic fumes under fire conditions.
Precautions and equipment for fire fighters	Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
Hazchem Code	2X

SECTION 6 ACCIDENTAL RELEASE MEASURES

Emergency procedures Wear respirator, chemical safety goggles, rubber boots, and heavy rubber gloves. Methods and materials for containment and clean up Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

SECTION 7 HANDLING AND STORAGE

Handling	Directions for Safe Handling: Do not breathe dust. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.
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Storage Never allow the product to become wet during storage. This may lead to certain chemical changes which will reduce the effectiveness of the product as a fungicide and create vapors which may be flammable. Store in the closed, original container in a dry well ventilated area, as cool as possible out of direct sunlight. Store below 30°C. Store in a locked room or place away from children, animals, foodstuffs, seeds and fertilisers.

Flammability Non flammable

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

National exposure standards No NOHSC exposure standard has been established for copper hydroxide or mancozeb. The following standards apply to some of the ingredients:

Sodium Hydroxide: 5 mg/m³ (TWA)

TWA = Time Weighted Average concentration of the substance over an 8 hour working day, for a 5 day working week.

Engineering controls Safety shower and eye bath. Mechanical exhaust required.

Personal protective equipment Respiratory Protection: Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate use a dust mask type N95 (US) or type P1 (EN 143) respirator.
Hand Protection: Compatible chemical-resistant gloves.
Eye Protection: Chemical safety goggles.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance (colour, physical form, shape) Dark green granule

Vapour pressure Negligible vapour pressure

Freezing/melting point (specify which) Not determined

Solubility (specify solvent, e.g. water) Technical copper hydroxide has a solubility of 0.1 - 5 ppm.

Specific gravity or density 0.5485 g/mL

Flash point and method of detecting flash point; Not applicable (solid)

SECTION 10 STABILITY AND REACTIVITY

Chemical stability This material is stable under normal conditions.

Conditions to avoid Not determined

Hazardous reactions Material is not known to polymerize.

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SECTION 11 TOXICOLOGICAL INFORMATION

Acute:

Swallowed : Slightly toxic by oral exposure. Acute oral LD₅₀ = 2535 mg/kg (rat). This material may produce toxicity if ingested in large quantities. Symptoms of over-exposure to copper salts may include nausea and vomiting, abdominal pain, and central nervous system depression, which if severe enough, may lead to death.

Eye : Dust or powdered granules are severely irritating to corrosive to the eyes of rabbits.

Skin : Considered a non-irritant to the skin of a rabbit. Excessive exposure, especially if prolonged, may cause itching, eczema and, rarely, sensitization reactions in previously exposed persons. Acute dermal LD₅₀ > 5000 mg/kg.

Inhaled : Irritating to the respiratory system of rats. Excessive exposure may cause cough, mucous product, shortness of breath, reflecting metal fume fever. Irritating to the respiratory system. Acute Inhalation of dust or powdered granules LC₅₀ > 1.266 mg/L (rat - 4 hour).

Chronic: Low chronic toxicity unless excessive exposure is encountered. Excessive exposure to copper by inhalation may result in irritation of the upper respiratory tract which, if severe, may lead to perforation of the nasal septum after long periods of exposure. Repeated ingestion of copper salts may result in anemia, liver, and kidney damage. Chronic inhalation exposure may cause a metaallic taste in the mouth, irritation of the upper respiratory tract such as the nasal mucosa that may progress to perforation of the nasal septum. Chronic cough may also occur.

Special Health Effects : Copper-intolerant individuals should not be exposed to this material. No additional information is available on whether over-exposure to this material would aggravate other existing special medical conditions.

SECTION 12 ECOLOGICAL INFORMATION

Ecotoxicity Mancozeb:
96 hour LC50 - Rainbow trout: 0.073 mg/L
96 hour LC50 - Fathead minnow: 0.57 mg/L
96 hour LC50 - Bluegill sunfish: 0.84 mg/L
72 hour EC50 (growth inhibition) – freshwater algae: 0.43 mg/L

Cupric Hydroxide
48 hour EC50 - Daphnia magna: 70.16 ug/L
8 day LC50 - Bobwhite quail: 3400 ppm
8 day LC50 - Mallard ducklings: > 5000 ppm
48 hour LD50 - Honeybee: 68.3 ug/bee

Persistence and degradability Cupric Hydroxide
EC50 (respiration rate) - activated sludge: 71 mg/L

Additional information This pesticide is toxic to fish and aquatic organisms. Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Drift and runoff from treated areas may be hazardous to fish and aquatic organisms in adjacent aquatic sites. Do not allow rinsate from cleaning of equipment or disposed material to enter surface or groundwater.

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SECTION 13 DISPOSAL CONSIDERATIONS

Disposal methods and containers

Shake bag contents into spray tank until the bag is empty. Do not dispose of undiluted chemicals on site. Puncture or shred and bury empty bags 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 bags and product should not be burnt.

SECTION 14 TRANSPORT INFORMATION

Road and Rail Transport

Class and subsidiary risk:	9
Packing Group:	III
UN Number:	3077
Proper Shipping Name:	Environmentally Hazardous Substance, Solid, N.O.S. (Copper Hydroxide 46% & Mancozeb 15%)
EPG:	47
Hazchem code:	2X

IMDG

Class:	9
Packaging Group:	III
UN Number:	3077
Proper shipping name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., (Mancozeb 15%)

Marine pollutant

Yes

SECTION 15 REGULATORY INFORMATION

APVMA Approval Number

60482/0106

Additional national and/or international regulatory information.

Registered according to Agricultural and Veterinary Chemicals Act 1988.

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SECTION 16 OTHER INFORMATION

Preparation information:

Key/legend to abbreviations and acronyms used in the MSDS:

ACGIH	American Conference of Governmental Industrial Hygienists.
DT ₅₀	Time(days) for 50%loss.
EC ₅₀	Median effective concentration.
EEL	Environmental Exposure Limit.
ERMA	Environmental Risk Management Authority
HSNO	Hazardous Substances and New Organisms.
IARC	International Agency for Research on Cancer.
Koc	Organic carbon partition coefficient (ml soil water/g organic carbon)
LC ₅₀	Lethal concentration that will kill 50% of the test organisms inhaling or ingesting it.
LD ₅₀	Lethal dose to kill 50% of test animals/organisms.
NOEL	No observable effect level.
OSHA	American Occupational Safety and Health Administration.
Pow	The octanol-water partition coefficient is the ratio of the concentration of a chemical in octanol and in water at equilibrium at a specified temperature.
TEL	Tolerable Exposure Limit.
TLV	Threshold Limit Value-an exposure limit set by responsible authority.
WES	Workplace Exposure Limit

Literature references

Sources for data.

Griffin ManKocide® DF® fungicide – Date July 2005
 "MANKOCIDE" FUNGICIDE/BACTERICIDE – M0000548 Date 27-Oct-2005

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