

Section 1 - Identification of Chemical Product and Company

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Trade Name: **Mancoflo**
Product Use: Agricultural Fungicide
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Section 2 - Hazards Identification

Statement of Hazardous Nature

This product is classified as Hazardous (Xn Harmful) according to the criteria of ASCC.

Hazchem Code: 2X

Not a Dangerous Good according to the Australian Dangerous Goods (ADG) Code.

Risk Phrases: R43 May cause sensitisation by skin contact, R63 Possible risk of harm to the unborn child
R50 Very toxic to aquatic organisms

Safety Phrases: S36/37 Wear suitable protective clothing and gloves, S46 If swallowed, seek medical advice immediately and show container or MSDS, S61 Avoid release to the environment

SUSDP Classification: S5

ADG Classification: None allocated. Not a Dangerous Good under the ADG Code.
(Classified as dangerous good for transport by sea or air - see section 14)

Emergency Overview

Physical Description & colour: Yellow powder

Odour: Mild sulphurous odour

Major Health Hazards: No major health hazards expected if product handled in accordance with this MSDS and product label

Potential Health Effects

Ingestion: Low hazard by oral route but may be harmful if swallowed

Eye contact: May irritate eyes

Skin contact: May irritate skin. Product is a mild skin sensitiser

Inhalation: Severe inhalation irritant. Symptoms may include headache, coughing, sneezing, extreme irritation of nose and throat

Carcinogen Status:

ASCC: No significant ingredient is classified as carcinogenic by ASCC.

Ethylenethiourea (ETU), a metabolite of the class of chemicals in which mancozeb is included, has caused cancer in experimental animals at high doses and has been classified as a probable human carcinogen by the EPA (USA)

Section 3 - Composition/Information on Ingredients

Ingredients	CAS No	Conc %	TWA (mg/m ³)	STEL (mg/m ³)
Mancozeb	8018-01-7	75	not set	not set
Non hazardous ingredients		to 100	not set	not set

This is a commercial product whose exact ratio of components may vary slightly. Minor quantities of other non hazardous ingredients are also possible.

The ASCC TWA exposure value is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week. The STEL (Short Term Exposure Limit) is an exposure value that may be equalled (but should not be exceeded) for no longer than 15 minutes and should not be repeated more than 4 times per day. There should be at least 60 minutes between successive exposures at the STEL. The term "peak" is used when the TWA limit, because of the rapid action of the substance, should never be exceeded, even briefly.

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Section 4 - First Aid Measures

General Information:

You should call The Poisons Information Centre if you feel that you may have been poisoned or irritated by this product. The number is 13 1126 from anywhere in Australia (0800 764 766 in New Zealand) and is available at all times. Have this MSDS with you when you call.

Inhalation: If vapour or mists have been inhaled, remove to fresh air. Seek immediate medical advice. If breathing difficult, give oxygen.

Skin Contact: Remove contaminated clothing and wash gently and thoroughly with water (use non-abrasive soap if necessary) for 5 minutes or until chemical is removed. If irritation persists, get medical advice

Eye Contact: Flush contaminated eye(s) with lukewarm, gently flowing water for 15 minutes or until the product is removed. Obtain medical advice if irritation is experienced or persists.

Ingestion: Rinse mouth with water. Do not induce vomiting. Seek medical advice

Advice to Doctor: Treat symptomatically

Section 5 - Fire Fighting Measures

Fire and Explosion Hazards: Product is not combustible

Extinguishing Media: Use extinguishing media suitable for the surrounding fire

Fire Fighting: When fighting fires involving significant quantities of this product, wear self contained breathing apparatus and suitable protective clothing.

Decomposition Products: Carbon dioxide, carbon monoxide, nitrogen and under certain circumstances oxides of nitrogen

Flash point: not combustible

Upper Flammability Limit: n/a

Lower Flammability Limit: n/a

Section 6 - Accidental Release Measures

Accidental release: In the event of a major spill, prevent spillage from entering drains or water courses. Evacuate the spill area and deny entry to unnecessary and unprotected personnel. Immediately call the Fire Brigade. Wear full protective chemically resistant clothing including Face mask, face shield, gauntlets and self contained breathing apparatus. All skin areas should be covered. See below under Personal Protection regarding Australian Standards relating to personal protective equipment.

Stop leak if safe to do so, and contain spill. Sweep up and shovel or collect product into labelled containers for recycling or salvage, and dispose of promptly. Recycle containers wherever possible after careful cleaning. Refer to product label for specific instructions. After spills, wash area preventing runoff from entering drains. If a significant quantity of material enters drains, advise emergency services. Ensure legality of disposal by consulting regulations prior to disposal. Thoroughly launder protective clothing before storage or re-use. Advise laundry of nature of contamination when sending contaminated clothing to laundry.

Section 7 - Handling and Storage

Handling: Keep exposure to this product to a minimum, and minimise the quantities kept in work areas. Check Section 8 of this MSDS for details of personal protective measures, and make sure that those measures are followed. The measures detailed below under "Storage" should be followed during handling in order to minimise risks to persons using the product in the workplace. Also, avoid contact or contamination of product with incompatible materials listed in Section 10.

Storage: Store in a cool dry place away from food or animal feed stuffs. This product is an S5 poison. Observe all relevant regulations regarding sale, transport and storage of this class of product. Containers should be kept closed in order to minimise contamination. Keep away from extreme heat and open flames and ensure that the product does not come into contact with substances listed under "Incompatibilities" in Section 10.

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Section 8 - Exposure Controls and Personal Protection

The following Australian Standards will provide general advice regarding safety clothing and equipment:
Respiratory equipment: **AS/NZS 1715**, Protective Gloves: **AS 2161**, Industrial Clothing: **AS2919**, Industrial Eye Protection: **AS1336** and **AS/NZS 1337**, Occupational Protective Footwear: **AS/NZS2210**.

Exposure Limits	TWA (mg/m ³)	STEL (mg/m ³)	ADI (mg/Kg/day)	NOEL (mg/Kg/day)
Mancozeb	not set	not set	0.006	0.6

The STEL (Short Term Exposure Limit) is an exposure value that should not be exceeded for more than 15 minutes and should not be repeated for more than 4 times per day. There should be at least 60 minutes between successive exposures at the STEL. The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week. A TWA has not been established by Worksafe Australia for any of the major ingredients in this product. There is a blanket limit of 10mg/m³ for dusts or mists when limits have not otherwise been established. The nature of this product makes it unlikely that this level will be approached in normal use. ADI means Acceptable Daily Intake and NOEL means No-observable-effect-level. Values taken from Australian ADI List, Dec 2003.

No special equipment is usually needed when occasionally handling small quantities. The following instructions are for bulk handling or where regular exposure in an occupational setting occurs without proper containment systems.

Ventilation: If there is a significant chance vapours or mists accumulating in the area where this product is being used, a local exhaust system should be used.

Eye Protection: Eye protection such as protective glasses or goggles is recommended when this product is being used.

Skin Protection: The prevention of skin contact by wearing impervious gloves, protective clothing. Hat and boots.

Respirator: If there is a significant chance of dusts accumulating in the area where this product is being used, a mask or respirator should be used. Use of a dust mask when preparing product for use is recommended

Always wash hands before eating, drinking or smoking or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.

Section 9 - Physical and Chemical Properties:

Physical Description & colour:	Yellow powder
Odour:	Mild sulphurous odour
Boiling Point:	Decomposes before boiling point
Melting point:	192-204°C
Volatiles:	n/a
Vapour Pressure:	Negligible at normal room temperatures
Density:	0.35-0.5
Water Solubility:	Dispersible
pH:	6.0-8.0 (aqueous solution)
Flashpoint:	n/a
Evaporation Rate:	No data.
Autoignition temp:	No data.

Section 10 – Stability and Reactivity

Reactivity: This product is unlikely to react or decompose under normal storage conditions.

Conditions to Avoid: Avoid exposure to heat or flames, direct sunlight

Incompatibilities: Strong acids, strong bases, strong oxidising agents, moisture.

Decomposition Products: Carbon dioxide, carbon monoxide, nitrogen and under certain circumstances oxides of nitrogen, sulphur

Polymerisation: This product is unlikely to undergo polymerisation

Section 11 - Toxicological Information

See possible health hazards see Section 2

Toxicity:	Oral LD ₅₀ (Rat) = 11,200mg/kg;
	Dermal LD ₅₀ (Rat) = 2800mg/kg;
	Dermal LD ₅₀ (Rabbit) >5000mg/kg;
	Inhalation 4hr LC ₅₀ (Rat) = 4.1mg/L

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Teratogenic Effects: No teratogenic effects were observed in a three-generation rat study with mancozeb at a dietary level of 50 mg/kg.

Mutagenic Effects

A data gap exists in the information available on the mutagenicity of mancozeb and ETU. Mancozeb was found to be mutagenic in one set of tests, while in another it did not cause mutations. Mancozeb is thought to be similar to maneb, which was not mutagenic in a test called the Ames Test.

Organ Toxicity

Several studies of the effects of EBDCs on test animals have shown rapid reduction in the uptake of iodine and swelling of the thyroid (i.e. goitre)

Fate in Humans and Animals

The EBDC fungicides break down in mammalian tissues into ethylene thiourea, ETU, a metabolite which has caused goitre and cancer in laboratory animals (9, 18).

Research shows that mancozeb is rapidly absorbed into the body from the gastrointestinal tract, distributed to various target organs and almost completely excreted in 96 hours. ETU is the major metabolite. After a single dose, less than one ppm ETU residues were measured in the thyroid and liver. After 24 hours, these residues were not detectable.

Section 12 - Ecological Information

Ecotoxicity

Aquatic organisms: Mancozeb is moderately to highly toxic to fish and aquatic organisms

LC₅₀ (rainbow trout) = 2.2mg/L – 48 hour

LC₅₀ (carp) = 4mg/L – 48 hour

LC₅₀ (catfish) = 5.2mg/L – 48 hour

LC₅₀ (goldfish) = 9mg/L – 48 hour

LC₅₀ (crayfish) > 40mg/L – 72 hour

Terrestrial

Bees LC₅₀ = 0.193mg/bee

LC₅₀ (bobwhite quail) >10,000mg/L

Mobility

Mancozeb is of low soil persistence, with a reported field half-life of 1 to 7 days. Mancozeb rapidly and spontaneously degrades to ETU in the presence of water and oxygen. ETU may persist for longer, on the order of 5 to 10 weeks.

Section 13 - Disposal Considerations

Do not empty into drains. Full details regarding disposal of used containers, spillage and unused material may be found on the label. If there is any conflict between this MSDS and the label, instructions on the label prevail. Dispose of only in accord with all regulations.

Section 14 - Transport Information

Road and Rail Transport: Not classified as Dangerous Goods by the criteria of Australian Dangerous Goods Code 7 (ADG) for the transport by Road and Rail.

Marine Transport: This product is a marine pollutant according to International Maritime Dangerous Goods Code. (IMDG)

UN No: 3077 Class: 9 Miscellaneous Dangerous Goods, PG: III

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE SOLID, N.O.S

Air Transport: This product is classified as Dangerous Goods by the International Air Transport Association (IATA) dangerous goods regulation for the transport by air.

UN No: 3077 Class: 9 Miscellaneous Dangerous Goods, PG: III

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE SOLID N.O.S.

Section 15 - Regulatory Information

AICS: All of the significant ingredients in this formulation are compliant with NICNAS regulations. The ingredients are mentioned in the SUSDP.

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Section 16 - Other Information

This MSDS contains only safety-related information. For other data see product literature.

Acronyms:

ADG Code	Australian Code for the Transport of Dangerous Goods by Road and Rail
AICS	Australian Inventory of Chemical Substances
ASCC	Office Of The Australian Safety & Compensation Council
CAS number	Chemical Abstracts Service Registry Number
Hazchem Number	Emergency action code of numbers and letters that provide information to emergency services especially fire-fighters
IARC	International Agency for Research on Cancer
NICNAS	National Industrial Chemicals Notification and Assessment Scheme
NTP	National Toxicology Program (USA)
SUSDP	Standard for the Uniform Scheduling of Drugs & Poisons
UN Number	United Nations Number

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 MUST REVIEW THIS MSDS IN THE CONTEXT OF HOW THE PRODUCT WILL BE HANDLED AND USED IN THE WORKPLACE. IF CLARIFICATION OR FURTHER INFORMATION IS NEEDED TO ENSURE THAT AN APPROPRIATE RISK ASSESSMENT CAN BE MADE, THE USER SHOULD CONTACT THIS COMPANY SO WE CAN ATTEMPT TO OBTAIN ADDITIONAL INFORMATION FROM OUR SUPPLIERS. 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.

Please read all labels carefully before using product. This MSDS is prepared in accord with the ASCC document "National Code of Practice for the Preparation of Material Safety Data Sheets" 2nd Edition [NOHSC:2011(2003)]

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