ABN: 97 008 734 852

SAFETY DATA SHEET

SECTION 1 - IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Richgro Garden Products
203 Acourt Road
Jandakot, Western Australia 6164

Phone: (08) 6258 7100 (office hours)
Fax: (08) 9455 1297 Free Fax: 1800 671 297
Email: customerservice@richgro.com.au

Chemical nature:	Mancozeb and sulfur presented as a wettable powder.
Product Name:	**Richgro Mancozeb Plus Sulphur Fungicide**
APVMA Code:	48957
Product Use:	Domestic fungicide for use as described on the product label.
Creation Date:	**April, 2016**
This version issued:	**April 2016** and is valid for 5 years from this date.

Emergency telephone number: 1800 455 132 Monday to Friday 9am to 5pm
Poisons Information Centre: Phone 13 1126 from anywhere in Australia

SECTION 2 - HAZARDS IDENTIFICATION

Statement of Hazardous Nature

This product is classified as: Xi, Irritating. Hazardous according to the criteria of SWA.

Not a Dangerous Good according to Australian Dangerous Goods (ADG) Code, IATA or IMDG/IMSBC criteria.

SUSMP Classification: S5
ADG Classification: None allocated. Not a Dangerous Good according to Australian Dangerous Goods (ADG) Code, IATA or IMDG/IMSBC criteria.
UN Number: None allocated





GHS Signal word: WARNING

Skin Corrosion /Irritation Category 2
Skin Sensitisation Category 1
Reproductive Toxicity Category 2
Hazardous to aquatic environment Short term/Acute Category 2

HAZARD STATEMENT:

H315: Causes skin irritation.
H317: May cause an allergic skin reaction.
H361: Suspected of damaging fertility or the unborn child.
H401: Toxic to aquatic life.

PREVENTION

P102: Keep out of reach of children.
P201: Obtain special instructions before use.
P202: Do not handle until all safety precautions have been read and understood.
P261: Avoid breathing dusts.
P262: Do not get in eyes, on skin, or on clothing.
P264: Wash contacted areas thoroughly after handling.
P272: Contaminated work clothing should not be allowed out of the workplace.
P273: Avoid release to the environment.
P281: Use personal protective equipment as required.

RESPONSE

P362: Take off contaminated clothing and wash before reuse.
P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P302+P352: IF ON SKIN: Wash with plenty of soap and water.
P308+P313: If exposed or concerned: Get medical advice.
P333+P313: If skin irritation or rash occurs: Get medical advice.

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P370+P378: Not combustible. Use extinguishing media suited to burning materials.

STORAGE

P410: Protect from sunlight.
P402+P404: Store in a dry place. Store in a closed container.
P403+P235: Store in a well-ventilated place. Keep cool.

DISPOSAL

P501: Dispose of small quantities and empty containers by wrapping with paper and putting in garbage. For larger quantities, if recycling or reclaiming is not possible, use a commercial waste disposal service.

Emergency Overview

Physical Description & Colour: Brown-yellow powder.
Odour: Mild odour.
Major Health Hazards: Mancozeb is practically nontoxic orally with reported oral LD_{50} of more than 5000 to more than 11,200 mg/kg in rats. Dermally it is also practically nontoxic, with reported dermal LD_{50} values of more than 10,000 mg/kg in rats, and more than 5000 mg/kg in rabbits. It is a mild skin irritant and sensitizer, and a mild to moderate eye irritant in rabbits. Workers with occupational exposure to Mancozeb have developed sensitization rashes. This product is a skin irritant, possible skin sensitiser.

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	CAS No	Conc,%	TWA (mg/m^3)	STEL (mg/m^3)
Mancozeb	8018-01-7	235g/kg	not set	not set
Sulfur as wettable sulfur	7704-34-9	549g/kg	not set	not set
Other non hazardous ingredients	secret	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 SWA 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.

SECTION 4 - FIRST AID MEASURES

General Information:

You should call The Poisons Information Centre if you feel that you may have been poisoned, burned 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 SDS with you when you call.

Inhalation: No first aid measures normally required. However, if inhalation has occurred, and irritation has developed, remove to fresh air and observe until recovered. If irritation becomes painful or persists more than about 30 minutes, seek medical advice.
Skin Contact: Quickly and gently brush away excess particles. Wash gently and thoroughly with warm water (use non-abrasive soap if necessary) for 10-20 minutes or until product is removed. Under running water, remove contaminated clothing, shoes and leather goods (e.g. watchbands and belts) and completely decontaminate them before reuse or discard. If irritation persists, repeat flushing and seek medical attention.
Eye Contact: Quickly and gently brush particles from eyes. No effects expected. If irritation does occur, flush contaminated eye(s) with lukewarm, gently flowing water for 5 minutes or until the product is removed. Obtain medical advice if irritation becomes painful or lasts more than a few minutes. Take special care if exposed person is wearing contact lenses.
Ingestion: If product is swallowed or gets in mouth, do NOT induce vomiting; wash mouth with water and give some water to drink. If symptoms develop, or if in doubt contact a Poisons Information Centre or a doctor.

SECTION 5 - FIRE FIGHTING MEASURES

Fire and Explosion Hazards: The major hazard in fires is usually inhalation of heated and toxic or oxygen deficient (or both), fire gases. There is no risk of an explosion from this product under normal circumstances if it is involved in a fire. This product, if scattered, may form flammable or explosive dust clouds in air.
Fire decomposition products from this product may be toxic if inhaled. Take appropriate protective measures.
Extinguishing Media: Not combustible. Use extinguishing media suited to burning materials.
Fire Fighting: If a significant quantity of this product is involved in a fire, call the fire brigade. Do not scatter spilled material with high pressure water jets.

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Flash point: No data
Upper Flammability Limit: No data.
Lower Flammability Limit: No data.
Autoignition temperature: No data.
Flammability Class: No data.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Accidental release: This product is sold in small packages, and the accidental release from one of these is not usually a cause for concern. For minor spills, clean up, rinsing to sewer and put empty container in garbage. Although no special protective clothing is normally necessary because of occasional minor contact with this product, it is good practice to wear impermeable gloves when handling chemical products. In the event of a major spill, prevent spillage from entering drains or water courses and call emergency services.

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 SDS 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: This product is a Scheduled Poison. Observe all relevant regulations regarding sale, transport and storage of this schedule of poison. Store packages of this product in a cool place. Make sure that containers of this product are kept tightly closed. Keep containers dry and away from water. Keep containers of this product in a well ventilated area. Protect this product from light. Make sure that the product does not come into contact with substances listed under "Incompatibilities" in Section 10. Check packaging - there may be further storage instructions on the label.

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**, Occupational Protective Clothing: AS/NZS 4501 set 2008, Industrial Eye Protection: **AS1336** and **AS/NZS 1337**, Occupational Protective Footwear: **AS/NZS2210**.

SWA Exposure Limits **TWA (mg/m^3)** **STEL (mg/m^3)**
Exposure limits have not been established by SWA for any of the significant ingredients in this product.

The ADI for Mancozeb is set at 0.006mg/kg/day. The corresponding NOEL is set at 0.6mg/kg/day. ADI means Acceptable Daily Intake; NOEL means No-observable-effect-level. Data from Australian ADI List, June 2014.

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: This product should only be used in a well ventilated area. If natural ventilation is inadequate, use of a fan is suggested.
Eye Protection: Eye protection such as protective glasses or goggles is recommended when this product is being used.
Skin Protection: If you believe you may have a sensitisation to this product or any of its declared ingredients, you should prevent skin contact by wearing impervious gloves, clothes and, preferably, apron. Make sure that all skin areas are covered. See below for suitable material types.
Protective Material Types: We suggest that protective clothing be made from the following materials: rubber, PVC.
Respirator: If there is a significant chance that dusts are likely to build up in the area where this product is being used, we recommend that you use a suitable dust mask. Otherwise, not normally necessary.
Safety deluge showers should, if practical, be provided near to where this product is being handled commercially.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES:

Physical Description & colour: Brown-yellow powder.
Odour: Mild odour.
Boiling Point: Not available.
Freezing/Melting Point: No specific data. Solid at normal temperatures.
Volatiles: No specific data. Expected to be low at 100°C.
Vapour Pressure: Negligible at normal ambient temperatures.
Vapour Density: Not applicable.

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Specific Gravity:	No data.
Water Solubility:	Wettable.
pH:	No data.
Volatility:	Negligible at normal ambient temperatures.
Odour Threshold:	No data.
Evaporation Rate:	Not applicable.
Coeff Oil/water Distribution:	No data
Viscosity:	Not applicable.
Autoignition temp:	No data.

SECTION 10 - STABILITY AND REACTIVITY

Reactivity: This product is unlikely to react or decompose under normal storage conditions. However, if you have any doubts, contact the supplier for advice on shelf life properties.
Conditions to Avoid: This product should be kept in a cool place, preferably below 30°C. Keep containers tightly closed. Containers should be kept dry. Keep containers and surrounding areas well ventilated. Protect this product from light.
Incompatibilities: No particular Incompatibilities.
Fire Decomposition: Combustion forms carbon dioxide, and if incomplete, carbon monoxide and possibly smoke. Water is also formed. May form nitrogen and its compounds, and under some circumstances, oxides of nitrogen. Occasionally hydrogen cyanide gas in reducing atmospheres. May form oxides of sulfur (sulfur dioxide is a respiratory hazard) and other sulfur compounds. Most will have a foul odour. Manganese and zinc compounds. Carbon monoxide poisoning produces headache, weakness, nausea, dizziness, confusion, dimness of vision, disturbance of judgment, and unconsciousness followed by coma and death.
Polymerisation: This product will not undergo polymerisation reactions.

SECTION 11 - TOXICOLOGICAL INFORMATION

Toxicity: An information profile for Mancozeb is available at http://extoxnet.orst.edu/pips/ghindex.html
Acute toxicity: Mancozeb is practically nontoxic orally with reported oral LD_{50} of more than 5000 to more than 11,200 mg/kg in rats. Dermally it is also practically nontoxic, with reported dermal LD_{50} values of more than 10,000 mg/kg in rats, and more than 5000 mg/kg in rabbits. It is a mild skin irritant and sensitizer, and a mild to moderate eye irritant in rabbits. Workers with occupational exposure to Mancozeb have developed sensitization rashes.
Chronic toxicity: No toxicological effects were apparent in rats fed dietary doses of 5 mg/kg/day in a long-term study. Impaired thyroid function was observed as lower iodine uptake after 24 months in dogs fed doses of 2.5 and 25 mg/kg/day of Mancozeb, but not in those dogs fed 0.625 mg/kg/day. A major toxicological concern in situations of chronic exposure is the generation of ethylenethiourea (ETU) in the course of Mancozeb metabolism, and as a contaminant in Mancozeb production. ETU may also be produced when EBDCs are used on stored produce, or during cooking. In addition to having the potential to cause goitre, a condition in which the thyroid gland is enlarged, this metabolite has produced birth defects and cancer in experimental animals.
Reproductive effects: In a three-generation rat study with Mancozeb at a dietary level of 50 mg/kg/day there was reduced fertility but no indication of embryotoxic effects. It is unlikely that Mancozeb will produce reproductive effects in humans under normal circumstances.
Teratogenic effects: No teratogenic effects were observed in a three-generation rat study with Mancozeb at a dietary level of 50 mg/kg/day. Developmental abnormalities of the body wall, central nervous system, eye, ear, and musculoskeletal system were observed in experimental rats which were given a very high dose of 1320 mg/kg of Mancozeb on the 11th day of pregnancy. In view of the conflicting evidence, the teratogenicity of Mancozeb is properly known.
Mutagenic effects: 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 the Ames Test. Data regarding the mutagenicity are inconclusive but suggest that Mancozeb is either not mutagenic or weakly mutagenic.
Carcinogenic effects: No data are available regarding the carcinogenic effects of Mancozeb. While studies of other EBDCs indicate they are not carcinogenic, ETU (a Mancozeb metabolite), has caused cancer in experimental animals at high doses. Thus, the carcinogenic potential of Mancozeb is not currently known.
Organ toxicity: The main target organ of Mancozeb is the thyroid gland; the effects may be due to the metabolite ETU.
Fate in humans and animals: 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 Mancozeb metabolite of toxicological significance, with carbon disulfide as a minor metabolite.
There is no data to hand indicating any particular target organs.

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Mancozeb is a SWA Class 3 Reproductive risk.
Mancozeb is classed by SWA as a potential sensitiser by skin contact.

Classification of Hazardous Ingredients

Ingredient	Risk Phrases
Mancozeb	Conc>=5%: Xn; R63; R43
• Reproductive toxicity - category 2 • Skin sensitisation - category 1 • Hazardous to the aquatic environment (acute) - category 1	
Sulfur	Conc>=20%: Xi; R38
• Skin irritation - category 2	
Mancozeb: LD_{50} Oral, Rat 8000mg/kg	LD_{50} Dermal, Rat = 10,000mg/kg
LD_{50} Dermal, Rabbit = >5000mg/kg	LC_{50} Inhalation, Rat = >5.14mg/L/4hr
Sulfur: LD_{50} Oral, Rat >8437mg/kg	

Potential Health Effects

Persons sensitised to Mancozeb should avoid contact with this product.

Inhalation:

Short Term Exposure: Available data indicates that this product is not harmful. However product may be mildly irritating, although unlikely to cause anything more than mild transient discomfort.
Long Term Exposure: No data for health effects associated with long term inhalation.

Skin Contact:

Short Term Exposure: Classified as a potential sensitiser by skin contact. Exposure to a skin sensitiser, once sensitisation has occurred, may manifest itself as skin rash or inflammation, and in some individuals this reaction can be severe. In addition product is a skin irritant. Symptoms may include itchiness and reddening of contacted skin. Other symptoms may also become evident, but all should disappear once exposure has ceased.
Long Term Exposure: No data for health effects associated with long term skin exposure.

Eye Contact:

Short Term Exposure: This product may be irritating to eyes, but is unlikely to cause anything more than mild transient discomfort.
Long Term Exposure: No data for health effects associated with long term eye exposure.

Ingestion:

Short Term Exposure: Significant oral exposure is considered to be unlikely. However, this product may be irritating to mucous membranes but is unlikely to cause anything more than transient discomfort.
Long Term Exposure: No data for health effects associated with long term ingestion.

Carcinogen Status:

SWA: No significant ingredient is classified as carcinogenic by SWA.
NTP: No significant ingredient is classified as carcinogenic by NTP.
IARC: No significant ingredient is classified as carcinogenic by IARC.

SECTION 12 - ECOLOGICAL INFORMATION

This product is toxic to aquatic organisms. This product is biodegradable. It will not accumulate in the soil or water or cause long term problems.
Effects on birds: Mancozeb is not harmful to birds, with reported -day dietary LC_{50} values in bobwhite quail and mallard ducklings of greater than 10,000 ppm. The 10-day dietary LC_{50} values of 6400 ppm and 3200 ppm are reported for mallard ducks and Japanese quail, respectively.
Effects on aquatic organisms: Mancozeb is moderately to highly toxic to fish and aquatic organisms.
Effects on other organisms: Mancozeb is not toxic to honeybees.
Environmental Fate:
Breakdown in soil and groundwater: 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. Because Mancozeb is practically insoluble in water, it is unlikely to infiltrate groundwater.
Breakdown in water: Mancozeb degrades in water with a half-life of 1 to 2 days in slightly acidic to slightly alkaline conditions.
Breakdown in vegetation: When used as directed, Mancozeb is not poisonous to plants.

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Birds: LD_{50} mallard: 6400mg/kg
LD_{50} Japanese quail: 3200mg/kg
Fish: LC_{50} *Poecilia reticulata* (guppie): 2.6mg/L
LC_{50} rainbow trout (*Oncorhynchus mykiss*): 2.2mg/L
LC_{50} carp (*Cyprinus carpio*): 4.0mg/L
LC_{50} catfish: 5.2mg/L
LC_{50} *Carassius auratus* (goldfish): 9mg/L
Bees: LD_{50} 193µg/bee
Daphnia: EC_{50} 1.3mg/L

SECTION 13 - DISPOSAL CONSIDERATIONS

Disposal: Dispose of small quantities and empty containers by wrapping with paper and putting in garbage. For larger quantities, if recycling or reclaiming is not possible, use a commercial waste disposal service.

SECTION 14 - TRANSPORT INFORMATION

UN Number: This product is not classified as a Dangerous Good by ADG, IATA or IMDG/IMSBC criteria. No special transport conditions are necessary unless required by other regulations.

SECTION 15 - REGULATORY INFORMATION

AICS: All of the significant ingredients in this formulation are compliant with NICNAS regulations.
The following ingredient: Mancozeb, is mentioned in the SUSMP.

SECTION 16 - OTHER INFORMATION

This SDS 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 (7th edition)
AICS	Australian Inventory of Chemical Substances
SWA	Safe Work Australia, formerly ASCC and NOHSC
CAS number	Chemical Abstracts Service Registry Number
Hazchem Code	Emergency action code of numbers and letters that provide information to emergency services especially firefighters
IARC	International Agency for Research on Cancer
NOS	Not otherwise specified
NTP	National Toxicology Program (USA)
R-Phrase	Risk Phrase
SUSMP	Standard for the Uniform Scheduling of Medicines & Poisons
UN Number	United Nations Number

THIS SDS SUMMARISES OUR BEST KNOWLEDGE OF THE HEALTH AND SAFETY HAZARD STATEMENT: INFORMATION OF THE PRODUCT AND HOW TO SAFELY HANDLE AND USE THE PRODUCT IN THE WORKPLACE. EACH USER MUST REVIEW THIS SDS 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 SDS is prepared in accord with the SWA document “Preparation of Safety Data Sheets for Hazardous Chemicals - Code of Practice” (December 2011)
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http://www.kilford.com.au/ Phone (02)9251 4532