

VILLA MULTIZEB 455 SC

MATERIAL SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE

Product name: MULTIZEB 455 SC
 Fungicide
UN No.: 3082
Supplier: Villa Crop Protection (Pty) Ltd
 PO Box 10413
 Aston Manor, 1630, South Africa
Telephone: (011) 396 2233
Fax: (011) 396 4666
Website: www.villacrop.co.za

Emergency telephone numbers:

24 Hr Transport / Spill emergency no:
 Envirosure. +27 31 205 4918
 (Hazcall24) +27 86 044 4411
 (Client: Villa Crop Protection)

Griffon Poison Information Centre +27 82 446 8946
 (Client: Villa Crop Protection)

Poisoning Emergency telephone numbers:

Griffon Poison Information Centre +27 82 446 8946
 Poisons Information Centre +27 861 555 777

Villa Crop Protection Emergency number:

National Safety, Health and Environmental Manager:
 +27 63 698 0668

2. COMPOSITION / INFORMATION ON INGREDIENTS

Common name: Mancozeb
Chemical Name: manganese ethylenebis
 (dithiocarbamate) (polymeric)
 complex with zinc salt (IUPAC)
CAS No.: 8018-01-7
Chemical Family: alkylenebis (dithiocarbamate)
Chemical Formula: $[C_4H_6MnN_2S_4]_xZn_y$
Molecular weight: 271.2 (based on Composition)
Use: Fungicide with protective action
Formulation: Mancozeb: 455 g/l
 Soluble Concentrate
Symbols: Xi
Indication of danger: Irritating substance, Toxic to
 aquatic organisms.
Risk-phrase(s): R 36/38, R43

3. HAZARD IDENTIFICATION

Toxicity class:
 WHO III, (Table 5); EPA IV. A low toxicity fungicide.

Likely routes of exposure:
 Ingestion

Skin contact: Minimally toxic and prolonged skin contact can cause possible skin irritation and dermatitis due to skin sensitization.

Ingestion: Minimally toxic.

Inhalation: Inhalation of the dust may be irritating to the nose, throat and lungs.

Delayed effects:

At high levels **Mancozeb** has caused hind leg paralysis in test animals and an increased incidence of retinal degeneration. It has caused thyroid tumours and birth defects in test animals, resulting from ethylenethiourea (ETU) formation. ETU, a trace contaminant and breakdown product of **Mancozeb**, primarily affects the thyroid and liver. It has also caused other endocrine and blood effects, tumours and birth defects in test animals.

4. FIRST AID MEASURES AND PRECAUTIONS

In cases of extreme high doses have been absorbed, reactions occurred. Otherwise reactions are not likely to occur. Symptoms of exposure to the product include: itching, scratchy throat, sneezing and coughing. Nausea, vomiting, diarrhoea, headache, ataxia, confusion and fatigue in man, have occurred in cases of accidental swallowing.

Inhalation:

Move the victim to fresh air or remove source of contamination. Monitor for respiratory distress. Keep person warm and at rest. Treat symptomatically and supportively as and when required. Qualified personnel should perform administration of oxygen. Get medical attention immediately if necessary.

Skin contact:

Move the victim to fresh air and remove all contaminated clothing, shoes and leather goods. Gently wipe off excess chemical. Wash affected skin areas gently and thoroughly with water and non-abrasive soap. Do not rub the skin. If irritation persists, seek medical advice. Persons who become sensitized may require specialized medical management with anti-inflammatory agents or cortisone-containing emulsions.

Eye contact:

Immediately flush the contaminated eyes with gently flowing lukewarm water for 15 to 20 minutes, occasionally lifting the upper and lower lids. If irritation persists, seek medical advice.

Ingestion:

Seek medical advice immediately. Do not induce vomiting without medical advice. Give 2 glasses of water to drink. Never give anything by mouth to an unconscious person. Qualified medical personnel should perform administration of gastric lavage or oxygen.

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Advice to physician:

No specific antidotes are available against dithiocarbamate poisoning. If a large amount of **Mancozeb** has been ingested in the last few hours, and if copious vomiting has not already occurred, the stomach must be emptied and steps taken to limit gastrointestinal absorption. If the patient is fully alert and nervous system depression is not anticipated, oral administration of Syrup of Ipecac is probably the best way to empty the stomach. If contact with the toxicant has been minimal, administration of charcoal without the cathartic, followed by careful observation of the patient, probably represent optimal management.

5. FIRE FIGHTING MEASURES

Fire hazard and explosion hazard:

Avoid heat or flame. Slight fire hazard when exposed to heat or flame. Dusts at sufficient concentrations can form explosive mixtures with air. The minimum ignition temperature of dust cloud is 310 °C. The minimum ignition temperature of dust layer is 132 °C.

Unusual Hazards:

Pesticides particulates can become airborne. Combustion generates toxic fumes of hydrogen sulphide, carbon disulfide, sulphur oxides, nitrogen oxides and carbon oxides.

Extinguishing agents: Extinguish fires with carbon dioxide, dry chemical, or alcohol-resistant foam. Avoid water coming in contact with the product.

Contain water used for fire fighting for later disposal. Avoid the accumulation of polluted run-off from the site.

Fire-fighting: Remove spectators from surrounding area. Isolate the fire area and evacuate downwind. Use a recommended extinguishing agent for the type of surrounding fire.

Fight fire from maximum distance and use unmanned hose holder or monitor nozzles. Contain fire control agents for later disposal. Do not scatter the material. Remove container from fire area if possible and without risk. Avoid the accumulation of polluted run-off from the site. Avoid pollution of waterways.

Avoid inhaling hazardous vapours. Keep upwind.

Personal protective equipment:

Fire-fighters and others that may be exposed should wear full chemical protective clothing and self-contained breathing apparatus. See section 8 for recommendations regarding Exposure Controls/Personal Protection. Fire may produce irritating or poisonous vapours (toxic oxides of carbon, nitrogen and sulphur) of combustion.

Procedures: Transfer spilled material to suitable containers for recovery or disposal. Keep dust to a minimum. Keep spills and cleaning runoff out of municipal sewers and open bodies of water.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Do not breathe in dusts or fumes. Avoid contact with skin and eyes. For personal protection see Section 8 and see section 4 regarding First Aid Measures when exposed to material during clean-up operations.

Environmental precautions: Do not allow entering drains or watercourses. Spillage or uncontrolled discharges into water courses (or public waters) to be reported immediately to the Police and to the Department of Water/Environmental Affairs.

Occupational spill: Remove all sources of flames and sparks. For dry spills, shovel up and sweep up with damp earth or sand or other suitable absorbents, taking care not to raise a dust cloud. Place the material into a labelled, clean, dry container and cover for subsequent disposal; and store in a safe place to await proper disposal. All contaminated cleaning materials should be placed in closable receptacles.

In situations where product comes in contact with water, contain contaminated water for later disposal. Do not flush spilled material into drains. Do not contaminate water while cleaning equipment or disposing of wastes. Keep spectators away and upwind.

7. HANDLING AND STORAGE REQUIREMENTS

Handling:

Wear appropriate protective equipment when handling the product. Do not handle material near food, feed or drinking water. Avoid contact with eyes, prolonged contact with skin, and inhalation of dust and vapour. Avoid high concentrations of dust in air and accumulation of dust on equipment. An airborne dust of this material can create a dust explosion. Use with adequate ventilation to control dust and reduce exposure to vapours. Protect all equipment from explosions.

Wash hands before eating, drinking, chewing gum, smoking, or using the toilet. Remove clothing immediately if the product gets inside. Then wash skin thoroughly using a non-abrasive soap and put on clean clothing. Do not apply directly to areas where surface water is present, or to intertidal areas below the mean high water mark. Water used to clean equipment must be disposed of correctly to avoid contamination. Local regulations should be complied with.

Storage:

Store the product in its original labelled container in cool, dry, well ventilated area, away from heat, sparks and other sources of ignition. No smoking is allowed. Protect the product from temperatures below 0 °C and above 49°C. Product is combustible, do not ignite. Do not allow the product to become wet or overheated in storage, decomposition, impaired activity or fire may result. Do not

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store bagged product more than 3 pallets high. Loose bags should not be stacked more than 2x2x2 meters. Check for hot containers and immediately remove to open areas for disposal. Do not store next to food, feed and water supplies. Keep out of reach of unauthorized persons, children and animals. Avoid breaking the containers, spillage or leaks. Comply with the local regulations.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Provide adequate ventilation. The measures appropriate for a particular work site depend on how this material is used and on the extent of exposure. Ensure that control systems are properly designed and maintained. Comply with occupational safety, environmental, fire, and other applicable regulations.

Acceptable exposure limit for Mancozeb:

AEL (8 hour TWA, total dust): 2 mg/m³;

AEL (12 hour TWA, total dust): 1,5mg/m³;

PERSONAL PROTECTIVE EQUIPMENT:

Respirator:

Wear an approved full-face respirator suitable for protection from dusts and mists of pesticides is required. Limitations of respirator use specified by the approving agency and the manufacturer must be observed.

Clothing: Wear appropriate chemical-resistant protective clothing or other impervious clothing. Wear boots, hat and equipment to prevent repeated or prolonged skin contact with this substance. Do not wear leather clothing. Wash clothing after use.

Gloves: Wear appropriate chemical-resistant protective gloves whenever the product is handled to prevent contact with this substance. Wash gloves after use.

Eye protection: Use safety goggles and face-shield, which is compatible with respiratory equipment.

Emergency eyewash: Where there is any possibility that an employee's eyes may be exposed to this substance, an eye wash fountain or appropriate alternative within the immediate work area for emergency use, must be provided.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Soluble Concentrate

Appearance: Yellow

Explosive properties: Not explosive

Flash point: Not flammable.

pH (of 1% solution): 5.0 to 9.0

Storage stability: Stable for 2 years under normal, dry storage conditions in unopened packages. The product is stable after 14 days at 54 °C (accelerated storage test).

10. STABILITY AND REACTIVITY

Stability:

Considered stable in unopened original packages, under normal, dry storage conditions. Slowly decomposed by heat and moisture.

Incompatibility:

Avoid contact with oxidizing agents and acids. Keep away from moisture, heat or flame. Compatible with most commonly used fungicides and insecticides, used at recommended rates. Always perform a compatibility test before using with other products. Do not physically mix concentrate directly with other pesticide concentrates, always dilute first.

Thermal decomposition:

May yield toxic oxides of carbon, nitrogen and sulphur. Avoid temperatures above 49 °C.

Hazardous decomposition products:

Hydrogen sulphide, carbon disulphide, carbon oxides, sulphur oxides and nitrogen oxides form on heating. During processing, dust may form explosive mixture in air. Decomposition by contact with water may generate vapours, which can be ignited by heat or open flame.

Hazardous polymerization:

Product will not undergo polymerisation.

11. TOXICOLOGICAL INFORMATION

Acute oral LD₅₀: > 2000 mg/kg in rats & mice.

Acute dermal LD₅₀: > 2000 mg/kg in rats.

Acute inhalation LC₅₀: > 4.97 mg/l of air.

Dermal sensitization: Sensitizing

Skin irritation: Mild-irritant

Eye irritation: Mild-irritant

Carcinogenicity:

In long-term studies with mice no evidence of carcinogenicity was observed. A two-year feeding study of **Mancozeb** indicated thyroid tumours in rats at a dietary concentration level of 750 ppm.

Two-year feeding studies of ETU produced increased incidence of thyroid and pituitary tumors in rats at dietary concentrations of 83 ppm and higher and also thyroid, pituitary and liver tumors in mice at 330 ppm and higher.

Information on the mechanism of these tumors establishes a threshold for the thyroid and pituitary tumors, and indicates that none of these tumour types is relevant for human risk assessment at likely exposure levels.

Mutagenicity:

Animal *in vitro* and *in vivo* studies with **Mancozeb** and ETU suggest that **Mancozeb** and ETU are not mutagenic in mammalian systems.

Teratogenicity:

In two-generation reproduction studies of **Mancozeb** and ETU no teratogenic effects were detected.

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In developmental studies, exposure to maternally toxic levels of **Mancozeb** produced developmental effects including malformations in rats. There was no evidence of developmental toxicity in rats below adult toxic levels or in rabbits at any dose. The NOAEL of developmental toxicity was 128 mg/kg bw/day in rats and > 80 mg/kg bw/day (highest dose tested) in rabbits.

The NOAEL for maternal toxicity was 30 to 32 mg/kg bw/day in both species.

In developmental toxicity studies with ETU, malformations were produced at thyroid-inhibiting levels in studies with rats and hamsters. Embryofetotoxicity, but no malformations were produced in mice and rabbits, and there was no evidence of developmental toxicity in guinea pigs or cats. The overall NOEL is 5 to 15 mg/kg bw/day in rats.

Acceptable Daily Intake (ADI):

Mancozeb: 0.05 mg/kg bw/day.

Ethylenebisdithiocarbamates as a group: 0.03 mg/kg bw/day.

ETU: 0.004 mg/kg bw/day.

12. ECOLOGICAL INFORMATION

Degradability:

Mancozeb is rapidly degraded in the environment by hydrolysis, oxidation, photolysis, and metabolism. Is strongly adsorbed to soil, and half life in soil is 3 to 11 days (clay and loam soil).

Mobility:

The product has low mobility and is not likely to leach.

Accumulation:

The product shows little tendency to bioaccumulation.

Bioaccumulation: log P_{OW} = 0.66 (pH 7).

ECOTOXICOLOGY:

Birds: Non-toxic.

LD ₅₀ : 10 day dietary:	Japanese quail:	3200 mg/kg
	Mallard duck:	6400 mg/kg

Fish:

48 h LC ₅₀ :	2.2 mg/ℓ:	Rainbow Trout
	9.0 mg/ℓ:	Goldfish
	5.2 mg/ℓ:	Catfish
	4.0 mg/ℓ:	Carp

Honeybees:

LC₅₀: 0.193 mg/bee.

13. DISPOSAL CONSIDERATION

Pesticide disposal:

Open dumping or burning of this pesticide is prohibited. Waste resulting from the use of this product that cannot be reused or reprocessed. Never pour untreated waste or surplus products into public sewers or where there is any danger of run-off or seepage into water systems. Do not

contaminate rivers, dams or any other water sources with the product or used containers.

Comply with local legislation applying to waste disposal.

TRIPLE RINSE empty containers in the following manner: Invert the empty container over the spray or mixing tank and allow draining for at least 30 seconds after the flow has slowed down to a drip. Thereafter rinse the container three times with a volume of water equal to a minimum of a third of that of the container. Add the rinsing to the contents of the spray tank before destroying the container in the prescribed manner.

Destroy the empty container by perforation and flattening and dispose of it in a safe way.

Never re-use the empty container for any other purpose.

Prevent contamination of food, feeds, drinking water and eating utensils.

14. TRANSPORT INFORMATION

UN NUMBER: 3082

ADR/IRD:

Class: 9
 Shipping name: Environmentally hazardous substance, Liquid, N.O.S. (**Mancozeb** 455 g/ℓ)

IMDG/IMO:

Packaging group: III
 Class: 9
 Shipping name: Environmentally hazardous substance, Liquid, N.O.S. (**Mancozeb** 455 g/ℓ)

MARINE POLLUTANT

ICAO/IATA:

Class: 9
 Packaging group: III
 Shipping name: Environmentally hazardous substance, Liquid, N.O.S. (**Mancozeb** 455 g/ℓ)

15. REGULATORY INFORMATION

Symbol: Xi
Indication of danger: Irritating substance, Toxic to aquatic organisms.

Risk phrases:

R 36/38 Irritating to eyes and skin.
R 43 May cause sensitization by skin contact.

Safety phrases:

S 2 Keep out of the reach of children.
S 8 Keep container dry.
S 13 Keep away from food, drink and animal feeding stuffs.
S 20/21 When using do not eat or drink.

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- S 22** Do not breathe dust.
S 24/25 Avoid contact with skin and eyes.
S 36/37 Wear suitable protective clothing and gloves.

16. OTHER INFORMATION:

Packing and Labelling

Packed in 5, 10, 20 & 25 litres plastic containers. Labelled according to South African regulations and guidelines.

Declaration:

All information and instructions provided in this Material Safety Data Sheet (MSDS) are based on the current state of scientific and technical knowledge at the date indicated on the present MSDS and is presented in good faith believed to be correct. This information applies to the PRODUCT AS SUCH. In case of formulations or mixes, it is necessary to ascertain that a new danger will not appear. It is the responsibility of persons in receipt of this MSDS to ensure that the information contained herein is properly read and understood by all people who may use, handle, dispose or in any way come in contact with the product. If the recipient subsequently produces formulation(s) containing this product, it is the recipient's sole responsibility to ensure the transfer of all relevant information from this MSDS to their own MSDS.

END OF DOCUMENT

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For detailed information on revisions, contact the Registration holder.