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SAFETY DATA SHEET

SECTION 1: Identification of the substance/mixture and of the company/ undertaking

1.1. Product identifiers

Product name : Sanonda Fungicide Mancozeb 750DF
Active ingredient : Mancozeb
Product code : Not allocated.

1.2. Other means of identification

IUPAC name: Manganese ethylenebis(dithiocarbamate) (polymeric) complex with zinc salt

1.3. Recommended use of the chemical and restrictions on use

For the control of certain fungus diseases of fruit, field crops, tobacco, turf, vegetables and ornamentals as per the Directions for Use Table.

1.4. Details of the supplier of the safety data sheet

Sanonda (Australia) Pty Ltd (ABN 23 059 813 973)

Address: Suite 822, St Kilda Road Towers, No. 1 Queens Road, Melbourne,
Victoria 3004 Australia.

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1.4. Emergency telephone number

Emergency number : +61 3 9863 8081

SECTION 2: Hazards identification

2.1. GHS classification of the substance or mixture

Skin corrosion/irritation : Category 2
Skin sensitization : Category 1
Reproductive toxicity : Category 2

2.2. Label elements

Signal word : Warning
Hazard statements (CLP) : H315 - Causes skin irritation.
H317 - May cause an allergic skin reaction.



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Precautionary statements

- H361 - Suspected of damaging fertility or the unborn child.
- P261 - Avoid breathing dust/fume/gas/mist/vapours/spray.
- P280 - Wear protective gloves, clothing, eye and face protection.
- P281 - Use personal protective equipment as required.
- P272 - Contaminated work clothing should not be allowed out of the workplace.
- P201 - Obtain special instructions before use.
- P202 - Do not handle until all safety precautions have been read and understood.
- P308+P313 - IF exposed or concerned: Get medical advice/attention.
- P332+P313 - If skin irritation occurs: Get medical advice/attention.
- P302+352 - IF ON SKIN: Wash with plenty of soap and water.
- P363 - Wash contaminated clothing before reuse.
- P405 - Store locked up.
- P501 - Dispose of contents/container in accordance with local/regional/national regulations.

Hazard pictogram

: Health Hazard Exclamation mark



SECTION 3: Composition/information on ingredients

Identity of chemical ingredients	CAS	Concentration (% , w/w)
Mancozeb	8018-01-7	75
Other non-hazardous ingredients	-	Balance

SECTION 4: First aid measures

4.1. Description of first aid measures

General advice



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If poisoning occurs, immediately contact a doctor or Poisons Information Centre (phone 13 11 26), and follow the advice given. Show this Material Safety Data Sheet to a doctor.

If inhaled

Move to fresh air in case of accidental inhalation of dust or fumes from overheating or combustion.

If symptoms persist, call a physician.

In case of skin contact

Take off contaminated clothing and shoes immediately.

Wash off with soap and plenty of water.

If symptoms persist, call a physician.

In case of eye contact

Flush eyes with water as a precaution.

Remove contact lenses.

Protect unharmed eye.

Keep eye wide open while rinsing.

If eye irritation persists, consult a specialist.

If swallowed

Clean mouth with water and drink afterwards plenty of water.

Do not give milk or alcoholic beverages.

Never give anything by mouth to an unconscious person.

Obtain medical attention.

Advice to Doctor

Treat symptomatically.

4.2. Most important symptoms and effects, both acute and delayed

Irritant effects Symptoms may be delayed.

May cause an allergic skin reaction. Suspected of damaging fertility or the unborn child.

4.3. Indication of any immediate medical attention and special treatment needed

Call a physician or poison control center immediately

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media



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Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

5.2. Special hazards arising from the substance or mixture

Do not allow run-off from fire fighting to enter drains or water courses.

5.3. Special protective equipment and precautions for fire fighters

In the event of fire, wear self-contained breathing apparatus.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective equipment.

Avoid dust formation.

Avoid breathing dust.

Ensure adequate ventilation.

6.2. Environmental precautions

Do not flush into surface water or sanitary sewer system.

Prevent further leakage or spillage if safe to do so.

If the product contaminates rivers and lakes or drains inform respective authorities.

6.3. Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust.

Keep in suitable, closed containers for disposal.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Avoid formation of respirable particles.

Avoid exceeding the given occupational exposure limits (see section 8).

For personal protection see section 8.

Persons with a history of skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.

Smoking, eating and drinking should be prohibited in the application area.

Dispose of rinse water in accordance with local and national regulations.

Hygiene measures:

Handle in accordance with good industrial hygiene and safety practice.

When using do not eat or drink.



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When using do not smoke.

Wash hands before breaks and at the end of workday.

7.2. Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters-exposure standards, biological monitoring

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
manganese eth-ylenebis (dithiocarbamate) (polymeric) complex with zinc salt	8018-01-7	TWA	1 mg/m ³ (Manganese)	AU OEL

8.2. Appropriate engineering controls

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapour below occupational exposure standards.

8.3. Personal Protection Equipment

Respiratory protection:

In the case of dust or aerosol formation use respirator with an approved filter.

Dust safety masks are recommended when the dust concentration is more than 10 mg/m³.

Hand protection:

Polyvinyl alcohol or nitrile- butyl-rubber gloves before removing gloves clean them with soap and water. Replace when worn.

Eye protection:

Eye wash bottle with pure water. Tightly fitting safety goggles

Skin and body protection:

Dust impervious protective suit.

Choose body protection according to the amount and concentration of the dangerous substance at the work place.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

a) Appearance : Yellow to brown granular.



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- | | |
|---------------------------------|---|
| b) Odour | : Odourless |
| c) pH | : 6.0 – 7.5 (1% dispersion) |
| d) Melting point/freezing point | : None-decomposes at about 192 °C without melting |
| e) Flash point | : Not available. |
| f) Flammability (solid, gas) | : Not flammable. |
| g) Vapour pressure | : Negligible at 20 °C mancozeb. |
| h) Solubility in water | : Suspends when mixed with water. |

9.2. Other information

Suspensibility: 85% min.

SECTION 10: Stability and reactivity

10.1. Reactivity

Stable under recommended storage conditions.

10.2. Chemical stability

No decomposition if stored and applied as directed.

10.3. Incompatible materials and possible hazardous reactions

Strong acids and strong oxidising agents.

10.4. Conditions to avoid

Do not store for prolonged periods in direct sunlight.

10.5. Hazardous decomposition products

When involved in a fire will emit toxic and noxious fumes containing hydrogen sulphide, carbon disulfide, sulphur oxides and carbon oxides.

SECTION 11: Toxicological information

11.1. Information on routes of exposure and symptoms related to exposure

No harmful effects are expected if the precautions on the label and this SDS are followed.

Inhalation: The components of the product are of low volatility and no adverse effects are expected from handling the concentrate. However, care should be taken to avoid the inhalation of dust. Probably an inhalation irritant.

Skin Contact: May cause moderate irritation and sensitisation of the skin. Some workers with occupational exposure may develop skin sensitization.

Eye Contact: Symptoms may include stinging and reddening of eyes and watering. If exposure is brief, symptoms should disappear once exposure has ceased.

11.2. Immediate, delayed and chronic health effects from exposure

Acute toxicity

LD ₅₀ oral rats	> 2000 mg/kg
LD ₅₀ dermal rats	> 2000 mg/kg
LC ₅₀ inhalation rats, rabbits, guinea pigs or cats	Rat (4hr) > 5.14 mg/L
Eye irritation	Mild irritant to eyes
Skin irritation	Moderate irritant to skin
Skin sensitization	Classified as a potential sensitiser

Germ cell mutagenicity

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. The data on mutagenicity are inconclusive but suggest that Mancozeb is either not mutagenic or weakly mutagenic.

Carcinogenicity

No data are available regarding Mancozeb. Studies of other EBDCs indicate they are not carcinogenic. ETU has caused cancer in experimental animals at high doses. Thus, the carcinogenic potential of Mancozeb is not currently known.

Reproductive toxicity

In a three-generation rat study with Mancozeb there was reduced fertility but no indication of embryotoxic effects. It is unlikely that Mancozeb will produce reproductive effects in humans under normal circumstances. However, Safe Work Australia has classified this material as a category 3 material - toxic to reproduction. The agents in category 3 are possible or uncertain reproductive hazards. They are suspected to affect reproductive health but the data are insufficient. The existing data are from animal studies with no human data available.

Teratogenic toxicity

No teratogenic effects were observed in a three-generation rat study with Mancozeb. Developmental abnormalities were observed in rats given a very high dose of 1320 mg/kg of Mancozeb on the 11th day of pregnancy.

11.3. Exposure Levels/Chronic effects

No toxicological effects were apparent in rats 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. In addition to having the potential to cause goiter, a condition in which the thyroid gland is enlarged, ETU has produced birth defects and cancer in experimental animals. The main target organ of Mancozeb is the thyroid gland; the effects may be due to the metabolite ETU.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

LC ₅₀ fish	LC ₅₀ (96 h, flow-through) for mancozeb in rainbow trout 1.0, bluegill sunfish > 3.6 mg/l. NOEC (34 d, early life-stage) for fathead minnows 0.022 mg/l; extended growth NOEC (14 d) for rainbow trout 0.66 mg/l.
LC ₅₀ daphnia	EC ₅₀ (48 h, flow-through) 3.8 mg/l for mancozeb.
EC ₅₀ algae	EC ₅₀ (120 h, cell density) for mancozeb in <i>Selenastrum capricornutum</i> 0.044 mg/l.
Other Organisms	Birds Acute oral LD ₅₀ (10 d) for mancozeb in mallard ducks >5500, Japanese quail 5500, English sparrows (<i>Passer domesticus</i>) >1290, European starlings (<i>Sturnus vulgaris</i>) >2400 mg/kg. Acute dietary LC ₅₀ (8 d) for bobwhite quail and mallard ducks >5200 mg/kg diet. Chronic reproduction NOEL for mallard ducks 125, bobwhite quail 300 mg/kg diet. Bees LD ₅₀ (oral) >209 µg/bee; (contact) >400 µg/bee for mancozeb. Worms LC ₅₀ (14 d) for mancozeb in <i>Eisenia foetida</i> >1000 mg/kg soil; (56 d) reproduction NOEC for <i>Eisenia foetida</i> 20 mg/kg soil.

12.2. Persistence and degradability

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



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5 to 10 weeks. Because Mancozeb is practically insoluble in water, it is unlikely to infiltrate groundwater. Mancozeb degrades in water with a half-life of 1 to 2 days in slightly acidic to slightly alkaline conditions.

12.3. Bioaccumulative potential

Bioconcentration potential is low ($BCF < 100$ and $\text{Log } P_{ow} < 3$).

12.4. Mobility in soil

Potential for mobility in soil is low (K_{oc} between 500 and 2000).

12.5. Other adverse effects

No data is available

SECTION 13: Disposal considerations

13.1. Safe handling and disposal methods

On site disposal of the concentrated product is not acceptable. Ideally, the product should be used for its intended purpose. If there is a need to dispose of the product, approach local authorities who hold periodic collections of unwanted chemicals (ChemClear®).

13.2. Disposal of any contaminated packaging

When the container is empty, shake any residual material into the spray tank. Shred and bury empty packaging in a local authority landfill. If no such landfill is available, bury the packaging 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.

13.3. Environmental regulations

drumMUSTER is the national program for the collection and recycling of empty, cleaned, non-returnable crop production and on-farm animal health chemical containers. If the label on your container carries the drumMUSTER symbol, triple rinse the container, ring your local Council, and offer the container for collection in the program. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, puncture or shred and bury containers in local authority landfill. If no landfill is available, bury the containers below 500mm 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.

SECTION 14: Transport information

14.1. UN number

UN-No. : UN3077

14.2. UN proper shipping name



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ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Contains Mancozeb)

14.3. Transport hazard class(es)

Class (UN) : 9

Hazard labels (UN) :



14.4. Packaging group

Packing group (UN) : III

14.5. Environmental hazards

Dangerous for the environment : Environmentally Hazardous Substance

IMDG Marine pollutant : Yes

Other information : No supplementary information available

14.6. Special precautions for user

Wash hands and exposed skin thoroughly after handling.

Wear protective gloves, clothing, eye and face protection.

14.7. Hazchem Code

2X

SECTION 15: REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Under the Standard for Uniform Scheduling of Medicines and Poisons (SUSMP), this product is a schedule 5 poison. This product is registered under the Agricultural and Veterinary Chemicals Code Act 1994. APVMA Approval No.: 67394/55956.

15.2. Poisons Schedule number

This product is a Schedule 5 Poison and must be stored, transported and sold in accordance with the relevant Health Department regulations.

SECTION 16. OTHER INFORMATION

16.1. Date of preparation or last revision of SDS

Revised 11/30/2016

Revisions Highlighted: The SDS was reviewed to include GHS requirements.

16.2. Contact Point



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16.3. Key/legend to abbreviations and acronyms used in the SDS

ADG Code: Australian Dangerous Goods Code (for the transport of dangerous goods by Road and Rail)

IMDG Code: International Maritime Dangerous Goods

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

All due care and skill, so far as practicable, has been applied in the preparation and collation of the information in this SDS. Each user of the Product named in this SDS should read and consider the information contained in this SDS in the context of how the Product will be stored, handled, used or applied in the workplace. In all circumstances, it is the responsibility of the user of the Product to ensure that they have sought out the relevant safety data appropriate to their particular situation. Nothing contained in this SDS shall be construed as a representation or recommendation to the user about the suitability or otherwise of the Product named in this SDS for the user's particular situation. If the user requires any clarification or further information, the user should contact Sanonda (Australia) Pty Ltd.

National Poisons Information Centre: Dial 13 11 26 (from anywhere in Australia)

Please read all labels carefully before using product.