

Section 1 - Identification of Chemical Product and Company

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Substance: Thiabendazole is an benzimidazole derivative.
Trade Name: **Farmoz Storite Flowable SC**
Product Use: Agricultural fungicide for use as described on the product label.
Creation Date: **June, 2005**
This version issued: **November, 2009** and is valid for 5 years from this date.

Section 2 - Hazards Identification

Statement of Hazardous Nature

This product is classified as: Not classified as hazardous according to the criteria of SWA Australia.

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

Risk Phrases: Not Hazardous - No criteria found.

Safety Phrases: S24/25. Avoid contact with skin and eyes.

SUSDP Classification: None allocated.

ADG Classification: None allocated. Not a Dangerous Good under the ADG Code.

UN Number: None allocated

Emergency Overview

Physical Description & colour: White to pale yellowish liquid.

Odour: Mild slightly aromatic odour.

Major Health Hazards: Effects of acute overexposure to Thiabendazole include dizziness, anorexia, nausea, and vomiting. Other symptoms such as itching, rash, chills, and headache occur less frequently. The symptoms are brief and are related to the dose level. No significant risk factors have been found for this product.

Potential Health Effects

Inhalation

Short term exposure: Significant inhalation exposure is considered to be unlikely. Available data indicates that this product is not harmful. In addition product is unlikely to cause any discomfort or irritation.

Long Term exposure: No data for health effects associated with long term inhalation.

Skin Contact:

Short term exposure: Available data indicates that this product is not harmful. It should present no hazards in normal use. However product may be mildly irritating, but is unlikely to cause anything more than mild discomfort which should disappear once contact ceases.

Long Term exposure: No data for health effects associated with long term skin exposure.

Eye Contact:

Short term exposure: Exposure via eyes is considered to be unlikely. This product may be mildly irritating to eyes, but is unlikely to cause anything more than mild discomfort which should disappear once product is removed.

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. This product is unlikely to cause any irritation problems in the short or long term.

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.

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Section 3 - Composition/Information on Ingredients

Ingredients	CAS No	Conc, %	TWA (mg/m ³)	STEL (mg/m ³)
Thiabendazole	148-79-8	50	not set	not set
Other non hazardous ingredients	secret	<10	not set	not set
Water	7732-18-5	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 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 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 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 MSDS with you when you call.

Inhalation: First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

Skin Contact: Irritation is unlikely. However, if irritation does occur, flush with lukewarm, gently flowing water for 5 minutes or until chemical is removed.

Eye Contact: 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.

Ingestion: If product is swallowed or gets in mouth, 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: There is no risk of an explosion from this product under normal circumstances if it is involved in a fire.

This product is likely to decompose only after heating to dryness, followed by further strong heating.

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.

Flash point: Does not burn.

Upper Flammability Limit: Does not burn.

Lower Flammability Limit: Does not burn.

Autoignition temperature: Not applicable - does not burn.

Flammability Class: Does not burn.

Section 6 - Accidental Release Measures

Accidental release: Minor spills do not normally need any special cleanup measures. In the event of a major spill, prevent spillage from entering drains or water courses. As a minimum, wear overalls, goggles and gloves. Suitable materials for protective clothing include rubber, PVC. Eye/face protective equipment should comprise as a minimum, protective glasses and, preferably, goggles. If there is a significant chance that vapours or mists are likely to build up in the cleanup area, we recommend that you use a respirator. Usually, no respirator is necessary when using this product. However, if you have any doubts consult the Australian Standard mentioned below (section 8).

Stop leak if safe to do so, and contain spill. Absorb onto sand, vermiculite or other suitable absorbent material. If spill is too large or if absorbent material is not available, try to create a dike to stop material spreading or going into drains or waterways. Sweep up and shovel or collect recoverable 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. 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. 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.

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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 packages of this product in a cool place. Protect this product from light. Store in the closed original container in a dry, cool, well-ventilated area out of direct sunlight. Make sure that the product does not come into contact with substances listed under "Incompatibilities" in Section 10. Some liquid preparations settle or separate on standing and may require stirring before use. 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**, Industrial Clothing: **AS2919**, Industrial Eye Protection: **AS1336** and **AS/NZS 1337**, Occupational Protective Footwear: **AS/NZS2210**.

SWA Exposure Limits **TWA (mg/m³)** **STEL (mg/m³)**
Exposure limits have not been established by SWA for any of the significant ingredients in this product.

The ADI for Thiabendazole is set at 0.3mg/kg/day. The corresponding NOEL is set at 3mg/kg/day. ADI means Acceptable Daily Intake and NOEL means No-observable-effect-level. Values taken from Australian ADI List, Dec 2008.

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: No special ventilation requirements are normally necessary for this product. However make sure that the work environment remains clean and that vapours and mists are minimised.

Eye Protection: Eye protection is not normally necessary when this product is being used. However, if in doubt, wear suitable protective glasses or goggles.

Skin Protection: The information at hand indicates that this product is not harmful and that normally no special skin protection is necessary. However, we suggest that you routinely avoid contact with all chemical products and that you wear suitable gloves (preferably elbow-length) when skin contact is likely.

Protective Material Types: We suggest that protective clothing be made from the following: rubber, PVC.

Respirator: Usually, no respirator is necessary when using this product. However, if you have any doubts consult the Australian Standard mentioned above.

Section 9 - Physical and Chemical Properties:

Physical Description & colour:	White to pale yellowish liquid.
Odour:	Mild slightly aromatic odour.
Boiling Point:	Approximately 100°C at 100kPa.
Freezing/Melting Point:	Approximately 0°C.
Volatiles:	Water component.
Vapour Pressure:	2.37 kPa at 20°C (water vapour pressure).
Vapour Density:	No data.
Specific Gravity:	No specific data. Expected to be 1.1 - 1.2
Water Solubility:	Completely soluble in water.
pH:	No specific data. Expected to be neutral.
Volatility:	No data.
Odour Threshold:	No data.
Evaporation Rate:	No data.
Coeff Oil/water distribution:	No data
Autoignition temp:	Not applicable - does not burn.

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. Protect this product from light. Store in the closed original container in a dry, cool, well-ventilated area out of direct sunlight.

Incompatibilities: strong oxidising agents.

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Fire Decomposition: This product is likely to decompose only after heating to dryness, followed by further strong heating. Carbon dioxide, and if combustion is incomplete, carbon monoxide and smoke. Nitrogen and its compounds, and under some circumstances, oxides of nitrogen. Occasionally hydrogen cyanide gas. Oxides of sulfur (sulfur dioxide is a respiratory hazard) and other sulfur compounds. Most will have a foul odour. Water. 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: Acute toxicity: Effects of acute overexposure to Thiabendazole include dizziness, anorexia, nausea, and vomiting. Other symptoms such as itching, rash, chills, and headache occur less frequently. The symptoms are brief and are related to the dose level. The oral LD₅₀ is 3100 to 3600 mg/kg in the rat, 1395 to 3810 mg/kg in mice, and greater than 3850 mg/kg in the rabbit. The lethal dose in sheep is 1200 mg/kg. The dermal LC₅₀ in rabbits is greater than 5000 mg/kg. Thiabendazole is not a skin irritant or a sensitizer.

Chronic toxicity: Rats fed 200 mg/kg/day or less showed few or no growth effects. At higher doses (400 mg/kg/day), there was growth suppression. Death occurred in a few days at 1200 mg/kg/day and 30% mortality occurred within 30 days at 800 mg/kg/day. A decrease of active bone marrow at high doses was also noted. At doses somewhat below the LD₅₀, mice experienced significant liver, spleen, and intestinal effects. In dogs, high daily doses (200 mg/kg/day) for 2 years produced few effects other than occasional attacks of vomiting and persistent anaemia. Sheep experienced toxic depression and anorexia at very high doses (800 to 1000 mg/kg/day). Studies on cattle, sheep, goats, swine, horses, and zoo animals have shown few chronic symptoms at low doses.

Reproductive effects: A three-generation study in rats showed no adverse effects on reproduction at 20 to 80 mg/kg/day. However, four times this low therapeutic dose produced serious pregnancy related disorders (eclampsia) in sheep. Mice studied for five generations showed no effects at 10 mg/kg/day, decreased weanling weights at 50 mg/kg/day, and decreased weanling weight and size at 250 mg/kg/day. Reproductive effects in humans are not likely at anticipated levels of exposure.

Teratogenic effects: Pregnant rabbits fed doses of 75, 150, and 600 mg/kg/day produced pups with lower foetal weights at the highest dose tested. No birth defects were observed with Thiabendazole at any dose tested. Teratogenic effects are not likely from Thiabendazole exposure.

Mutagenic effects: Several studies with bacteria have failed to produce any chromosome changes or mutations due to Thiabendazole. It appears that the compound is not mutagenic.

Carcinogenic effects: A 2-year feeding study with rats at levels of 10 to 160 mg/kg/day produced no cancer-related effects attributable to Thiabendazole. Another study conducted over 18 months at the maximum tolerated dose in mice produced no evidence of cancer related effects. It does not appear that Thiabendazole is carcinogenic.

Organ toxicity: Dogs autopsied after a 2-year feeding study had incomplete development of bone marrow, a wasting away of lymph tissue, and other abnormalities. Most dogs tested at about 100 mg/kg/day for 2 years developed anaemia. The dogs recovered at the end of the study.

Fate in humans and animals: In four men given 1000 mg (approximately 14 mg/kg) Thiabendazole orally, plasma concentrations peaked at 13 to 18 ppm within an hour. Within 4 hours, 40% of the dose was excreted, and within 24 hours, 80% was excreted, mostly in the urine as metabolites of the compound. Elimination is rapid in other species as well. Rats almost completely eliminate the compound after 48 hours and sheep after 96 hours. Metabolites are distributed throughout most body tissues in sheep, but detectable in only a few tissues at low levels (less than 0.2 ppm) at 16 days and at very low levels (0.06 ppm or less) after 30 days.

Section 12 - Ecological Information

Effects on birds: No data are currently available.

Effects on aquatic organisms: Thiabendazole is of low toxicity to fish. The compound is not expected to appreciably accumulate in aquatic organisms. The bioconcentration factor for Thiabendazole in whole fish is 87 times the ambient water concentrations. Fish eliminated the compound within 3 days after being placed in Thiabendazole-free water.

Effects on other organisms: Earthworms are sensitive to the compound (LD₅₀ = approx. 20 µg/worm), while bees are not. It is nontoxic to bees.

Environmental Fate:

Breakdown in soil and groundwater: Thiabendazole's affinity for binding to soil particles increases with increasing soil acidity. It is highly persistent. The field half-life for Thiabendazole has been reported as 403 days. In one study, 9 months following application, most of the residues (85 to 95%) were recovered from soil. Due to its binding and slight solubility in water, it is not expected to leach readily from soil.

Breakdown in water: Thiabendazole is stable in aqueous suspension and acidic media. Its low water solubility will make it unlikely to be in solution, and it will most likely be bound to sediment.

Breakdown in vegetation: No metabolism was seen with seed potatoes, but photoproducts were detected on sugar beet leaves. Total residues in sugar beets were 78% parent compound with the remaining 22% being benzimidazole, benzimidazole-2-carboxamide, and unidentified products. Thiabendazole is readily absorbed by roots and translocated to all parts of a plant, but predominantly to the leaf margins.

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Section 13 - Disposal Considerations

Disposal: Instructions concerning the disposal of this product and its containers are given on the product label. These should be carefully followed.

Section 14 - Transport Information

ADG Code: This product is not classified as a Dangerous Good. 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 to be found in the public AICS Database. The following ingredients: Thiabendazole, are mentioned in the SUSDP.

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, 7th Edition
AICS	Australian Inventory of Chemical Substances
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
SWA	Safe Work Australia, formerly ASCC and NOHSC
NOS	Not otherwise specified
NTP	National Toxicology Program (USA)
R-Phrase	Risk Phrase
SUSDP	Standard for the Uniform Scheduling of Drugs & Poisons
UN Number	United Nations Number

Contact Points:

Call Farnoz on (02)9431 7800 and ask for the technical manager.

Fax: (02)9431 7700

Police and Fire Brigade:

Dial 000

Emergency contact:

1800 024 973 (24 hours)

If ineffective:

Dial Poisons Information Centre

(13 1126 from anywhere in Australia)

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Please read all labels carefully before using product.

This MSDS is prepared in accord with the SWA document "National Code of Practice for the Preparation of Material Safety Data Sheets" 2nd Edition [NOHSC:2001(2003)]
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