

Section 1 - Identification of Chemical Product and Company

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Trade Name: TMTD Flowable
Product Use: Fungicide for Turf
Creation Date: January 2005
Revised: March 2008

Section 2 - Hazards Identification

Statement of Hazardous Nature

This product is classified as hazardous –Xn Harmful, Xi Irritant according to ASCC Australia

This product is not a Dangerous Good according to the Australian Dangerous Goods (ADG) Code.

Risk Phrases: R68 Harmful Mutagen Cat 3; R20/22 – harmful by inhalation and if swallowed; R36/37 – Irritating to eyes and respiratory system; R43 - May cause sensitisation by skin contact.

Safety Phrases: S23/24/25 Do not breathe fumes, Avoid contact with skin and eyes

SUSDP Classification: S6

ADG Classification: Not a Dangerous Good

Packaging Group: Not a Dangerous Good

UN Number: None allocated

Hazchem Code: 2X

Emergency Overview

Physical Description & colour: White to yellow coloured liquid

Odour: Acrid odour

Major Health Hazards: Thiram is slightly toxic by ingestion and inhalation, but it is moderately toxic by dermal absorption. Acute exposure in humans may cause headaches, dizziness, fatigue, nausea, diarrhoea, and other gastrointestinal complaints.

Potential Health Effects

Inhalation: Thiram is slightly toxic by inhalation

Skin Contact: Moderately toxic by dermal absorption

Eye Contact: Irritating to eyes

Ingestion: Thiram is slightly toxic by ingestion

Acute exposure in humans may cause headaches, dizziness, fatigue, nausea, diarrhoea, and other gastrointestinal complaints. Thiram is irritating to the eyes, skin, and respiratory tract. It is a skin sensitizer. Symptoms of acute inhalation exposure to Thiram include itching, scratchy throat, hoarseness, sneezing, coughing, inflammation of the nose or throat, bronchitis, dizziness, headache, fatigue, nausea, diarrhoea, and other gastrointestinal complaints. Persons with chronic respiratory or skin disease are at increased risk from exposure to Thiram. Ingestion of Thiram and alcohol together may cause stomach pains, nausea, vomiting, headache, slight fever, and possible dermatitis.

Carcinogen Status:

ASCC: No significant ingredient is classified as carcinogenic by ASCC at stated concentration.

NTP: No significant ingredient is classified as carcinogenic by NTP at stated concentration

IARC: No significant ingredient is classified as carcinogenic by IARC at stated concentration

Section 3 - Composition/Information on Ingredients

Ingredients	CAS No	Conc.%	TWA (mg/m ³)	STEL (mg/m ³)
Thiram	137-26-8	60	1	not set
Other non hazardous ingredients including wetting agents and 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.

Ingestion: Call Poison Information Centre or doctor immediately. **Do not** induce vomiting unless instructed to do so by medical advice. Wash mouth with water and give a glass of water to drink if affected person able to drink. Do not give anything by mouth to an unconscious person.

Inhalation: If vapours or mists have been inhaled, and irritation or unusual symptoms have developed, remove to fresh air and observe until recovered. If irritation or symptoms persists more than about 30 minutes, seek medical advice.

Skin Contact: If product gets on skin, immediately remove contaminated clothing and wash skin thoroughly with soap and water to remove material. If you begin to feel unwell, seek medical attention

Eye Contact: Immediately irrigate with copious amounts of lukewarm, gently flowing water for 15 – 20 minutes or until the product is removed or irritation has ceased, while holding the eyelid(s) open. Remove contact lenses after 5 minutes then continue rinsing. Obtain medical advice.

Notes to Doctor: Treat symptomatically. However, note the sensitising nature of this product. Observe for signs of sensitisation, and treat appropriately if evident. Avoid giving alcohol – may cause vomiting and shock. We suggest contact with the Poisons Information Centre for expert advice.

Section 5 - Fire Fighting Measures

Fire and Explosion Hazards: There is no risk of an explosion from this product under normal circumstance if it is involved in a fire

Extinguishing Media: Use extinguishing media suited to materials burning – Large fires, foam or water spray, small fires, Carbon dioxide, dry chemical

Fire Fighting: Fire fighters should wear full protective gear, including self-contained breathing apparatus (AS/NZS 1715/1716). Keep unnecessary people away. If it can be done safely, remove intact containers from the fire. Bund area with sand or earth to prevent contamination of drains or waterways. Dispose of extinguishing agent and spillage safely later. Do not release contaminated water into the environment

Flash point: Does not burn

Upper Flammability Limit: N/A

Lower Flammability Limit: N/A

Auto ignition temperature: No data

Flammability Class: N/A

Fire Decomposition Products: In a fire, toxic compounds of carbon, nitrogen and sulfur can be expected. May become combustible liquid at high temperatures

Hazchem Code: 2X

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. See above under Personal Protection regarding Australian Standards relating to personal protective equipment. Stop leak if safe to do so, and contain spill. Absorb onto sand, vermiculite or other suitable absorbent material. Avoid using sawdust or other combustible material. Sweep up and shovel or collect recoverable product into labelled containers for recycling or salvage, and dispose of promptly. After spills, wash area preventing runoff from entering drains. If a significant quantity of material enters drains, advise emergency services. Triple or preferably pressure rinse containers before disposal. Add rinsate to spray tank. Do not dispose of undiluted chemical on site. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush or puncture and bury empty containers in local authority landfill. Empty containers should not be burnt. If there is any conflict between this MSDS and label, instructions on the label prevail. Dispose of only in accord with all regulations. Launder all contaminated clothing before re-use and advise laundry of nature of contaminant.

Section 7 - Handling and Storage

Handling: This product is a S6 Poison. Observe all relevant regulations regarding sale, transport and storage of this class of product. 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, well ventilated dry area. Do not store for prolonged periods in direct sunlight. Store away from children, animals, food, animal feed, seed and fertilisers. Containers should be kept closed in order to minimise contamination. Keep from extreme heat and open flames, and make sure that the product does not come into contact with substances listed under "Materials to avoid" in Section 10.

Section 8 - Exposure Controls and Personal Protection

This product is intended for outdoor use where engineering controls are not necessary. 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)
	1	not set	0.004	0.4

A time weighted average (TWA) has been established for Thiram. This value is 1mg/m³. The corresponding STEL level is "not set". 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.

ADI means Acceptable Daily Intake and NOEL means No-observable-effect-level.

Ventilation: Avoid vapours and provide local exhaust ventilation where necessary.

Eye Protection: To avoid contact with eyes, wear face shield, goggles or safety glasses. Emergency eyewash should be readily accessible.

Skin Protection: Wear impermeable elbow length PVC gloves to prevent skin contact. Wear overall and long sleeves to prevent contact as absorption through the skin is harmful.

Respirator: Use P2 type canister respirator if required

Safety Boots: Leather may be permeable to the concentrate, so wear rubber or plastic boots
 Provision of eye wash facilities and safety shower recommended.

Wash hands before eating, drinking, smoking or going to toilet, launder protective clothing before re-use or destroy contaminated clothing. Advise laundry of nature of contamination.

Section 9 - Physical and Chemical Properties:

Physical Description & colour:	White to yellow liquid
Odour:	Acrid odour
Boiling Point:	Approx 100°C at 100kPa
Freezing Point	0°C
Melting Point:	N/A liquid at normal temperatures
Volatiles:	Water component
Vapour Pressure:	As for water vapour, 18mm Hg at 20°C
Vapour Density:	No data.
Specific Gravity:	1.18 – 1.19 @ 20°C
Water Solubility:	Forms suspensions in water
pH:	No data.
Odour Threshold:	No data.
Evaporation Rate:	No data.
Coeff Oil/water distribution:	No data
Flash Point:	No data
Auto ignition temp:	N/A
Corrosiveness:	Not corrosive.

Section 10 - Stability and Reactivity

Reactivity: This product is stable under normal temperatures and pressures, when stored and handled in accordance with this MSDS

Conditions to Avoid: Store away from heat or fire.

Incompatibilities: Incompatible with strong acids, strong oxidising agents, strong alkalis. The addition of a strong acid will cause release of carbon disulphide vapour (volatile liquid, toxic)

Fire Decomposition: In a fire, formation of toxic compounds of carbon, nitrogen and sulfur can be expected

Polymerisation: Unable to spontaneously polymerise

Section 11 - Toxicological Information

Eye Contact: Will irritate eyes **Skin Contact:** Prolonged contact with concentrate may cause irritation

Inhalation: May irritate mucous membranes of nose and mouth

Ingestion: Possible symptoms of exposure include headache, arrhythmia, shortness of breath and nausea. Consumption of alcohol increases toxic effects

Oral Toxicity: LD₅₀ (Rat) 2,600 mg/Kg, LD₅₀ (Mice) 1500-2000 mg/Kg, LD₅₀ (Rabbit) >2000 mg/Kg

Dermal Toxicity: LD₅₀ (Rat) > 2000 mg/L

Inhalation Toxicity: LC₅₀ (Rat 4 hr) > 4.42 mg/L

Skin Sensitisation: Sensitising with prolonged and repeated skin contact

Chronic toxicity: Symptoms of chronic exposure to Thiram in humans include drowsiness, confusion, loss of sex drive, in-coordination, slurred speech, and weakness, in addition to those due to acute exposure. Repeated or prolonged exposure to Thiram can also cause allergic reactions such as dermatitis, watery eyes, sensitivity to light, and conjunctivitis. Symptoms of muscle in-coordination and paralysis from Thiram poisoning have been shown to be associated with degeneration of nerves in the lower lumbar and pelvic regions.

Reproductive effects: The data suggest that reproductive effects occur at high doses not likely to be experienced by humans

Teratogenic effects: The laboratory data suggest that high doses are required to cause teratogenic effects

Mutagenic effects: Thiram has been found to be mutagenic in some test organisms but not in others. Thus, the evidence is inconclusive

Carcinogenicity: The data indicates that Thiram is not carcinogenic.

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Organ toxicity: Studies have shown evidence of damage to the liver by Thiram in the form of decreased liver enzyme activity and increased liver weight. Thiram may also cause damage to the nervous system, blood, and kidneys.

Fate in humans and animals: In the body, carbon disulfide is formed from the breakdown of Thiram and does contribute to the toxicity of Thiram to the liver. Thiram is not a member of the ethylene(bis)dithiocarbamate (EBDC) chemical family, and thus it should not generate ethylene thiourea (ETU).

Acute toxicity: Thiram is slightly toxic by ingestion and inhalation, but it is moderately toxic by dermal absorption. Acute exposure in humans may cause headaches, dizziness, fatigue, nausea, diarrhoea, and other gastrointestinal complaints. Thiram is irritating to the eyes, skin, and respiratory tract. It is a skin sensitizer. Symptoms of acute inhalation exposure to Thiram include itching, scratchy throat, hoarseness, sneezing, coughing, inflammation of the nose or throat, bronchitis, dizziness, headache, fatigue, nausea, diarrhoea, and other gastrointestinal complaints. Persons with chronic respiratory or skin disease are at increased risk from exposure to Thiram. Ingestion of Thiram and alcohol together may cause stomach pains, nausea, vomiting, headache, slight fever, and possible dermatitis. Workers exposed to Thiram during application or mixing operations within 24 hours of moderate alcohol consumption have been hospitalized with symptoms

Section 12 - Ecological Information

Toxic to aquatic organisms and may cause adverse effects in the aquatic environment.

Ecotoxicity:

Effects on aquatic organisms:

Fish toxicity: LC₅₀ (96 h) bluegill sunfish (*Lepomis macrochirus*) 0.045mg/L

LC₅₀ (96 h) in trout (*Onchorhynchus mykiss*) 0.128mg/L

Daphnia toxicity: EC₅₀ (48 h) water flea (*Daphnia magna*) 0.21mg/L

Effects on other organisms: Not toxic to bees

Environmental Fate:

Thiram is rapidly degraded in the soil. Average field half-life of Thiram is < 1 day

Section 13 - Disposal Considerations

Disposal: Full details regarding disposal of used containers, 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

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.

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	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
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

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 NOHSC document "National Code of Practice for the Preparation of Material Safety Data Sheets" 2nd Edition [NOHSC:2011(2003)]
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