MATERIAL SAFETY DATA SHEET

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1. IDENTIFICATION OF MATERIAL AND SUPPLIER

PRODUCT NAME: Barmac Thiram DG Fungicide	**OTHER NAMES:** No other names	**APVMA REGISTRATION NUMBER**: 41128
USE: Fungicide. **FORM:** Water Dispersible Granule	**AUSTRALIAN DISTRIBUTOR:** Barmac, a division of Amgrow Pty Ltd. 17 Machinery Street, Darra, QLD 4076 Phone: (07) 3727 3000 Fax: (07) 3727 3030	**EMERGENCY PHONE NUMBERS:** Fire Brigade, Ambulance and Police Services: 000 Poisonings: 131 126 POISON INFORMATION CENTRE

2. HAZARD IDENTIFICATION

Classified as hazardous according to the criteria of SWA. Not dangerous according to the ADG Code. **HAZARD CATEGORY:** Xn (Harmful) according to the SWA. **POISON SCHEDULE:** S6 according to SUSMP.	**RISK PHRASES:** R20/22, R48/22, R36/38, R43.	**SAFETY PHRASES:** S2,S26, S36/37, S60, S61.
	HAZCHEM CODE: Not Applicable.	**UN NUMBER:** . Not Applicable

3. COMPOSITION INFORMATION ON INGREDIENTS

MIXTURE: **CHEMICAL IDENTITY:**	**PROPORTION**:	**CAS No:**
Tetramethylthiuram disulphide	80%	137-26-8
Non-hazardous ingredients	20%	Not Applicable

4. FIRST AID MEASURES

SWALLOWED: If more than 15 minutes away from a hospital, induce vomiting, preferably using Ipecac Syrup APF.	**SKIN:** Remove contaminated clothing and wash affected areas with soap and water. Seek medical attention if irritation develops.
EYES: In case of eye contact, check for and remove any contact lenses. Immediately irrigate eyes with plenty of running water for at least 15 minutes, keeping eyelids open. Seek immediate medical attention.	**INHALED:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, seek immediate medical attention.

FIRST AID FACILITIES: Provide eye wash and shower facilities in workplace.

5. HEALTH EFFECTS

INGESTION: Harmful if swallowed.	**EYES**: Irritant to eyes.
SKIN: May cause sensitisation and irritation to skin.	**INHALED**: Harmful if inhaled. Will irritate mucous membranes.

CHRONIC: No data for health effects associated with long term ingestion, inhalation, skin contact or eye contact with this product.

6. FIRE-FIGHTING MEASURES

UNUSUAL FIRE & EXPLOSION HAZARDS: Product is not flammable. Dust explosions may be a risk if dust levels are allowed to become too great. exposed to extreme heat or flames product may give off oxides of nitrogen and sulphur.	**SPECIAL FIRE FIGHTING PROCEDURES:** Must wear suitable breathing apparatus when fighting fire. Approach upwind. Ensure that no spillage enters drains or water courses.
EXPOSURE LIMITS: SWA has set the an exposure standard for Thiram as TWA at 1.0 mg/m^3.	**EXTINGUISHING MEDIA:** Preferred extinguishing media are carbon dioxide, dry chemical, foam, water fog.
FLAMMABILITY: Not Flammable.	**HAZCHEM CODE:** 2X.

7. ACCIDENTAL RELEASE MEASURES

PERSONAL PROTECTION: Avoid contact with the skin through use of appropriate clothing and gloves and footwear. An agricultural respirator should be worn when handling or spraying product.

ENVIRONMENTAL PROTECTION: Contain spill by absorbing with sand, earth or other absorbent material. Collect and seal waste in properly labelled containers or drums for disposal. Do not allow into drains or waterways. If contamination of sewers or waterways has occurred advise local emergency services

CLEAN UP AND DISPOSAL: 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. After spills, wash area preventing runoff from entering drains. This material may be suitable for approved landfill. Ensure legality of disposal by consulting regulations prior to disposal.

8. HANDLING AND STORAGE

HANDLING: Avoid contact with eyes and skin. Do not inhale dust or spray mist. Wash hands after use.

STORAGE: Store in a cool, well ventilated area. This product is a Scheduled Poison. Do not store for prolonged periods in direct sunlight.

9. EXPOSURE CONTROL/PERSONAL PROTECTION

EYE PROTECTION: Eye protection such as protective glasses or goggles is recommended when this product is being used.	**PROTECTIVE MATERIAL TYPES:** There is no specific recommendation for any particular protective material type.
SKIN PROTECTION: Minimise contact with skin and wear full clothing and suitable gloves (preferably elbow-length).	**RESPIRATOR:** It is advised that an agricultural respirator be used when spraying this product.
EXPOSURE LIMITS (TWA): SWA has set the an exposure standard for Thiram for TWA at 1.00 mg/m^3.	**VENTILATION**: This product should only be used where there is ventilation that is adequate to keep exposure below the TWA levels. If necessary, use a fan.

10. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Small brown granule.	**BOILING POINT:** No data.	**BULK DENSITY:** 0.3 g/mL	**FLAMMABILITY:** Not Flammable.
FLASH POINT: No data.	**VAPOUR DENSITY:** No data	**VAPOR PRESSURE (20°C):** <10 -5 m bar.	**SOLUBILITY:** 0.03g/L.

11. STABILITY AND REACTIVITY

STABILITY: Stable if stored in original container under normal ambient conditions.	**INCOMPATIBILITY/ CONDTIONS TO AVOID:** Strong Acids, Strong Bases, Strong Oxidising Agents.

HAZARDOUS DECOMPOSITION PRODUCTS:
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 in reducing atmospheres. Oxides of sulfur (sulfur dioxide is a respiratory hazard) and other sulfur compounds. Most will have a foul odour.

12. TOXICOLOGICAL INFORMATION

ROUTE OF EXPOSURE: Inhalation, ingestion, eye and skin:

ACUTE TOXICOLOGICAL INFORMATION:
The following refers to Tetramethylthiuram disulphide:

Tetramethylthiuram disulphide is harmful by ingestion and inhalation and by dermal absorption. Acute exposure in humans may cause headaches, dizziness, fatigue, nausea, diarrhoea, and other gastrointestinal complaints. In rats and mice, large doses of Tetramethylthiuram disulphide produced muscle incoordination, hyperactivity followed by inactivity, loss of muscular tone, laboured breathing, and convulsions. Most animals died within 2 to 7 days.

Ingestion of Thiram and alcohol together may cause stomach pains, nausea, vomiting, headache, slight fever, and possible dermatitis. Workers exposed to Tetramethylthiuram disulphide during application or mixing operations within 24 hours of moderate alcohol consumption have been hospitalized with symptoms.

The 4-hour inhalation LC_{50} for Tetramethylthiuram disulphide is greater than 500 mg/L in rats. Reported oral LD_{50} values for Tetramethylthiuram disulphide are 620 to over 1900 mg/kg in rats; 1500 to 2000 mg/kg in mice; and 210 mg/kg in rabbits. The dermal LD_{50} is greater than 1000 mg/kg in rabbits and in rats

13. ECOLOGICAL INFORMATION

ECOTOXICITY:
The following refers to Tetramethylthiuram disulphide:

Very toxic to aquatic organisms, may cause long-term adverse effects to the aquatic environment. This product is biodegradable. It will not accumulate in the soil or water or cause long term problems.

EFFECTS ON BIRDS:
Thiram is practically nontoxic to birds. The reported dietary LC_{50} of Thiram in Japanese quail is greater that 5000 ppm. Reported dietary LC_{50} values in pheasants and mallard ducks are 2800 ppm and 673 ppm, respectively. The LD_{50} for the compound in red-winged blackbirds is greater than 100 mg/kg.

EFFECTS ON AQUATIC ORGANISMS:
Thiram is highly toxic to fish. The LC_{50} for the compound is 0.23 mg/L in bluegill sunfish, 0.13 mg/L in trout, and 4 mg/L in carp. Thiram is not expected to bioconcentrate in aquatic organisms.

EFFECTS ON OTHER ORGANISMS:
Thiram is nontoxic to bees.

ENVIRONMENTAL FATE:
The following refers to Tetramethylthiuram disulphide:

BREAKDOWN IN SOIL AND GROUNDWATER:
Thiram is of low to moderate persistence. It is nearly immobile in clay soils or in soils high in organic matter. Because it is only slightly soluble in water (30 mg/L) and has a strong tendency to adsorb to soil particles, Thiram is not expected to contaminate groundwater.. The major metabolites of Thiram in the soil are copper dimethyldithiocarbamate, dithiocarbamate, dimethylamine, and carbon disulfide. In soil, Thiram will be degraded by microbial action or by hydrolysis under acidic conditions. Thiram will not volatilize from wet or dry soil surfaces.

BREAKDOWN IN WATER:
In water, Thiram is rapidly broken down by hydrolysis and photodegradation, especially under acidic conditions. Thiram may adsorb to suspended particles or to sediment.

BREAKDOWN IN VEGETATION:
No data are currently available.

14. DISPOSAL

WASTE DISPOSAL METHOD: Dispose according to applicable local and state government regulations.

15. TRANSPORT INFORMATION

UN No: Not applicable.

SPECIAL PROVISIONS: Not Applicable.

16. REGULATORY INFORMATION

POISONS SCHEDULE: S6 according to SUSMP.

HAZARD CATEGORY: Xn (Harmful).

PACKAGING AND LABELLING: Not Set.

CLASSIFICATION: Not classified according to the ADG.

16. OTHER INFORMATIONS

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
SWA Safe Work Australia, formerly ASCC and NOHSC
CAS Number Chemical Abstracts Service Registry Number
SUSMP Standard for the Uniform Scheduling of Medicines & Poisons
UN: United Nations Number
TWA: Time weight average.