MATERIAL SAFETY DATA SHEET

PRODUCT: BORON

Date of Issue: 16 AUG 2021 **Valid until:** 15 AUG 2026 **GHS** Format

1. IDENTIFICATION OF MATERIAL & SUPPLIER

Product (material) Name: MANUTEC BORON
Other names: Borax Decahydrate/Sodium Tetraborate/Disodium Tetraborate
Manufacturer's code:MTO0544B
Recommended use: as a trace element fertiliser to correct Boron deficiency in plants

Manufacturer/Supplier Information:

Name: MANUTEC PTY LTD
Address: 30 Jonal drive, Cavan, South Australia 5094
Telephone No:+61-8-8260 2277 **Fax**:+61-8-8260 2399
Email: manutec@manutec.com.au

Emergency contact only: Poisons Information Centre (Australia) 131126

2. HAZARDS IDENTIFICATION

Poisons Schedule (Aust) 5

Hazard Classification:
Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)

Hazard Categories: Toxic To Reproduction - Category 1B

Pictograms:

Signal Word: Danger

Hazard Statements:
H360FD May damage fertility. May damage the unborn child.

Precautionary Statements:

Prevention	P201	Obtain special instructions before use.
	P202	Do not handle until all safety precautions have been read and understood.
	P281	Use personal protective equipment as required.

	Response P308 + P313 IF exposed or concerned: Get medical advice/ attention.	
Storage	P405	Store locked up.
Disposal	P501	Dispose of contents/container in accordance with local / regional / national /international regulations.

National Transport Commission (Australia)

Dangerous Goods Classification

NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Entity	Formula	CAS Number	Proportion
Borax Decahydrate	Na2B4O7.10H2O	1303-96-4	>99.9 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed If large amounts are swallowed (i.e. more than one teaspoon), give two glasses of water and seek medical attention.

Eye Use eye wash fountain or fresh water to cleanse eye. If irritation persists for more than 30 minutes, seek medical attention**.**

Skin Remove contaminated clothing. Wash affected area with soap and plenty of water. Seek medical attention if irritation occurs. Wash clothing before reuse.

Inhaled Remove victim from exposure to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek medical attention immediately**.**

Advice to Doctor Observation only is required for adult ingestion of less than 9 grams of borax decahydrate. For ingestion in excess of 9 grams, maintain adequate kidney function and force fluids. Gastric lavage is recommended for symptomatic patients only. Haemodialysis should be reserved for massive acute ingestion or patients with renal failure. Boron analyses of urine or blood are only useful for documenting exposure and should not be used to evaluate severity ofpoisoning or to guide treatment.

Medical Conditions Aggravated by Exposure

Potential health effects: Inhalation is the most significant route of exposure in occupational and other settings. Dermal

exposure is not usually a concern because borax decahydrate is poorly absorbed through intact skin. Signs and symptoms of exposure: Symptoms of accidental over-exposure to borax decahydrate have been associated with ingestion or absorption through large areas of damaged skin. These may include nausea, vomiting,and diarrhoea, with delayed effects of skin redness and peeling. Refer to section 11 for details on Toxicological data.

5. FIRE FIGHTING MEASURES

General Measures	Clear fire area of all non-emergency personnel. Stay upwind. Keep out of low areas. Eliminate ignition sources. Move fire exposed containers from fire area if it can be done without risk.
Flammability Conditions	Product is a non-flammable solid.
Extinguishing Media	Any fire extinguishing media may be used on nearby fires.
Fire and Explosion Hazard	Non-combustible solid. Material does not burn nor will it support combustion.

Hazardous Products of Combustion

Non-combustible solid. Borax decahydrate is not flammable, combustable or explosive. The product is itself a flame retardant. Incompatible with strong reducing agents such as metal hydrides, acetic anhydride, alkali metals, and sources of ignition. Hazardous decomposition products have not been reported. Reaction with strong reducing agents such as metal hydrides, acetic anhydride or alkali metals will generate hydrogen gas which could create an explosive hazard.

Special Fire Fighting Instructions

Do NOT allow fire fighting water to reach waterways, drains or sewers. Store fire fighting water for treatment.

Personal Protective Equipment

Fire fighters should wear a positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots and gloves) or chemical splash suit. Clear fire area of all non emergency personnel. Stay upwind. Keep out of low areas. Eliminate ignition sources. Move fire exposed containers from fire area if it can be done without risk. Do NOT allow fire fighting water to reach waterways, drains or sewers. Store fire fighting water for treatment.

Flash Point	No Data Available
Lower Explosion Limit	No Data Available
Upper Explosion Limit	No Data Available
Auto Ignition Temperature	No Data Available
Hazchem Code	No Data Available

6. ACCIDENTAL RELEASE MEASURES

General Response: Procedure Avoid accidents, clean up immediately. May be Slippery when spilt. Eliminate all sources of ignition. Increaseventilation. Avoid generating dust. Stop leak if safe to do so. Isolate the danger area.

Use clean, non-sparking tools and equipment Clean Up Procedures Contain and sweep/shovel up spills with dust binding material or use an industrial vacuum cleaner. Transfer to a suitable, labelled chemical-waste container and dispose of promptly as hazardous waste. Avoid contamination of water bodies during clean up and disposal.

Spillage into water: Where possible, remove any intact containers from the water. Advise local water authority that none of the affected water should be used for irrigation or for the abstraction of potable water until natural dilution returns the boron value to its normal environmental background level. Containment Stop leak if safe to do so. Isolate the danger area.

Environmental Precautionary Measures

Do NOT let product reach drains or waterways. If product does enter a waterway, advise the Environmental Protection Authority or your local Waste Management Evacuation Criteria Evacuate all unnecessary personnel.

Personal Precautionary Measures

Personnel involved in the clean up should wear full protective clothing as listed in section 8.

7. HANDLING AND STORAGE

Handling

Ensure an eye bath and safety shower are available and ready for use.Observe good personal hygiene practices and recommended procedures.To maintain package integrity and to minimise caking of the product, Good housekeeping and dust prevention procedures should be followed to minimise dust generation and accumulation. Wash thoroughly after handling. Take precautionary measures against static discharges by bonding and grounding equipment. Avoid contact with eyes, skin and clothing. Do not inhale product dust/fumes. Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained. The product should be kept away from strong reducing agents. Apply above handling advice when mixing with other substances.

Storage

Store in a cool, dry, well-ventilated area. Keep containers tightly closed when not in use. Inspect regularly for deficiencies such as damage or leaks.
Protect against physical damage. Store away from incompatible materials as listed in section 10. This product is not classified dangerous for transport according to The Australian Code for the Transport of Dangerous Goods by Road and Rail.

Container

Store in original packaging as approved by manufacturer.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

The following exposure standard has been established by The Australian Safety and Compensation Council (ASCC); Disodium tetraborate decahydrate (Borax Decahydrate) CAS 1303-96-4: TWA = 5mg/m3 NOTE: 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.

These exposure standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

Exposure Limits	No Data Available
Biological Limits	No information available on biological limit values for this product.
Engineering Measures	A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Maintain air concentrations below occupational exposure standards. Wash hands before breaks and at the end of the workday. Remove and wash soiled clothing.

Personal Protection Equipment

RESPIRATOR: Wear an effective dust mask where dusts/vapours are generated and engineering controls are inadequate (AS1715/1716).
EYES: Safety glasses with side shields or goggles (AS1336/1337).
HANDS: Wear rubber or PVC gloves (AS2161).
CLOTHING: Long-sleeved protective clothing and safety footwear (AS3765/2210).
NOTE: Goggles and gloves are not required for normal industrial exposures, but may be warranted if environment is excessively dusty.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Solid
Appearance	Crystalline Solid
Odour	Odourless
Colour	White
pH	9.2
Vapour Pressure	Negligible
Relative Vapour Density	No Data Available
Boiling Point	No Data Available
Freezing Point	No Data Available
Solubility	Completely soluble in water at 25oC
Specific Gravity	1.71-1.73 (20'C)
Flash Point	No Data Available
Auto Ignition Temp	No Data Available
Evaporation Rate	No Data Available
Bulk Density	No Data Available
Corrosion Rate	No Data Available
Decomposition Temperature	No Data Available
Density	1.73 g/cm3 Relative
Specific Heat	No Data Available
Molecular Weight	381.37 g/mol
Melting Point	62oC

10. STABILITY AND REACTIVITY

Chemical Stability
Product is stable under normal conditions of use, storage and temperature.
Borax decahydrate is a stable product, but when heated it loses water, eventually forming anhydrous borax (Na2B4O7).
Conditions to Avoid
Avoid excessive heat, direct sunlight, static discharges,
generating dust, moisture and high temperatures.
Materials to Avoid
Incompatible with strong reducing agents such as metal hydrides,
acetic anhydride, alkali metals, and sources of ignition, strong oxidising agents.
Hazardous Decomposition Products
Hazardous decomposition products have not been reported.
Reaction with strong reducing agents such as metal hydrides, acetic anhydride or alkali metals will generate hydrogen gas which could create an explosive hazard.
Hazardous Polymerisation
Hazardous polymerization has not been reported. Reaction with strong reducing agents such as metal hydrides, acetic anhydride or alkali metals will generate hydrogen gas which could create an explosive hazard.

11. TOXICOLOGICAL INFORMATION

General Information
LD50 Oral - Rat - 4,500 - 5,000 mg/kg
LD50 Dermal - Rabbit - 10,000 mg/kg
Animal feeding studies in rat, mouse and dog, at high doses, have demonstrated effects on fertility and testes. Studies with the chemically related boric acid in the rat, mouse and rabbit, at high doses, demonstrate developmental effects on the fetus, including fetal weight loss and minor skeletal variations. The doses administered were many times in excess of those to which humans would normally be exposed. Human epidemiological studies show no increase in pulmonary disease in occupational populations with cronic exposures to boric acid dust and sodium borate dust. A recent epidemiological study under the conditions of normal occupational eposure to borate dusts indicated no effect on fertility

EyeIrritant Borax decahydrate is a serious eye irritant.

Ingestion Products containing borax decahydrate are not intended for ingestion.
Borax decahydrate has low acute toxicity.
Small amounts (e.g. a teaspoonful) swallowed accidentally are not likely to cause effects; swallowing amounts larger than that may cause gastrointestinal symptoms

Inhalation
Occasional mild irritation effects to nose and throat may occur from inhalation of borax decahydrate dusts at levels higher than 10 mg/m3.
Inhalation is the most significant route of exposure in occupational and other settings.

Skin Irritant Borax decahydrate does not cause irritation to intact skin. Dermal exposure is not usually a concern because borax decahydrate is poorly absorbed through intact skin. Non-irritant. Borax decahydrate is not a skin sensitizer

Reproduction Fetotoxicity :
Presumed human reproductive toxicant. May damage fertility or the unborn child.

Carcinogen Category No Data Available

12. ECOLOGICAL INFORMATION

Ecotoxicity
Toxicity to fish LC50 - Carassius auratus (goldfish) - 178 mg/l - 72 h
Toxicity to daphnia and other aquatic invertebrates : EC50 - Daphnia magna (Water flea) - 1,085 - 1,402 mg/l - 48 h
Toxicity to algae IC50 - Desmodesmus subspicatus (green algae) - 158 mg/l - 96 h.
Boron is naturally occuring and ubiquitous in the environment. Borax decahydrate decomposes in the environment to natural borate.
Phytotoxicity: Boron is an essential micronutrient for healthy growth of plants, however, it can be harmful to boron sensitive plants in higher quantities. Care should be taken to minimise the amount of borate released to the environment .Boron occurs naturally in sea water at an average concentration of 5mg/B/1or less. In dilute aqueous solutions the predominant boron species present is undissociated boric acid.
Phytotoxicity: Boron is an essential micronutrient for healthy growth of plants, however, it can be harmful to boron sensitive plants in higher quantities. Care should be taken to minimise the amount of borate released to the environment.
Persistence/Degradability
Mobility
The product is soluble in water and is leachable through normal soil.
Partition coefficient :n-octanol/water: Log Kow (Pow):1.53+-0.05 (at 22+-1'C) pH 7.5
Environmental Fate
Large amounts of borax decahydrate can be harmful to plants and other species. Therefore releases to the environment should be minimised.
ENVIRONMENTAL PRECAUTIONS:
Borax decahydrate is a water-soluble white powder that may, at high concentrations cause damage to trees or vegetation by root absorption.
Bioaccumulation Potential Not significantly bioaccumulative.
Environmental Impact No Data Available

13. DISPOSABLE CONSIDERATIONS

General Information
Dispose of in accordance with all local, state and federal regulations.
All empty packaging should be disposed of in accordance with Local, State, and Federal Regulations or recycled/reconditioned at an approved facility**.**

Special Precautions for Land Fill
Contact a specialist disposal company or the local waste regulator for advice. Small quantities of Borax decahydrate can usually be disposed of at landfill sites. No special disposal treatment is required, but local authorities should be consulted about any specific local requirements. Tonnage quantities of product are not recommended to be sent to landfills. Such product should, if possible, be used for an appropriate application.

14. TRANSPORT INFORMATION

Land Transport (Australia)

Proper Shipping Name	BORAX DECAHYDRATE
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available

National Transport Commission (Australia)
Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code**)**
Dangerous Goods Classification
NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

15. REGULATORY INFORMATION

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National/Regional Inventories

Australia (AICS)	Listed
Canada (DSL)	Listed
Canada (NDSL)	Not Determined
China (IECSC)	Listed
Europe (EINECS)	215-540-4
New Zealand (NZIoC)	Listed

16. OTHER INFORMATION

The MSDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

STATEMENT OF DISCLAIM:

This Material Safety Data Sheet has been developed according to WHS Code of Practice Preparation of Safety Data Sheets for Hazardous Chemicals Guidelines and written in accordance with GHS format.

All information is as accurate and up-to-date as possible. Since Manutec Pty Ltd cannot anticipate or control the conditions under which this information may be used, each user should review the information in the specific context of the intended application. Manutec Pty Ltd will not be responsible for damages of any nature resulting from use of or reliance upon this information.

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