

# MATERIAL SAFETY DATA SHEET

## 1. IDENTIFICATION

**Revision Date** JULY 2011

**Product Name** SODIUM TETRABORATE PENTAHYDRATE

**Other Names** BORAX PENTAHYDRATE

**Uses** The product is used in industrial manufacturing, in particular in ceramics, detergent, borosilicate glass, insulation fibreglass.

### Contact Information

Organisation	Location	Telephone	Ask For
Price Chemicals Pty Ltd	10 Pile Road Somersby NSW 2250	+61 2 4340 0088	Technical Officer
Poison Information Centre	Westmead NSW Australia	131126	
Chemcall 24 Hour Emergency Number	Australia New Zealand	1800-127406 0800-243622	
National Poisons Centre	New Zealand	0800-764766	

## 2. HAZARD IDENTIFICATION

Hazardous according to criteria of NOHSC/ASCC.

TOXIC

### Risk Phrases

- R60 May impair fertility.
- R61 May cause harm to the unborn child.

### Safety Phrases

- S53 Avoid exposure - obtain special instructions before use.
- S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

ERMA New Zealand Approval Code HSR003998

HSNO Hazard Classification 6.1E 6.4A 6.8B 9.1D

This Material Safety Data Sheet may not provide exhaustive guidance for all HSNO Controls assigned to this substance. The ERMA Web Site should be consulted for a full list of triggered controls and cited regulations.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

#### Ingredients

Chemical Entity	CAS Number	Proportions (%)
BORAX PENTAHYDRATE	[12179-04-3]	>99.0

### 4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure.

**Swallowed** Rinse mouth with water. Give water to drink provided person is conscious. Do NOT induce vomiting. If symptoms develop, seek medical attention.

**Eye** Immediately flush eyes with plenty of water for 15 minutes, holding eyelids open. If irritation persists, seek medical attention.

**Skin** Remove contaminated clothing. Flush affected area with plenty of water. If irritation persists, seek medical attention.

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

**Advice to Doctor** Treat symptomatically based on individual reactions of patient and judgement of doctor. Observation only is required for adult ingestion in the range of 4-8 grams of borax 5 mol. For ingestion of larger amounts, maintain adequate kidney function and force fluids. Gastric lavage is recommended for symptomatic patients only. Hemodialysis should be reserved for massive acute ingestion or patients with renal failure. Boron analysis of urine or blood are only useful for documenting exposure and should not be used to evaluate severity of poisoning or to guide treatment.

**Aggravated medical conditions caused by exposure** Signs and symptoms of exposure: Symptoms of accidental over-exposure to borax pentahydrate 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. Target Organs: No target organ has been identified in humans. High-dose animal ingestion studies indicate the testes are the target organs in male dogs. Developmental Effects: Animal ingestion studies in several species, at high doses, indicate that borates cause reproductive and developmental effects. A human study of occupational exposure to borate dust showed no adverse effect on reproduction. Carcinogenicity: No evidence of carcinogenicity in mice. No mutagenic activity was observed for boric acid, a chemically related substance, in a battery of short-term mutagenic assays. Human Data: Human epidemiological studies show no increase in pulmonary disease in occupational populations with chronic exposures to sodium borate dust. A recent epidemiology study under the conditions of normal occupational exposure to borate dusts indicated no effect on fertility. This product is classified as Toxic to Reproduction Category 2 according to the Australian Safety and Compensation Council (ASCC).

### 5. FIRE FIGHTING MEASURES

**Extinguishing Media** In case of fire, use appropriate extinguishing media most suitable for surrounding fire conditions.

**Hazards from Combustion Products** Non-combustible solid. Avoid generating dust. Borax 5 mol is non-flammable, non combustible and non explosive. The product is often used as a flame retardant. Incompatible with oxidising agents, reducing agents, and sources of ignition. When involved in a fire, this product may generate irritating and toxic gases and fumes.

**Special Protective Precautions and Equipment for Fire Fighters** 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). Clear fire area of all non-emergency personnel. Stay upwind. Keep out of low areas. Eliminate ignition sources.

**Flammability Conditions** Product is a non-flammable solid.

Additional Information **Hazchem Code**

N/A

## 6. ACCIDENTAL RELEASE MEASURES

**Emergency Procedures** Personnel involved in the clean up should wear full protective clothing. Eliminate all sources of ignition. Increase ventilation. Avoid generating dust. Do not allow product to reach drains, sewers or waterways. If the product does enter a waterway, advise the Environmental Protection Authority or your local Waste Management Authority.

**Methods and Materials for Containment and Clean Up** 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 hold for safe disposal. Water Spill: 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.

## 7. HANDLING AND STORAGE

**Precautions for Safe Handling** Ensure an eye bath and safety shower are available and ready for use. Observe good personal hygiene practices and recommended procedures. 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.

**Conditions for Safe Storage (Including Any Incompatibles)** 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. Protect from direct sunlight and moisture. Exposure to high humidity environments, product may cake. This product is not classified dangerous for transport according to The Australian Code for the Transport of Dangerous Goods By Road and Rail.

**Container Type** Store in original packaging as approved by manufacturer.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**National Exposure Standards** The following exposure standard has been established by The Australian Safety and Compensation Council (ASCC); Disodium Tetraborate Pentahydrate (Borax Pentahydrate) CAS 12179-04-3: TWA = 1mg/m<sup>3</sup> 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.

**Biological Limit Values** No information available on biological limits for this product.

**Engineering Controls** 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.

**Personal Protection** RESPIRATOR: Wear an effective dust mask where dusts/vapours are generated and engineering controls are inadequate (AS1715/1716). EYES: Safety glasses with side shields (AS1336/1337). HANDS: Wear impervious gloves (AS2161). CLOTHING: Long-sleeved protective clothing and safety footwear (AS3765/2210).

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance** White crystalline solid

**Formula** Na<sub>2</sub>B<sub>4</sub>O<sub>7</sub>·5H<sub>2</sub>O

**Odour** Odourless

**Vapour Pressure** negligible mm Hg (1 atmosphere)

**Vapour Density** Not applicable.

**Boiling Point** 1575°C deg C

**Melting Point** 200°C deg C

**Solubility in Water** 3.7

**Specific Gravity** 1.81 (Water = 1)

**Flash Point** Not applicable.

**pH** 9.3 (3% solution)

**Lower Explosion Limit** Not applicable.

**Upper Explosion Limit** Not applicable.

**Ignition Temperature** Not applicable.

**Specific Heat Value** Not applicable.

**Particle Size** Not applicable.

**Volatile Organic Compounds (VOC) Content** Not applicable.

**Evaporation Rate** Not applicable.

**Viscosity** Not applicable.

**Percent Volatile** Not applicable.

**Octanol/Water partition coefficient** Not applicable.

**Saturated Vapour Concentration** Not applicable.

**Additional Characteristics** Not applicable.

**Flame Propagation/Burning Rate of Solid Materials** Not applicable.

**Properties of Materials That May Initiate or Contribute to Fire Intensity** Not applicable.

**Potential for Dust Explosion** Not applicable.

**Reactions that Release Flammable Gases** Contact with reducing agents such as metal hydrides, acetic anhydride, and alkali metals generates hydrogen gas which could create an explosive hazard.

**Fast of Intensely Burning Characteristics** Not applicable.

**Non-flammables That Could Contribute Unusual Hazards to a Fire** Not applicable.

**Release of Invisible Flammable Vapours and Gases** Not applicable.

**Decomposition Temperature** Not applicable.

**Additional Information** Molecular Weight: 291.35g/mol

## 10. STABILITY AND REACTIVITY

**Chemical Stability** Product is stable under normal conditions of use, storage and temperature. When heated it loses water, eventually forming anhydrous borax.

**Conditions to Avoid** Avoid excessive heat, direct sunlight, static discharges, generating dust, moisture and high temperatures.

**Incompatible Materials** Incompatible with oxidising agents, strong reducing agents such as metal hydrides, acetic anhydride, alkali metals, and sources of ignition.

**Hazardous Decomposition Products** When involved in a fire, this product may generate irritating and toxic gases and fumes.

**Hazardous Reactions** Hazardous polymerization has not been reported.

## 11. TOXICOLOGICAL INFORMATION

**Toxicity Data** Oral LD50 Rat : 3200-3500mg/Kg Oral LD50 Rat : 4500-5000mg/Kg Dermal LD50 Rabbit : >10000mg/Kg Inhalation LC50 Rat : >2.0mg/L Skin Irritant : Non-irritant Eye Irritation : Mild irritation in rabbits. Sensitisation : Not a skin sensitiser.  
Reproductive/Developmental: 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 rat, mouse and rabbit, at high doses, demonstrate developmental effects on the foetus, including weight loss and minor skeletal variations. The doses administered were many times in excess of those to which humans would normally be exposed to.

Health Effects - Acute

**Swallowed** Product containing Borax pentahydrate are not intended for ingestion. Borax pentahydrate 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.

**Eye** Borax pentahydrate is mild eye irritant.

**Skin** Borax pentahydrate does not cause irritation to intact skin.

**Inhaled** Occasional mild irritation effects to nose and throat may occur from inhalation of borax pentahydrate dust at levels greater than 10 mg/m<sup>3</sup>.

## 12. ECOLOGICAL INFORMATION

**Ecotoxicity** No data available.

**Persistence and Degradability** Boron is naturally occurring and ubiquitous in the environment. Borax decomposes in the environment to natural borate.

**Mobility** Borax is soluble in water and is leachable through normal soil. Octanol/water partition coefficient: No value In aqueous solution sodium tetraborate pentahydrate is converted substantially into an dissociated boric acid.

**Environmental Fate (Exposure)** Do NOT let product reach waterways, drains and sewers.

**Bioaccumulative Potential** No information available on bioaccumulation for this product.

## 13. DISPOSAL CONSIDERATIONS

**Disposal** 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 or Incineration** Contact a specialist disposal company or the local waste regulator for advice. Small amounts of borax pentahydrate can usually be disposed of at landfill sites. Tonnage quantities of product are not recommended to be sent to landfill sites. Such product should, if possible, be used for an appropriate application.

## 14. TRANSPORT INFORMATION

Land Transport

**UN Number** Not applicable.

**Shipping Name** SODIUM TETRABORATE PENTAHYDRATE

**Dangerous Goods Class** Not applicable.

**Subsidiary Risk** Not applicable.

**Pack Group** Not applicable.

**Precaution for User** TOXIC

**Hazchem Code** N/A

Sea Transport

**UN Number** Not applicable.

**Shipping Name** SODIUM TETRABORATE PENTAHYDRATE

**Dangerous Goods Class** Not applicable.

**Subsidiary Risk** Not applicable.

**Pack Group** Not applicable.

**Precaution for User** TOXIC

**Hazchem Code** N/A

## 15. REGULATORY INFORMATION

No data available.

**Poisons Schedule** 5

**EPG** N/A

**AICS Name** No data available.

**NZ Toxic Substance** N

**HSNO Hazard Classification** 6.1E 6.4A 6.8B 9.1D

**ERMA Approval Code** HSR003998

## 16. OTHER INFORMATION

**Literature References** No data available.

**Sources for Data** No data available.

Legend to Abbreviations and Acronyms

< less than

> greater than

**AICS** Australian Inventory of Chemical Substances

**CAS** Chemical Abstracts Service (Registry Number)

**cm<sup>2</sup>** square centimetres

**CO<sub>2</sub>** Carbon Dioxide

**COD** Chemical Oxygen Demand

**deg C ( °C )** degrees Celsius

**ERMA** Environmental Risk Management Authority

**g** gram

**g/cm<sup>3</sup>** grams per cubic centimetre

**g/l** grams per litre

**HSNO** Hazardous Substance and New Organism

**IDLH** Immediately Dangerous to Life and Health

**immiscible** liquids are insoluble in each other

**kg** kilogram

**kg/m<sup>3</sup>** kilograms per cubic metre

**LC<sub>50</sub>** LC stands for lethal concentration. LC<sub>50</sub> is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.

**LD<sub>50</sub>** LD stands for Lethal Dose. LD<sub>50</sub> is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals

**ltr** Litre

**m<sup>3</sup>** cubic metre

**mbar** millibar

**mg** milligram

**mg/24H** milligrams per 24 hours

**mg/kg** milligrams per kilogram

**mg/m<sup>3</sup>** milligrams per cubic metre

**Misc** miscible

**miscible** liquids form one homogeneous liquid phase regardless of the amount of either component present

**mm** millimetre

**mPa.s** milli Pascal per second

**N/A** Not Applicable

**NOHSC** National Occupational Health and Safety Commission

**OECD** Organization for Economic Co-operation and Development

**PEL** Permissible Exposure Limit

**ppb** parts per billion

**ppm** parts per million

**ppm/2h** parts per million per 2 hours

**ppm/6h** parts per million per 6 hours

**RCP** Reciprocal Calculation Procedure

**STEL** Short Term Exposure Limit

**TLV** Threshold Limit Value

**tne** tonne

**TWA** Time Weighted Average

**ug/24H** micrograms per 24 hours

**UN** United Nations (number)

**wt** weight

This MSDS summarises Price Chemicals Pty Ltd best knowledge of the health and safety hazard information of the selected substance and how to safely handle the selected substance in the workplace however Price Chemicals Pty Ltd expressly disclaims that the MSDS is a representation or guarantee of the chemical specifications for the substance.

Each user should read the MSDS and consider the information in the context of how the selected substance will be handled and used in the workplace including its use in conjunction with other substances.