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Material Safety Data Sheet
Borax Pentahydrate

Section 1: Chemical Product and Company Identification

Product Name : Borax Pentahydrate
Chemical Formula : $Na_2B_4O_7.5H_2O$
Company Identification : Tradeasia International Pte Ltd
Email : contact@chemtradeasia.com

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS#	% by Weight
Borax Pentahydrate	12179-04-3	100

Toxicology Information: Oral LD50: 2660 mg/kg (Rat)

Section 3: Hazards Identification

Emergency Overview: Borax pentahydrate is a white odorless, powdered substance that is not flammable, combustible, or explosive, and has low acute oral and dermal toxicity.
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 pentahydrate is poorly absorbed through intact skin.
Inhalation: Occasional mild irritation effects to nose and throat may occur from inhalation of borax pentahydrate dusts at levels greater than 10 mg/m'.
Eye contact: Borax pentahydrate is a mild eye irritant.
Skin contact: Borax pentahydrate does not cause irritation to intact skin.
Ingestion: Products 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.
Reproductive / Developmental: 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.
Potential Ecological Effects: Large amounts of borax pentahydrate can be harmful to plants and other species. Therefore releases to the environment should be minimized.
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 diarrhea, with delayed effects of skin redness and peeling (see section 11).

Section 4: First Aid Measures

Eye Contact: Flush eyes with gently flowing water for at least 30 minutes or until the chemical is removed, while holding the eyelid(s) open. Take care not to rinse the contaminated water into the unaffected eye or face. Seek immediate medical attention.
Skin Contact: Wash with soap and water.
Serious Skin Contact: Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.
Inhalation: If symptoms such as nose or throat irritation are observed, remove to fresh air.

Ingestion: If large amounts are swallowed (i.e. more than one teaspoon), give two glasses of water or milk to drink and seek medical attention.
Notes to Physician: Observation only is required for adult ingestion in the range of 4-8 grams of product. 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 {cute 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 of poisoning or to guide treatment.

Section 5: Fire and Explosion Data

General Hazard: None, because borax pentahydrate is not flammable, combustible or explosive. The product is itself a flame retardant.
Flash Point: Non-flammable
Flash Point Method: Not applicable
Autoignition Temperature: Not available
Flammable Limits in Air (%): Not Available.
Extinguishing Media: Use extinguishing media appropriate for surrounding fire.
Special Exposure Hazards: Not flammable. This product is p flame retardant.
Hazardous Decomposition / Combustion Materials (under fire conditions): None.
Special Protective Equipment: Fire fighters should wear full protective clothing, including self-contained breathing equipment.
NFPA RATINGS FOR THIS PRODUGT ARE: HEALTH 0, FLAMMABILITY 0, INSTABILITY 0
HMIS RATINGS FOR THIS PRODUGT ARE: HEALTH 1, FLAMMABILITY 0, REACTIVITY 0

Section 6: Accidental Release Measures

Personal Precautionary Measures: Wear appropriate
Environmental Precautionary Measures: Prevent from groundwater. Consult local authorities.
Procedure for Clean Up: Scoop up or vacuum up and place in an appropriate closed container. Water spill: Where possible, remove any intact containers from the water. Advice local water authority that none of the affected water should be used for irrigation or for the abstraction of potable water until natural dilution retrns the boron value to its natural environmental background level.

Section 7: Handling and Storage

Handling: To maintain package integrity and to minimize caking of the product, bags should be handled on a first-in, first-out basis. Good housekeeping procedures should be followed to minimize dust generation and accumulation.
Storage: Dry to avoid tendency of product to cake. Keep containers tightly closed. Store at ambient temperature. Protect against moisture. Store in accordance with good industrial practices.

Section 8: Exposure Controls/Personal Protection

Engineering Controls: Localized ventilation should be used to control dust levels.
Respiratory Protection: Use a NIOSH approved dust respirator.
Gloves: Gloves are not required for normal industrial exposures, but may be warranted if environment is excessively dusty.
Skin Protection: Normal work coveralls.
Eyes: Chemical goggles.

Other Personal Protection Data: Ensure that eyewash stations and safety showers are proximal to the work-station location.

Section 9: Physical and Chemical Properties

Physical state and appearance	: Crystalline Solid.
Odor	: Odorless
Molecular Weight	: 291.35 g/mole
Color	: Not available.
pH @ 20°C	: 9.3 (3% Solution)
Boiling Point	: 1575°C
Freezing / Melting Point	: 200°C / 392°F (heated in closed space)
Critical Temperature	: Not available.
Specific Gravity	: 1.81
Bulk Density	: 55 – 65 lb / ft^3
Vapor Pressure	: Negligible @ 20°C
Vapor Density	: Not available.
Evaporation Rate	: Not available.
% Volatility by Volume	: Not available.
Odor Threshold	: Not available.
VOCs	: Not available.
Viscosity	: Not available.
Dispersion Properties	: See solubility in water.
Solubility in Water	: 3.8% @ 20°C; 51.2% @ 100°C

Section 10: Stability and Reactivity Data

Stability: The product is stable.
Instability Temperature: Not available.
Conditions to Avoid: Borax is a stable product, but when heated it loses water, eventually forming anhydrous borax.
Materials to Avoid: Reaction with strong reducing agents, such as metal hydrides or alkali metals, will generate hydrogen gas, which could create an explosive hazard.
Hazardous Decomposition Products: None anticipated.
Hazardous Polymerization: Will not occur.

Section 11: Toxicological Information

Principle Routes of Exposure
Ingestion: Low toxicity. Small amounts swallowed incidental to normal handling operations are not likely to cause injury. Swallowing larger amounts may cause gastrointestinal symptoms. Low acute oral toxicity; LDsoin rats is 3,200 to 3,500 mg/kg of body weight.
Skin: Low acute dermal toxicity; LD50 in rabbits is greater than 2,000 mg/kg of body weight. Borax pentahydrate is poorly absorbed through intact skin.
Inhalation: Inhalation of dust may irritate nose and throat. Low acute inhalation toxicity; LCso in rats is greater than 2.0 mg/l (or g/m^3).
Skin irritation: Non-irritant.

Eye irritation: Mild eye irritant in rabbits. Fifty years of occupational exposure to borax pentahydrate indicate no adverse effects on human eye. Borax pentahydrate is a constituent of eye lotions.
Sensitisation: Borax pentahydrate is not a skin sensitiser.
Additional Information:
Acute Test of Product:
Acute Oral LD50: Not Available.
Acute Dermal LD50: Not Available.
Acute Inhalation LC50: Not available.
Carcinogenicity / Mutagenicity: Not a carcinogen. Not a mutagen.
Reproductive Toxicity/ Teratogenicity/ Embryotoxicity/ Mutagenicity: Animal feeding studies in rat, mouse and dog, at high doses, have demonstrated effects on fertility and testes . Boric acid studies in rat, mouse and rabbit, at high doses, demonstrate developmentaleffects on the fetus, including fetalweight loss and minor skeletal variations. The doses administered were manv times in excess of those to which humans would normally be exposed.
Human data: Human epidemiological studies show no increase in pulmonary disease in occupational populations with chronic exposures to boric acid dust and sodium borate dust. A recent epidemiology study under the conditions of normal occupational exposure to borate dusts indicated no effect on fertility.

Section 12: Ecological Information

Ecotoxicity Data
General: Boron occurs naturally in sea water at an average concentration of 5 mg B/l and fresh water at 1 mg B/l or 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 product released to the environment
Algal toxicity: Green algae, *Scenedesmus subspicatus*. 96-hr IC_{10} = 24 mg B/l^t
Invertebrate toxicity: Daphnia, *Daphnia magna Straus*. 24-hr IC_{50} = 242 mg B/l^t
Fish toxicity:
Sea water: Dab, *Limanda limanda* 96-hr LC_{50} = 74 mg mg B/l^t
Fresh water: Rainbow trout, *Oncorhynchus mykiss* (embryo-larval stage):
[24-day LCso = 88 mg B/l^t, 32- day LC_{50} = 54 mg B/l^t]
Goldfish, Carassius auratus (embryo-larval stage):
[7-day LC_{50} = 65 mg B/l^t, 3-day LCso = 71 mg B/l^t]
Environmental Fate Data
Persistence/Degradation: Boron is naturally occurring and ubiquitous in the environment. Borax pentahydrate decomposes in the environment to natural borate.
Octanol / Water partition coefficient: No value. In aqueous solution borax pentahydrate is converted substantially into undissociated boric acid.
Soil mobility: The product is soluble in water and is leachable through normal soil

Section 13: Disposal Considerations

Waste Disposal: Small quantities of borax pentahydrate 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.

Section 14: Transport Information

International transportation Borax pentahydrate has no UN Number, and is not regulated under international rail, road, water or air transport regulations.

Section 15: Other Regulatory Information

General: Ensure all national / Iocal regulations are observed.
Clean Air Act (Montreal Protocol): Borax pentahydrate was not manufactured with and does not contain any Class I or Class II ozone depleting substances.
Chemical inventory listing

- U.S. EPA TSCA Inventory: 1330-43-4
- Canadian DSL: 1330-43-4
- EINECS: 215-540-4
- South Korea: 1-760
- Japanese MITI: (1)-69

Section 16: Other Information

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall Tradeasia International Pte. Ltd. Be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Tradeasia International Pte. Ltd. has been advised of the possibility of such damages.