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SAFETY DATA SHEET

SECTION 1 :: PRODUCT IDENTIFICATION

Product name: Borax pentahydrate
Formula: Na₂B₄O₇·5H₂O
CAS:12179-04-3
Chemical Name: Sodium Tetraborate Pentahydrate
Synonyms: Borax Pentahydrate, Sodium Biborate Pentahydrate, Disodium Tetraborate Pentahydrate

Details of the supplier of the safety data sheet

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SECTION 2 :: DATA ON COMPONENTS

Sodium Tetraborate Pentahydrate is hazardous under the OSHA Hazard Communication Standard based on animal chronic toxicity studies of similar organic Borates.

SECTION 3 :: HAZARDS IDENTIFICATION

National Fire Protection Association (NFPA) Classification
Health = 0 Flammability = 0 Reactivity = 0

Hazardous Materials Information System (HMIS)

Blue (Acute Health) = 1
Red (Flammability) = 0
Yellow (Reactivity) = 0

Sodium Tetraborate Pentahydrate is chemical and toxicologically related to Boric

Acid; the majority of the Borate chronic toxicology studies were conducted using Boric Acid. Sodium Tetraborate Pentahydrate equivalent data by dividing by a factor of 0.8490.

Emergency Overview: Sodium Tetraborate Pentahydrate is a white odorless, powdered substance that is not flammable, combustible, or explosive, and it presents no unusual hazard if involved in a fire. Sodium Tetraborate Pentahydrate presents little or no hazard (to humans) and has low acute oral and dermal toxicities. Care should be taken to minimize the amount of Sodium Tetraborate Pentahydrate released to the environment to avoid ecological effects.

Routes of exposure: In the occupation setting, inhalation is the most important route of exposure. Dermal absorption is usually not important because Sodium Tetraborate Pentahydrate is not absorbed through intact skin.

Health effects::

Eyes: Exposure to Borate dust does not cause eye irritation in normal industrial use (See Section 11 for details on Toxicological Data).

Skin: Sodium Tetraborate Pentahydrate is non-irritating to the intact skin. Can be readily absorbed through broken or abraded skin.

Inhalation: Mild irritation to nose and throat may occur when the PEL or TLV are exceeded (see section 15).

Ingestion: Sodium Tetraborate Pentahydrate is not intended for ingestion. Amounts greater than one teaspoonful, when ingested, may cause gastrointestinal problems.

Cancer: Sodium Tetraborate Pentahydrate is not considered a carcinogen.

Reproductive: A human study of occupationally exposed Borate worker population showed no adverse reproductive effects. Animal studies of similar organic Borates demonstrated reproductive effects in males.

Target organs: no target organs have been determined in humans. High dose animal ingestion studies indicate that the testes is the target organ.

Signs and symptoms of exposure: Symptoms of accidental overexposure to Borates 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.

Product Label Text Information:

May be harmful if swallowed.

May cause reproductive harm or birthdefects based on animal data.

Avoid contamination of food or feed.

Not for food, drug or pesticidal use.

Practice good housekeeping.

Refer to MSDS.

KEEP OUT OF THE REACH OF CHILDREN.

SECTION 4 :: FIRST AID MEASURES

Eyes: Continuously flush exposed eyes, occasionally lifting the upper and lower lids. Get medical attention if irritation persists.

Skin: Sodium Tetraborate Pentahydrate is non-irritating in the normal occupational setting. If irritation occurs, wash affected area with soap or mild detergent and

large amounts of water. Get medical attention if irritation persists.

Inhalation: no specific treatment is necessary since Sodium Tetraborate Pentahydrate is not likely to be hazardous by inhalation. Prolonged exposure to dust levels in excess of regulatory limits should always be avoided.

Ingestion: If amounts greater than one teaspoon are swallowed, give two glasses of water to drink and seek medical attention.

Note to Physician: Adult ingestion of a few grams requires observation only. For ingestion in greater than 6 grams, 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 is useful only for documenting exposure and should not be used for evaluating severity of poisoning or to guide treatment.

SECTION 5 :: FIRE FIGHTING MEASURES

General Hazard: Sodium Tetraborate Pentahydrate is not flammable, combustible, or explosive. Sodium Tetraborate Pentahydrate presents no unusual hazards when involved in a fire. This product is an inherent fire retardant.

Flash Point: Not Applicable

Fire and Explosion Hazards: Not applicable

Extinguishing media: Any fire extinguishing media may be used on nearby fires

Fire fighting Equipment/Instructions: not applicable

Autoignition temperature: Not Applicable

SECTION 6 :: ACCIDENTAL RELEASE MEASURES

Spill and Leak procedures: Borates may damage trees and vegetation (see Ecological Information, Section 12, for further information). For dry spills, sweep, vacuum or shovel and place in containers for disposal in accordance with applicable regulations (refer to Sections 13 and 15 for additional references and information regarding California and EPA regulations). Avoid contamination of bodies of water during cleanup. Sodium Tetraborate Pentahydrate will cause localized contamination of surrounding waters depending on amount dissolved in these waters. Some damage to local vegetation, fish, and other aquatic life may be expected (see Section 12). Under usual conditions, no protective equipment is required.

Sodium Tetraborate Pentahydrate is a non-hazardous waste when spilled or disposed of, as defined in the Resource Conservation and Recovery Act (RCRA) regulations (40 CFR 261). (See Section 15).

SECTION 7 :: HANDLING AND STORAGE

General: Dry, indoor storage under normal atmospheric conditions is recommended. To maintain package integrity and to minimize caking of the product, bags should be handled on a first-in-first-out basis. Good housekeeping should be maintained to minimize dust accumulation and generation. Sodium Tetraborate Pentahydrate may cake in moist conditions.

Hygienic practices: Wash hands thoroughly with soap and water after handling and before eating, drinking or smoking..

SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Engineering controls: Use local exhaust ventilation to keep airborne levels below exposure limits.

Personal Protective equipment:

Respiratory: Use appropriate NIOSH/MSHA certified respirators when levels are expected to exceed exposure limits (see Section 15)

Eyes: Use goggles or ventilated safety glasses in excessively dusty conditions

Skin: Not required under normal conditions. Use if excessively dusty or if skin is damaged.

SECTION 9 :: PHYSICAL AND CHEMICAL PROPERTIES

Appearance and character: Without odor, colorless, translucent, taste salty crystals or white shape powder.

Molecular formula: $\text{Na}_2\text{B}_4\text{O}_7 \cdot 5\text{H}_2\text{O}$

Molecular weight: 381.37

PH value: insignificant

Melting point (°C) : 75°C

Relative density(water=1) : 1.73

Boiling point (°C) : 320°C

Relative steaming density(air=1): no data

water distribution coefficient: no material

Flash point (°C) : insignificant

Ignition temperature (°C) : meaningless

Explosion upper limit [% (V/V)] : meaningless

Explosion lower limit [% (V/V)] : meaningless

Burning hot (mol) : meaningless kJ /

The critical temperature (°C) : meaningless

The critical pressure (MPa) : meaningless

Solubility: slightly soluble in ethanol, slightly soluble in cold water, soluble easily in hot water.

Main application: used for medicine, metallurgy, tanning, ceramics, textile and the food preservation with agent.

SECTION 10 :: STABILITY AND REACTIVITY

Stability: stable

Forbidden things with: strong oxidizer.

Avoid contact with conditions: damp air.

Polymerization harm: don't polymerization

Breakdown products:

SECTION 11 :: TOXICOLOGY INFORMATION

Note: Sodium Tetraborate Pentahydrate is chemically and toxicologically related to Boric Acid; the majority of the Borate chronic toxicology studies were conducted using Boric Acid. Sodium Tetraborate Pentahydrate is converted to Boric Acid in biological systems. The Boric Acid data discussed in this section can be converted to Sodium Tetraborate Pentahydrate equivalent data by dividing by a factor of 0.8490. Eyes: Boric Acid, when applied to the eyes of albino rabbits (Draize test) produced effects of mild erythema, and mild to moderate discharge in 5 of 6 rabbits. All signs subsided by the fourth day after application. Fifty years of occupational exposure history indicates no human eye injury from exposure to Sodium Tetraborate Pentahydrate.

Skin: Boric Acid was applied to the skin of albino rabbits. Slight to no irritation persisted 72 hours after application. No evidence of tissue damage was found. Low acute dermal toxicity of Sodium Tetraborate Pentahydrate; LD50 for rabbits is expected to be greater than 2,000 mg/kg of body weight (test conducted per 16 CFR 1500.41). Sodium Tetraborate Pentahydrate is not absorbed through intact skin.

Inhalation: Human epidemiological studies show no increase in pulmonary disease in occupational populations with chronic exposure to Boric Acid and Sodium Borate dust.

Ingestion: Low acute oral toxicity; LD50 for Sprague-Dawley rats is 3,200 to 3,400 mg/kg of body weight.

SECTION 12 :: ECOLOGY INFORMATION

Note: Boron is the element in Sodium Tetraborate Pentahydrate which is used to characterize Borate product ecological effects. To convert Sodium Tetraborate Pentahydrate data to Boron, multiply by 0.1484.

Fish Toxicity: Boron naturally occurs in seawater at an average concentration of 5 mg B/liter. In laboratory studies the acute toxicity (96-hr LC50) for under yearling Coho salmon (*Onchortynchus klsutch*) in seawater was determined as 40 mg B/liter (added as Sodium Metalborate). The Minimum Leathe Dose for minnows exposed to Boric Acid at 20°C for 6 hours is 18,000 to 19,000 mg/B/l in distilled water, 19,000-19,500 in hard water.

Rainbow trout (*S. gairdneri*)

24-day LC50=150.0 mg/B/L

36-day NOEC-LOEC = .75-1 mg/B/L

Goldfish (*Carassius auratus*)

7-day NOEC-LOEC = 26.50 mg/B/L

3-day LC50 = 178 mg/B/L

Bird Toxicity: Dietary levels of 100 mg/kg resulted in reduced growth of female mallards. As little as 30 mg/kg fed to mallard adults adversely affected the growth rate of offspring.

Invertebrate Toxicity:

Daphnids

48-hour LC50 = 133 mg/B/L

Phytotoxicity: Although boron is an essential micro-nutrient for healthy growth of plants, in can be harmful to boron-sensitive plants quantities. Plants and tees can easily be exposed by root absorption to toxic levels of boron in the form of water soluble Borate leached into nearby waters or soil. Care should be taken to minimize the amount of boron release to the environment.

Environmental Fate Data: Persistence/Degradation: Boron is naturally occurring and is commonly found in the environment. Sodium Tetraborate Pentahydrate decomposes in the environment to natural Borate. Soil Mobility: The product is soluble in water and is leachable through normal soil. Note: Boron is the element in Sodium Tetraborate Pentahydrate which is used to characterize Borate product ecological effects. To convert Sodium Tetraborate Pentahydrate data to Boron, multiply by 0.1484.

SECTION 13 :: DISPOSAL CONSIDERATIONS

Disposal Guidance: Small amounts of Sodium Tetraborate Pentahydrate can usually be disposed of at municipal landfill sites, and requires no special treatment.

Tonnage quantities are not, however, recommended for the landfill, and if possible, should be re-used for an appropriate application. Refer to state and local regulations for applicable site-specific requirements.

SECTION 14 :: TRANSPORT INFORMATION

US Department of Transportation (DOT) Identification Number: Sodium Tetraborate Pentahydrate is NOT a DOT Hazardous Material or Hazardous Substance.

International Transportation: Sodium Tetraborate Pentahydrate has no U.N number, and is not regulated under international rail, highway, water or air transport regulations.

SECTION 15 :: REGULATIONS

United States Toxic Substance Control Act (TSCA): 1330-43-4 (anhydrous)

RCRA (40 CFR 261): not listed under any section

CERCLA (Superfund): not listed under any section

Clean Water Act (CWA): Sodium Tetraborate Pentahydrate is not regulated by any water quality criteria under Section 304, is not listed as priority pollutant under Section 307, and is not listed as a hazardous substance under Section 311.

Safe Drinking Water Act (SDWA): Not regulated under SDWA, 42 USC 300g-1, 40 CFR 141 et seq. Consult state and local regulations for possible water quality advisories involving boron.

Occupational Exposure Limits: Sodium Tetraborate Pentahydrate is listed/regulated by OSHA, CAL OSHA, and ACGIH

OSHA: Permissible Exposure Limit (PEL): 10 mg/m³

ACGIH: Threshold Limit Value (TLV): 1 mg/m³

California OSHA: Permissible Exposure Limit (PEL): 5 mg/m³

International Agency for Research on Cancer (IARC): Not listed as a carcinogen

NTP Annual Report on Carcinogens: Not listed as a carcinogen

OSHA Carcinogen: Not listed as an OSHA carcinogen

CONEG Model Legislation: Meets all the CONEG requirements relating to heavy metal limitations on components of packaging materials.

Clean Air Act (CAA): This product was not manufactured with and does not contain any Class 1 or Class II ozone depleting substances, as defined by EPA.

California Proposition 65: not listed as a carcinogen or reproductive toxin. Warning ñ this product contains trace amounts of arsenic. Arsenic is known to the State of California to cause cancer, reproductive harm or birth defects (this warning required by 25249.6 of the California Health and Safety Code).

SECTION 16 :: COMMENTS

The information accumulated herein is believed to be accurate but is not warranted to be whether originating with Ingredients To Die For or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances.