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PHARMCO-AAPER

AND COMMERCIAL ALCOHOLS

Product Information (203) 740-3471 / Emergency Assistance CHEMTREC 1-800-424-9300

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Product name: Borax 5 Mol **Grade:** Technical, NF, SQ **Product use:** Industrial manufacturing **Chemical formula:** Na₂B₄O₇·5H₂O **Chemical**

name/synonyms: Sodium tetraborate pentahydrate,
disodium tetraborate pentahydrate,
borax pentahydrate

Chemical family: Inorganic borates
CAS registry number: 12179-04-3

Emergency Contact:

CHEMTREC 1-800-424-9300

2 Composition/information on ingredients

This product contains greater than 99 percent (%) sodium the Canadian Controlled Products Regulations of the Hazardous tetraborate pentahydrate, Na₂B₄O₇·5H₂O, which is hazardous Products Act (WHMIS), based on animal chronic toxicity under the OSHA Hazard Communication Standard and under studies. Refer to Sections 3 and 11 for details on hazards.

3 Hazard identification

Emergency overview

Borax 5 Mol is a white, odorless, powder substance that is not flammable, combustible, or explosive and has low acute oral and dermal toxicity.

Potential ecological effects

Large amounts of Borax 5 Mol can be harmful to plants and other species. Therefore, releases to the environment should be minimized.

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

Dermal exposure is not usually a concern because Borax 5 Mol is poorly absorbed through intact skin. **Inhalation:** Occasional mild irritation effects to the nose and throat may occur from inhalation of Borax 5 Mol dust at levels greater than 10 mg/m³. **Eye contact:**

Borax 5 Mol is non-irritating to the eyes in normal industrial use.

Skin contact: Borax 5 Mol does not cause irritation to intact skin.

Ingestion: Products containing Borax 5 Mol are not intended for ingestion. Borax 5 Mol has a low acute toxicity. Small amounts (e.g., a teaspoon) swallowed accidentally are not likely to cause effects; swallowing amounts larger than that may cause gastrointestinal symptoms. **Cancer:** Borax 5 Mol is not a known carcinogen.

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. **Target**

organs: No target organ has been identified in humans. High dose animal ingestion studies indicate the testes are the target organs in male animals. **Signs and symptoms of exposure:** Symptoms of accidental over-exposure to Borax 5 Mol might include nausea, vomiting and diarrhea, with delayed effects of skin redness and peeling. These symptoms have been associated with the accidental overexposure to the chemically related substance boric acid. Refer to Section 11 for details on Toxicological data.

First aid measures

Inhalation: If symptoms such as nose or throat irritation are observed, remove person to fresh air. **Eye contact:** Use eye wash fountain or fresh water to cleanse the eye. If irritation persists for more than 30 minutes, seek medical attention. **Skin contact:** No treatment necessary because non-irritating. **Ingestion:** Swallowing small quantities (one teaspoon) will cause no harm to healthy adults. If larger amounts are swallowed, give two glasses of water to drink and seek medical attention.

Note to physicians: 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 analyses of urine or blood are only useful for documenting exposure and should not be used to evaluate severity of poisoning or to guide treatment¹. Refer to Section 11 for details.

Firefighting measures

General hazard: None, because Borax 5 Mol is not flammable. **Extinguishing media:** Any fire extinguishing media may be combustible or explosive. The product is itself a flame used on nearby fires. retardant. **Flammability classification (29 CFR 1910.1200):** Nonflammable solid.

Accidental release measures

General: Borax 5 Mol is a water-soluble white powder that may, at high concentrations, cause damage to trees or vegetation by root absorption. (Refer to Ecological information, Section 12, for specific information.)

Land spill: Vacuum, shovel or sweep up Borax 5 Mol and place in containers for disposal in accordance with applicable local regulations. Avoid contamination of water bodies during cleanup and disposal. Personal protective equipment is not needed to cleanup land spills.

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. (Refer to Sections 12, 13 and 15 for additional information.) Borax 5 Mol is a non-hazardous waste when spilled or disposed of, as defined in the Resource Conservation and Recovery Act (RCRA) regulations (40 CFR 261). (Refer to Regulatory information, Section 15, for additional references.)

7 Handling and storage

General: No special handling precautions are required, but dry, indoor storage 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 procedures should be followed to minimize dust generation and accumulation.

Storage temperature: Ambient
Storage pressure: Atmospheric
Special sensitivity: Moisture (caking)

8 Exposure controls/personal protection

Engineering controls: Use local exhaust ventilation to keep airborne concentrations of Borax 5 Mol dust below permissible exposure levels.

Personal protection: Where airborne concentrations are expected to exceed exposure limits, NIOSH/MSHA certified respirators should be used. Eye goggles and gloves are not required for normal industrial exposures, but may be warranted if environment is excessively dusty.

Occupational exposure limits: Sodium tetraborate pentahydrate (Borax 5 Mol) is regulated by OSHA, Cal OSHA and ACGIH.

ACGIH/TLV: 1 mg/m³ **Cal OSHA/PEL:** 5 mg/m³ **OSHA/PEL (total dust):** 10 mg/m³

9 Physical and chemical properties

White, odorless, crystalline solid
Specific gravity: 1.81
Vapor pressure: Negligible @ 20°C
Solubility in water: 3.8% @ 20°C; 51.2% @ 100°C

Melting point: 200°C (392°F) (heated in closed space)
pH @ 20°C: 9.3 (3.0 % solution)
Molecular weight: 291.35

10 Stability and reactivity

General: Borax 5 Mol is a stable product, but when heated it loses water, eventually forming anhydrous borax (Na₂B₄O₇). will generate hydrogen gas, which could create an explosive hazard.

Incompatible materials and conditions to avoid: Reaction with strong reducing agents, such as metal hydrides or alkali metals,

Hazardous decomposition: None.

11 Toxicological information

Acute toxicity Ingestion: Low acute oral toxicity; LD₅₀ in rats is 3,200 to 3,400 mg/kg of body weight. **Skin/dermal:** Low acute dermal toxicity; LD₅₀ in rabbits is greater than 2,000 mg/kg of body weight. Borax 5 Mol is poorly absorbed through intact skin. **Inhalation:** Low acute inhalation toxicity; LC₅₀ in rats is greater than 2.0 mg/L (or g/m³). **Skin irritation:** Non-irritant. **Eye irritation:** Draize test in rabbits produced eye irritation effects. Fifty years of occupational exposure to Borax 5 Mol indicates no adverse effects on human eye. Therefore, Borax 5 Mol is not considered to be a human eye irritant in normal industrial use. **Sensitization:** Borax 5 Mol is not a skin sensitizer.

Other Reproductive/developmental toxicity: Animal feeding studies in rat, mouse and dog, at high doses, have demonstrated effects on fertility and testes². 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^{3,4}. The doses administered were many times in excess of those to which humans would normally be exposed⁵. **Carcinogenicity/mutagenicity:** No evidence of carcinogenicity in mice⁶. No mutagenic activity was observed for boric acid in a battery of short-term mutagenicity assays. **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 fertility⁷.

12 Ecological information

Ecotoxicity data General: Boron (B) is the element in sodium tetraborate pentahydrate (Borax 5 Mol) which is used by convention to report borate product ecological effects. It occurs naturally in seawater at an average concentration of 5 mg B/L and generally occurs in fresh water at concentrations up to 1 mg B/L. In dilute aqueous solutions the predominant boron species present is undissociated boric acid. To convert sodium tetraborate pentahydrate into the equivalent boron (B) content, multiply by 0.1484. **Phytotoxicity:** Boron is an essential micronutrient for healthy growth of plants; however, it can be harmful to boron sensitive plants in high quantities. Care should be taken to minimize the amount of Borax 5 Mol released to the environment.

Algal toxicity:

Green algae, *Scenedesmus subspicatus* 96-hr EC₁₀ = 24 mg B/L[†] **Invertebrate toxicity**⁸: Daphnids, *Daphnia magna straus* 24-hr EC₅₀ = 242 mg B/L[†]

Fish toxicity:

Sea-water⁹: Dab, *Limanda limanda* 96-hr LC₅₀ = 74 mg B/L[†] Fresh water¹⁰:

Rainbow trout, *S. gairdneri* (embryo-larval stage)
24-day LC₅₀ = 88 mg B/L[†] 32-day LC₅₀ = 54 mg B/L[†]

Goldfish, *Carassius auratus* (embryo-larval stage) 7-day LC₅₀ = 65 mg B/L[†] 3-day LC₅₀ = 71 mg B/L[†]

Environmental fate data Persistence/degradation: Boron is naturally occurring and ubiquitous in the environment. Borax 5 Mol decomposes in the environment to natural borate.

Octanol/water partition coefficient: No value. In aqueous solution sodium tetraborate pentahydrate is converted substantially into undissociated boric acid. **Soil mobility:** Borax 5 Mol is soluble in water and is leachable through normal soil.

Test substance: [†] sodium tetraborate

13 Disposal considerations

Disposal guidance: Small quantities of Borax 5 Mol 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 should, if possible, be used for an appropriate application.

RCRA (40 CFR 261): Borax 5 Mol is not listed under any sections of the Federal Resource Conservation and Recovery Act (RCRA).

NPRI (Canada): Borax 5 Mol is not listed on the Canadian National Pollutant Release Inventory. Refer to Section 15 for additional regulatory information.

14 Transport information

DOT hazardous classification: Sodium tetraborate pentahydrate (Borax 5 Mol) is not regulated by the U.S. Department of Transportation (DOT) and is therefore not considered a Dangerous Goods (TDG) hazardous material/substance. **International transportation:** Sodium tetraborate pentahydrate (Borax 5 Mol) has no UN Number, and is not regulated under international rail, road, water or air transport regulations.

15 Regulatory information

OSHA/Cal OSHA: This MSDS document meets the requirements of both OSHA (29 CFR 1910.1200) and Cal OSHA (Title 8 CCR 5194 (g)) hazard communication standards. Refer to Section 8 for regulatory exposure limits.

WHMIS classification: Sodium tetraborate pentahydrate (*Neobor*) is classified as Class D- Division 2A under Canadian WHMIS guidelines.

Chemical inventory listing: Sodium tetraborate pentahydrate (*Neobor*), 12179-04-3, appears on several chemical inventory lists (including the EPA TSCA inventory, Canadian DSL, European EINECS, Japanese MITI, Australian and Korean lists) under the CAS No. representing the anhydrous form of this inorganic salt.

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

RCRA: Sodium tetraborate pentahydrate is not listed as a hazardous waste under any sections of the Resource Conservation and Recovery Act (RCRA) or regulations (40 CFR 261 *et seq.*).

Superfund: CERCLA/SARA. Sodium tetraborate pentahydrate is not listed under CERCLA or its 1986 amendments, SARA, including substances listed under Section 313 of SARA, Toxic Chemicals, 42 USC 11023, 40 CFR 372.65, Section 302 of SARA, Extremely Hazardous Substances, 42 USC 11002, 40 CFR 355, or the CERCLA Hazardous Substances list, 42 USC 9604, 40 CFR 302. **Safe**

Drinking Water Act (SDWA): Sodium tetraborate pentahydrate is not regulated under the SDWA, 42 USC 300g-1, 40 CFR 141 *et seq.* Consult state and local regulations for possible water quality advisories regarding boron compounds.

Clean Water Act (CWA) (Federal Water Pollution Control Act): 33 USC 1251 *et seq.*

a) Sodium tetraborate pentahydrate is not itself a discharge covered by any water quality criteria of Section 304 of the CWA, 33 USC 1314.

b) It is not on the Section 307 List of Priority Pollutants, 33 USC 1317, 40 CFR 129. c) It is not on the Section 311 List of Hazardous

Substances, 33 USC 1321, 40 CFR 116. **Canadian drinking water**

guideline: An "Interim Maximum Acceptable Concentration"

(IMAC) for boron is currently set at 5 mg B/L. **IARC:** The International Agency for Research on Cancer (IARC) (a unit of the World Health Organization) does not list or categorize sodium

tetraborate pentahydrate as a carcinogen. **NTP Biennial Report on Carcinogens:** Sodium tetraborate pentahydrate is not listed. **OSHA**

carcinogen: Sodium tetraborate pentahydrate is not listed. **California**

Proposition 65: Sodium tetraborate pentahydrate (Borax 5 Mol) is not listed on the Proposition 65 list of carcinogens or reproductive

toxics. **Federal Food, Drug and Cosmetic Act:** Pursuant to 21 CFR 175.105, 176.180 and 181.30, Borax 5 Mol is approved by the

FDA for use in adhesive components of packaging materials, as a component of paper coatings on such materials, or for use in the

manufacture thereof, which materials are expected to come in contact with dry food products. **Clean Air Act (Montreal Protocol):** Borax 5

Mol was not manufactured with and does not contain any Class I or

Class II ozone depleting substances.

Product label text hazard information*:

- Do not ingest.
- Ingestion may cause reproductive harm or birth defects based on animal data.
- Avoid contamination of food or feed.
- Not for use in food, drugs, or pesticides[†].
- Refer to MSDS.
- KEEP OUT OF REACH OF CHILDREN. *The WHMIS panel format is used for Canadian product. [†]Except for NF (pharmaceutical grade) products.

National Fire Protection Assoc. (NFPA) Classification:

Health 0 Flammability 0 Reactivity 0

Hazardous Materials Information Systems (HMIS):

Red: (Flammability) 0 Yellow: (Reactivity) 0 Blue: (Acute Health) 1* *Chronic Effects

The information contained herein is based on data considered to be accurate. However, no warranty is expressed regarding the accuracy of these data or the results to be obtained from the use thereof. It is the user's obligation to determine the conditions of safe use of the product.