BORAX PENTAHYDRATE/ ETIBOR-48
HEALTH AND SAFETY DATA SHEET

1. Identification of the Substance / Preparation and the Company / Undertaking

Product Name
Etibor-48 (Borax Pentahydrate)

Chemical name/synonyms
Sodium tetraborate pentahydrate, disodium tetraborate pentahydrate, borax 5 mol

Use of the substance / preparation
The product is used in industrial manufacturing, in particular in:
- Ceramics
- Detergent
- Borosilicate glass
- Insulation fibreglass

Supplier
MK Import/Export Inc.

2. Composition / Information on Ingredients

Chemical Nature of the Substance / Preparation
The product contains greater than 99.9 percent (%) borax pentahydrate Na₂B₄O₇·5H₂O

Components

<table>
<thead>
<tr>
<th>CAS-N°</th>
<th>EINECS</th>
<th>Name</th>
<th>EC Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>12179-04-3</td>
<td>215-540-4</td>
<td>Borax pentahydrate</td>
<td>no classification</td>
</tr>
</tbody>
</table>

For other "Chemical inventory listing", please refer to section 15.

3. Hazards Identification

Emergency overview
Borax pentahydrate is a white odourless, 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/m³.

**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 minimised.

**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 (see section 11).

### 4. First aid measures

**Skin contact**
No treatment necessary because non-irritating.

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

**Note to physicians**
Observation only is required for adult ingestion of less than 7 grams of borax pentahydrate. For ingestion in excess of 7 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 of poisoning or to guide treatment[^1] (see section 11).

### 5. Fire-fighting measures

**General hazard**
None, because borax pentahydrate is not flammable, combustible or explosive. The product is itself a flame retardant.
Extinguishing media
Any fire extinguishing media may be used on nearby fires. 6. Accidental release measures

Personal precautions
Avoid dust formation. In case of exposure to high level of airborne dust, wear a personal respirator in compliance with national legislation.

Environmental precautions
Borax pentahydrate is a water-soluble white powder that may cause damage to trees or vegetation by root absorption (see section 12).

Methods for cleaning up (Land spill)
Vacuum, shovel or sweep up borax pentahydrate and place in containers for disposal in accordance with applicable local regulations. Avoid contamination of water bodies during clean up and disposal. No personal protective equipment is needed to clean up 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 (see sections 12, 13 and 15).

7. Handling and Storage

Safe Handling Advice and storage
No special handling precautions are required, but dry, indoor storage is recommended. To maintain package integrity and to minimise caking of the product, bags should be handled on a first-in first-out basis. Good housekeeping procedures should be followed to minimise dust generation and accumulation. Your supplier can advise you on safe handling, please contact him.

Specific Use(s)
The product should be kept away from strong reducing agents.

8. Exposure controls / Personal protection

Exposure limit values
Respect regulatory provisions for dust (inhalable and respirable).

Exposure controls

A. OCCUPATIONAL EXPOSURE CONTROLS
Use local exhaust ventilation to keep airborne concentrations of borax pentahydrate dust below permissible exposure levels.

- Respiratory protection
  Where airborne concentrations are expected to exceed exposure limits, respirators should be used.

- Eyes and hands protection
  Goggles and gloves are not required for normal industrial exposures, but may be warranted if environment is excessively dusty.

B. ENVIRONMENTAL EXPOSURE CONTROLS
No special requirement.
9. Physical and chemical properties

**General information**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>crystalline solid</td>
</tr>
<tr>
<td>Colour</td>
<td>white</td>
</tr>
<tr>
<td>Odour</td>
<td>odourless</td>
</tr>
<tr>
<td>Molecular weight</td>
<td>291.35</td>
</tr>
<tr>
<td>Specific gravity</td>
<td>1.81</td>
</tr>
</tbody>
</table>

**Important health, safety and environmental information**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melting temperature</td>
<td>200°C (heated in closed space)</td>
</tr>
<tr>
<td>Boiling point</td>
<td>1575 °C</td>
</tr>
<tr>
<td>Flash point</td>
<td>Non flammable</td>
</tr>
<tr>
<td>Explosion hazard</td>
<td>Non explosive</td>
</tr>
<tr>
<td>Solubility in water</td>
<td>3.7% @ 20°C; 51.2% @ 100°C</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>Negligible @ 20°C</td>
</tr>
<tr>
<td>pH @ 20°C</td>
<td>9.3 (3 % solution)</td>
</tr>
</tbody>
</table>

10. Stability and Reactivity

**General**

Borax pentahydrate is a stable product, but when heated it losses water, eventually forming anhydrous borax (Na₂B₄O₇).

**Hazardous decomposition or polymerisation**

None

**Incompatible materials and conditions to avoid:**

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

**ACUTE TOXICITY**

**Ingestion**

Low acute oral toxicity; LD₅₀ in 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**

Low acute inhalation toxicity; LC₅₀ in rats is greater than 2.0 mg/l (or g/m³).

**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.

OTHER
Reproductive/Developmental toxicity
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 rat, mouse and rabbit, at high doses, demonstrate developmental effects on the foetus including foetal weight loss and minor skeletal variations. The doses administered were many times in excess of those which humans would normally be exposed to.

Carcinogenicity/Mutagenicity
Not a carcinogen.
Not a mutagen.

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.

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 IC50 = 24 mg B/l

Invertebrate toxicity
Daphnia, Daphnia magna Straus
24-hr IC50 = 242 mg B/l

Fish toxicity
Sea water:
Dab, Limanda limanda 96-hr LC50 = 74 mg B/l

Fresh water:
Rainbow trout, Oncorhynchus mykiss (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

Test substance: Sodium tetraborate

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.
13. Disposal considerations

Disposal guidance
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.

14. Transport information

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

15. Regulatory information

General
Ensure all national/local 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

16. Other information

References


All information presented herein is given in good faith and is based on sources and tests considered to be reliable, but cannot be guaranteed, it is the user’s full responsibility to accept risk for the safety, toxicity, handling, storage as well as to determine the suitability of the product for a specific purpose. We make no warranty as to the results to be obtained in using this product; therefore all risks must be assumed by the user.