ETİ MINE WORKS
GENERAL MANAGEMENT

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TECHNOLOGY & DEVELOPMENT
DEPARTMENT

ETIBOR-48
(BORAX PENTAHYDRATE)
HEALTH AND SAFETY DATA SHEET

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(Safety Data Sheet in compliance with REACH Title IV / Annex II and ISO 11014)

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

1.1. Identification of the substance or preparation

Etibor-48 (Borax Pentahydrate)

Registration number:
To be exempted from registration under REACH Regulation according to Article 2 § (7). Etibor-48 (disodium tetraborate pentahydrate) is to be exempted from Registration and Evaluation with respect to paragraph 6 of Annex V of REACH Regulation provided that borax anhydrous (disodium tetraborate anhydrous) is registered using this exemption (CAS No: 12179-04-3).

Trade names : Etibor-48 (Borax Pentahydrate)

Chemical name/synonyms :

Sodium tetraborate pentahydrate, disodium tetraborate pentahydrate, borax 5 mol

1.2. Use of the substance / preparation

The product is used in industrial manufacturing, in particular in:
- Ceramics
- Detergent
- Borosilicate glass
- Insulation fibreglass

1.3. Company/undertaking identification

Importer :
Name : AB ETIPRODUCTS OY,
Address : PIISPANPORTTI 9, 02240 ESPOO- FINLAND
Phone No: +358 9 819 4440
Fax No : +358 9 819 444 44
e-mail : sales@etiproducts.com

Manufacturer:
Name : ETİ MINE WORKS GENERAL MANAGEMENT
Addres : Sıhhiye, Cihan Sok. No:2, 06430, Ankara, Türkiye.
Phone No: 00 90 312 294 23 42
Fax No : 00 90 312 232 59 10

1.4. Emergency phone number : 00 90 312 294 23 45 (Available office hours)
: 00 90 312 232 59 10 (Available office hours)

2. 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/m^3.

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).

3. Composition / Information on Ingredients

3.1. Chemical composition:

Chemical Nature of the Substance / Preparation
The product contains greater than 99.9 percent (%) borax pentahydrate $Na_2B_4O_7.5H_2O$

Components

CAS- N°	EINECS	Name	EC Classification
12179-04-3	215-540-4	Borax pentahydrate	no classification

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

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, at high concentrations 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

7.1. Safe Handling Advice
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 the supplier.

7.2. Storage
No special handling precautions are required, but dry, indoor storage is recommended. No specific requirements. Provide appropriate ventilation and store bags such as to prevent any accidental damage.

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

8. Exposure controls / Personal protection

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

- *Occupational exposure limits : Borax pentahydrate is regulated by OSHA, Cal OSHA and ACGI.*
  ACGIH/TLV 5 mg/m^3
  Cal OSHA/PEL 5 mg/m^3

OSHA/PEL (total dust)	10 mg/m^3

8.2. Exposure controls

8.2.1. 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.

8.2.2. ENVIRONMENTAL EXPOSURE CONTROLS

No special requirement.

9. Physical and chemical properties

9.1. General information

Physical state	crystalline solid
Colour	white
Odour	odourless
Molecular weight	291.35
Specific gravity	1.81

9.2. Important health, safety and environmental information

Melting temperature	200°C (heated in closed space)
Boiling point	1575 °C
Flash point	Non flammable
Explosion hazard	Non explosive
Solubility in water	3.7% @ 20°C; 51.2% @ 100°C
Vapour pressure	Negligible @ 20°C
pH @ 20°C	9.3 (3 % solution)

10. Stability and Reactivity

General

Borax pentahydrate is a stable product, but when heated it losses water, eventually forming anhydrous borax ($Na_2 B_4 O_7$).

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

11.1. Acute effects

Ingestion[2]

Low acute oral toxicity; LD_{50} 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; LC_{50} 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.

11.2. Chronic effects
Reproductive/Developmental toxicity
Animal feeding studies in rat, mouse and dog, at high doses, have demonstrated effects on fertility and testes[2]. 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 [3,4,5].

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 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[6]
Green algae, *Scenedesmus subspicatus*

96-hr IC_{10} = 24 mg B/1 †

Invertebrate toxicity[7]
Daphnia, *Daphnia magna* Straus
24-hr IC_{50} = 242 mg B/1 †

Fish toxicity
Sea water[8]:
Dab, *Limanda limanda* 96-hr LC_{50} = 74 mg B/l †

Fresh water[9]:
Rainbow trout, *Oncorhynchus mykiss* (embryo-larval stage)

24-day LC_{50} = 88 mg B/l †
32-day LC_{50} = 54 mg B/l †
Goldfish, *Carassius auratus* (embryo-larval stage)
7-day LC_{50} = 65 mg B/l †
3-day LC_{50} = 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
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2. Weir R J, Fisher R S, Toxicol. Appl. Pharmacol., (1972), 23, 351-364

3. National Toxicology Program (NTP) – Technical Report Series No. TR324, NIH Publication No. 88-2580 (1987), PB88 213475/XAB

4. Fail *et al*., Fund. Appl. Toxicol. (1991) 17, 225-239

5. Heindel *et al*., Fund. Appl. Toxicol. (1992) 18, 266-277

6. Guhl W, SÖFW-Journal (1992) 181 (18/92), 1159-1168

7. Schöberl P, Marl and Huber L (1988) Tenside Surfactants Detergents 25, 99-107

8. Hugman S J and Mance G (1983) Water Research Centre Report 616-M

9. Birge W J, Black J A, EPA-560/-76-008 (April 1977) PB 267 085

For general information on the toxicology of borates see ECETOC Technical Report No. 63 (1995); Patty's Industrial Hygiene and Toxicology, 4th Edition Vol. II, (1994) Chap. 42, 'Boron'.