

**ETİ MADEN İŞLETMELERİ GENEL MÜDÜRLÜĞÜ**  
**RESEARCH & DEVELOPMENT**  
**DEPARTMENT**

# **ANHYDROUS BORAX**

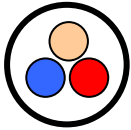
## **HEALTH AND SAFETY DATA SHEET**

**Prepared by**

**Dr. Ayhan MERGEN**  
**Erhan TEKTAŞ**

ETİ MADEN İŞLETMELERİ GENEL MÜDÜRLÜĞÜ  
RESEARCH & DEVELOPMENT DEPARTMENT  
(06377) Güvercinlik / ANKARA, TÜRKİYE  
TEL : ++90 312 397 2570  
FAX : ++90 312 397 1655

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**GENEL MÜDÜRLÜĞÜ**

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

## Product Name

Etibor-68.

## Chemical name/synonyms

Anhydrous borax, dehydrated borax, disodium tetraborate,

## Use of the substance / preparation

The product is used in industrial manufacturing, in particular in:

- Metallurgical Fluxes
- Glass
- Fiber glass
- Ceramics
- Fertilizers
- Flame retardants

## Supplier

**Name :** ETİ MADEN İŞLETMELERİ GENEL MÜDÜRLÜĞÜ

**Address:** Sıhhiye, Cihan Sok. No:2, 06430, Ankara, Türkiye.

**Phone No:** 00 90 312 294 20 00

**Fax No:** 00 90 312 229 21 32

**Emergency phone number:** 00 90 312 294 23 38

## 2. Composition / Information on Ingredients

### Chemical Nature of the Substance / Preparation

The product contains greater than 99 percent (%) anhydrous borax  $\text{Na}_2\text{B}_4\text{O}_7$

### Components

CAS- N°	EINECS	Name	EC Classification
1330-43-4	215-540-4	Anhydrous Borax	no classification

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

## 3. Hazards Identification

### Emergency overview

Anhydrous borax is a white, odourless, granular 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 anhydrous borax is poorly absorbed through intact skin.

### Inhalation

Occasional mild irritation effects to nose and throat may occur from inhalation of anhydrous borax dusts at levels greater than  $10 \text{ mg/m}^3$ .

### Eye contact

Anhydrous borax is a mild eye irritant.

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Anhydrous borax is b

o intact skin.

### Ingestion

Products containing anhydrous borax are not intended for ingestion. Anhydrous borax 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 anhydrous borax 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 anhydrous borax 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 5 grams of anhydrous borax. For ingestion in excess of 5 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<sup>[1]</sup> (see section 11).

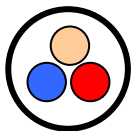
## **5. Fire-fighting measures**

### **General hazard**

None, because anhydrous borax 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.



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## **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**

Anhydrous borax 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 anhydrous borax 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**

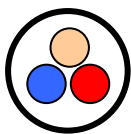
#### **A. OCCUPATIONAL EXPOSURE CONTROLS**

Use local exhaust ventilation to keep airborne concentrations of anhydrous borax 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.



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## **9. Physical and chemical properties**

## General information

Physical state	granular solid
Colour	white
Odour	odourless
Molecular weight	201.22
Specific gravity	2.37

## Important health, safety and environmental information

Melting temperature	741°C
Boiling point	1575 °C
Flash point	Non flammable
Explosion hazard	Non explosive
Solubility in water	2.48% @ 20°C
Vapour pressure	Negligible @ 20°C
pH @ 20°C	9.2 (1 % solution)

## 10. Stability and Reactivity

### General

Anhydrous borax is a stable product.

### 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<sup>[2]</sup>

Low acute oral toxicity; LD<sub>50</sub> in rats is 2,400 to 2,600 mg/kg of body weight.

#### Skin

Low acute dermal toxicity; LD50 in rabbits is greater than 2,000 mg/kg of body weight. Anhydrous borax is poorly absorbed through intact skin.

#### Inhalation

Low acute inhalation toxicity; LC<sub>50</sub> in rats is greater than 2.0 mg/l (or g/m<sup>3</sup>).

#### Skin irritation

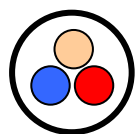
Non-irritant.

#### Eye irritation

Mild eye irritant in rabbits. Fifty years of occupational exposure to anhydrous borax indicate no adverse effects on human eye. Anhydrous borax is non-irritating to eyes in normal industrial use.

#### Sensitisation

Anhydrous borax is not a skin sensitiser.



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OTHER

### Reproductive/Developmental toxicity

Animal feeding studies in rat, mouse and dog, at high doses, have demonstrated effects on fertility and testes<sup>[2]</sup>. 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<sup>[3,4,5]</sup>.

### 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<sup>[6]</sup>

Green algae, *Scenedesmus subspicatus*

96-hr IC<sub>10</sub> = 24 mg B/l †

#### Invertebrate toxicity<sup>[7]</sup>

Daphnia, *Daphnia magna* Straus

24-hr IC<sub>50</sub> = 242 mg B/l †

#### Fish toxicity

Sea water<sup>[8]</sup>:

Dab, *Limanda limanda* 96-hr LC<sub>50</sub> = 74 mg B/l †

Fresh water<sup>[9]</sup>:

Rainbow trout, *Oncorhynchus mykiss* (embryo-larval stage)

24-day LC<sub>50</sub> = 88 mg B/l †

32-day LC<sub>50</sub> = 54 mg B/l †

Goldfish, *Carassius auratus* (embryo-larval stage)

7-day LC<sub>50</sub> = 65 mg B/l †

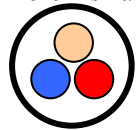
3-day LC<sub>50</sub> = 71 mg B/l †

Test substance: † Sodium tetraborate

### ENVIRONMENTAL FATE DATA

#### Persistence/Degradation

Boron is naturally occurring and ubiquitous in the environment.



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#### Octanol/Water partition coefficient

No value. In aqueous solution anhydrous borax 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 anhydrous borax 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

Anhydrous borax 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)

Anhydrous borax 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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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'.