



ETİ MADEN İŞLETMELERİ GENEL MÜDÜRLÜĞÜ
RESEARCH & DEVELOPMENT
DEPARTMENT

BORAX DECAHYDRATE HEALTH AND SAFETY DATA SHEET

Prepared by

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

Product Name
Borax Decahydrate

Chemical name/synonyms
Sodium tetraborate decahydrate, disodium tetraborate decahydrate, borax

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

Supplier
Name : ETİ MADEN İŞLETMELERİ GENEL MÜDÜRLÜĞÜ
Address: Sıhhiye, Cihan Sok. No:2, 06430, Ankara, Türkiye.
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2. Composition / Information on Ingredients

Chemical Nature of the Substance / Preparation
The product contains greater than 99.9 percent (%) borax decahydrate $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$

Components	EINECS	Name	EC Classification
CAS- N° 1303-96-4	215-540-4	Borax decahydrate	no classification

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

3. Hazards Identification

Emergency overview
Borax decahydrate 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 decahydrate is poorly absorbed through intact skin.

Inhalation
Occasional mild irritation effects to nose and throat may occur from inhalation of borax decahydrate dusts at levels greater than 10 mg/m^3 .

Eye contact
Borax decahydrate is a mild eye irritant.

Skin contact
Borax decahydrate does not cause irritation to intact skin.



Ingestion

Products containing borax decahydrate are not intended for ingestion. Borax decahydrate 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 decahydrate 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 decahydrate 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 9 grams of borax decahydrate. For ingestion in excess of 9 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 decahydrate 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 decahydrate 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 decahydrate 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 decahydrate 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

Physical state	crystalline solid
Colour	white
Odour	odourless
Molecular weight	381.37
Specific gravity	1.71

Important health, safety and environmental information

Melting temperature	62°C (heated in closed space)
Boiling point	1575 °C
Flash point	Non flammable
Explosion hazard	Non explosive
Solubility in water	4.7% @ 20°C; 65.6% @ 100°C
Vapour pressure	Negligible @ 20°C
pH @ 20°C	9.3 (0.1 % solution) 9.2 (1.0% solution) 9.3 (4.7 % solution)

10. Stability and Reactivity

General

Borax decahydrate is a stable product, but when heated it losses water, eventually forming anhydrous borax ($\text{Na}_2\text{B}_4\text{O}_7$).

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

ACUTE TOXICITY

Ingestion^[2]

Low acute oral toxicity; LD_{50} in rats is 6,000 mg/kg of body weight.

Skin

Low acute dermal toxicity; LD_{50} in rabbits is greater than 2,000 mg/kg of body weight. Borax decahydrate 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 decahydrate indicate no adverse effects on human eye. Borax decahydrate is a constituent of eye lotions.

Sensitisation

Borax decahydrate is not a skin sensitiser.

