ETİBORİK ASİT
SAFETY DATA SHEET

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ETİ MADEN İŞLETMELERİ GENEL MÜDÜRLÜĞÜ
Ayvalı Mah. Halil Sezai Erkut Cad. Afra Sok. No: 1/A 06010 Keçiören/Ankara TÜRKİYE

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Substance name : Boric Acid

Trade name **:** ETİBORİK ASİT (Boric acid)

Chemical name/synonyms: Orthoboric acid, boracic acid

Index Nº : 005-007-00-2

CAS Nº : 10043-35-3

EC Nº : 233-139-2

REACH Registration number **:** 01-2119486683-25-0006

1.2. Relevant identified uses of the substance and uses advised against

Relevant identified uses

The product is used in industrial manufacturing, among others in:

- Ceramics
- Cosmetics
- Detergent
- Borosilicate glass
- Textile fibreglass
- Fertilizers

For area-specific use, see the exposure scenarios in the annex of this extended Safety Data Sheet (eSDS).

Uses advised against

Not applicable, there are no uses of Etiborik Asit advised against.

1.3. Details of the supplier of the safety data sheet

Importer

Name : AB ETIPRODUCTS OY

Address **:** Piispanportti 5, 02240 Espoo/FINLAND

Phone No **:** + 358 9 819 444 40

Fax No **:** + 358 9 819 444 44

e-mail **:** sales@etiproducts.com

Manufacturer

Name : ETİ MADEN İŞLETMELERİ GENEL MÜDÜRLÜĞÜ

Address: Ayvalı Mah. Halil Sezai Erkut Cad. Afra Sok. No: 1/A 06010 Keçiören/Ankara TÜRKİYE

Phone No : +90 312 294 20 00

Fax No : +90 312 232 71 84

1.4. Emergency phone number : +49 (0)6132-84463 (24-Hour-Number) GBK GmbH

SECTION 2: Hazard Identification

2.1. Classification of the substance

2.1.1. Classification according to Regulation EC N°1272/2008 (CLP)

Harmonised classification provided in the 1st ATP to CLP (Regulation EC N°790/2009)

Repr. Cat. 1B; H360FD

Specific concentrations limits : Repr. 1B; H360FD: C ≥5.5%

Precautionary Statement Prevention : P201; P202; P280

Precautionary Statement Response : P308+P313

Precautionary Statement Storage : P405

Precautionary Statement Disposal : P501

2.1.2. Additional information

For the full text of Hazard Class/Statements and Precautionary Statements see SECTION 16.3.

2.2. Label elements

2.2.1. Label according to Regulation (EC) N°1272/2008 (CLP)

Hazard pictograms

Signal word **:** Danger

Hazard Statements **:** H360FD: May damage fertility or the unborn child.

Precautionary Statements:

P201 : Obtain special instruction before use

P202 : Do not handle until all safety precautions have been read and understood

P280 : Wear protective gloves/protective clothing/eye protection/face protection.

P308+P313 : If exposed or concerned: Get medical advice/attention

P405 : Store locked up.

2.2.2. According to REACH, Annex XVII

Restricted to professional users

2.3. Other hazards

Emergency overview

Etiborik Asit is a white odourless, powder/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 Etiborik Asit is poorly absorbed through intact skin.

Inhalation

Occasional mild irritation effects to nose and throat may occur from inhalation of Etiborik Asit dusts at levels higher than 10 mg/m^3.

Eye contact

Etiborik Asit is non-irritating to eyes in normal industrial use.

Skin contact

Etiborik Asit does not cause irritation to intact skin.

Ingestion

Products containing Etiborik Asit are not intended for ingestion. Etiborik Asit 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.

Reproductive/developmental

Animal ingestion studies in several species, at high doses, indicate that borates cause reproductive and developmental effects [1]. A human study of occupational exposure to borate dust showed no adverse effect on reproduction. An epidemiological study and a peer reviewing report of the past epidemiological studies conducted in China didn't show any negative effect of boron on human fertility [2]. A study conducted in Turkey with boron exposed mine workers showed that mean blood concentrations of the high exposure group is ~6 times and ~9 times lower than those of the highest no effect level of boron in blood with regard to developmental and reprotoxic effects (respectively) in rats. With those findings, no unfavourable effects of boron exposure on reproductive indicators are observed in humans [3, 4].

Potential ecological effects

Large amounts of Etiborik Asit can be harmful to plants and other species. Therefore, releases to the environment should be minimized.

Signs and symptoms of exposure

Symptoms of accidental over-exposure to Etiborik Asit 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.

Refer to SECTION 11 for details on Toxicological data.

SECTION 3: Composition / Information on ingredients

3.1. Substances

The product contains greater than 99.9 percent (%) Etiborik Asit (H_3BO_3).

Identification Name	EC N°	CAS N°	REACH Registration Number	Wt. %
Boric Acid (Orthoboric acid, boracic acid)	233-139-2	10043-35-3	01-2119486683-25-0006	> 99.9

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

SECTION 4: First aid measures

4.1. Description of first aid measures

Skin contact

No treatment necessary because Etiborik Asit does not cause irritation to intact skin.

Eye contact

No treatment necessary because non-irritant.

Inhalation

If symptoms such as nose or throat irritation are observed, remove to fresh air. Etiborik Asit has low inhalation toxicity.

Ingestion

If large amounts are swallowed (i.e. more than one teaspoon), contact a doctor or toxicity centre immediately.

4.2. Most important symptoms and effects, both acute and delayed

N.A.

4.3. Indication of any immediate medical attention and special treatment needed.

Observation only is required for adult ingestion of less than 6 grams of Etiborik Asit. For ingestion in excess of 6 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 [5] (see SECTION 11).

SECTION 5: Fire-fighting measures

5.1. Extinguishing media

Any appropriate fire extinguishing media may be used on nearby fires.

5.2. Special hazards arising from the substance

Etiborik Asit is not flammable, combustible or explosive. The product is itself a flame retardant.

5.3. Advice for firefighters

N.A.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures.

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

6.2. Environmental precautions

Etiborik Asit is a water-soluble white product that may, at high concentrations cause damage to trees or vegetation by root absorption (see SECTION 12).

6.3. Methods and material for containment and cleaning up

Land spill

Vacuum, shovel or sweep up Etiborik Asit 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).

6.4. Reference to other sections

See SECTIONS 8 and 13 for further information.

SECTION 7: Handling and Storage

7.1. Precautions for safe handling

To maintain package integrity and to minimise caking of the product, bags should be handled on a first-in first-out basis. Good housekeeping and dust prevention procedures should be followed to minimise dust generation and accumulation. Your supplier can advise you on safe handling, please contact the supplier.

7.2. Conditions for safe storage, including any incompatibilities

Dry, indoor storage is recommended since the product is highly hygroscopic. The product should be kept away from strong reducing agents.

7.3. Specific end use(s)

See exposure scenario in Annex to the SDS.

SECTION 8: Exposure controls / Personal protection

8.1. Control parameters

Occupational Exposure Limit Values

Substance:	**Boric Acid**			
CAS N°	**10043-35-3**			
	Limit value-Eight hours		Limit value – Short term	
	ppm	mg/m^3	ppm	mg/m^3
Belgium		2		6
Germany (AGS)		0.5 (1)		1 (1)(2)
Germany (DFG)		10 inhalable aerosol (1)		10 inhalable aerosol (1)(2)
Latvia		10		
Spain		2		6
Switzerland		1.8 (1)		1.8 (1)(2)

Source: IFA Institut für Arbeitsschutz der Deutschen Gesetzlichen Unfallversicherung

Remarks

Germany (AGS) (1) Inhalable fraction

(2) 15 minutes average value

Germany (DFG) (1) calculated as boron: 1.8 mg/m^3

(2) 15 minutes average value in the case of simultaneous appearance of boric acid and tetraborates counts 0.75 mg/m^3 calculated as boron.

Switzerland (1) Inhalable fraction (2) 15 minutes average value

Occupational exposure limits for dust (total and respirable) are treated by OSHA, Cal OSHA and ACGIH as "Particulate Not Otherwise Classified" or "Nuisance Dust"

ACGIH/TLV : 10 mg/m^3

Cal OSHA/PEL : 10 mg/m^3

OSHA/PEL (total dust) : 15 mg/m^3

OSHA/PEL (respirable dust) : 5 mg/m^3

DNEL values

Exposure pattern	**Type/site of effect**	**Exposure route**	**DNEL value**
DNELs for workers			
Long-term	Systemic	Inhalation	8.3 mg /m^3
Long-term	Systemic	Dermal	392 mg/ kg bw/day
DNELs for the general public			
Acute	Systemic	Oral	0.98 mg /kg bw/day
Long-term	Systemic	Dermal	196 mg /kg bw/day
Long-term	Systemic	Inhalation	4.15 mg /kg bw/day
Long-term	Systemic	Oral	0.98 mg /kg bw/day

Source: Chemical Safety Report of Boric Acid

PNEC values

PNEC $_{\text{add, freshwater, marine water}}$ = 1.35 mg B/L

PNEC $_{\text{add aqua intermittent}}$ = 9.1 mg B/L

PNEC $_{\text{add freshwater sediment, marine water sediment}}$ = 1.8 mg B/kg sediment dry weight

PNEC $_{\text{add, STP}}$ = 1.75 mg B/L

Source: Chemical Safety Report of Boric Acid

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Maintain air concentrations below occupational exposure standards.

Use local exhaust ventilation to keep airborne concentrations of Etiborik Asit dust below permissible exposure levels. Wash hands before breaks and at the end of the workday. Remove and wash soiled clothing.

8.2.2. Individual protection measures, such as personal protective equipment

Individual protection measures should be preferred taking into account the Council Directive 89/966/EEC and the appropriate CEN standard.

Respiratory protection

In case of prolonged exposure to dust wear a personal respirator in compliance with national/international legislation (CEN standard).

Eyes and hands protection

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

8.2.3. Environmental exposure controls

No special requirement.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	: White solid, granular/powder
Odour	: Odourless
Odour threshold	: N.A.
pH @ 20°C	: 5.1 (1.0 % solution)
Melting point	: 450°C
Initial boiling point and boiling range	: 1860°C
Flash point	: Non flammable
Evaporation rate	: N.A.
Flammability (solid, gas)	: N.A.
Upper/lower flammability or explosive limits	: Non explosive
Vapour pressure	: Negligible @ 20°C
Vapour density	: N.A.
Solubility in water	: 4.7% @ 20°C; 27.5% @ 100°C
Partition coefficient: n-octanol/water	: N.A.
Auto-ignition temperature	: N.A.
Decomposition temperature	: 169±1 toHBO_2 & -1 ½ H_2O at 300°C
Viscosity	: N.A.
Explosive properties	: Non explosive
Oxidising properties	: N.A.

9.2. Other information

Molecular weight	: 61.83
Specific gravity	: 1.51 @ 20°C

SECTION 10: Stability and reactivity

10.1. Reactivity

Etiborik Asit is a stable product.

10.2. Chemical stability

Etiborik Asit is a stable product, but when heated it loses water, first forming metaboric acid (HBO_2), and on further heating it is converted into boron oxide (B_2O_3).

10.3. Possibility of hazardous reactions

Reaction with strong reducing agents such as metal hydrides or alkali metals will generate hydrogen gas which could create an explosive hazard.

10.4. Conditions to avoid

Avoid contact with strong reducing agents.

10.5. Incompatible materials

Avoid contact with strong reducing agents such as metal hydrides or alkali metals.

10.6. Hazardous decomposition products

N.A.

SECTION 11: Toxicological information

11.1. Information on toxicological effect

11.1.1. Substances

Acute toxicity

Low acute oral toxicity; LD50 in rats > 2,600 mg/kg of body weight (Test material: Boron Oxide) [6].

Skin corrosion/irritation

Low acute dermal toxicity; LD_{50} in rabbits is greater than 2,000 mg/kg of body weight [7]. Boric acid is poorly absorbed through intact skin. Non-irritant.

Serious eye damage/irritation

Boric acid has no eye damage/irritation.

Respiratory or skin sensitization

Boric acid has no respiratory or skin sensitization.

Germcell mutagenicity

Boric acid is not mutagenic.

Carcinogenicity

Boric acid is not carcinogenic.

Reproductive toxicity

Animal feeding studies in rat, mouse and dog, at high doses, have demonstrated effects on fertility and testes [1]. 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 [8, 9]. While boron has been shown to adversely affect male reproduction in laboratory animals, there is no clear evidence of male reproductive effects attributable to boron in studies of highly exposed workers. Human epidemiological studies show no increase in pulmonary disease in occupational populations with chronic exposures to borate dusts. A recent epidemiology study under the conditions of normal occupational exposure to borate dusts indicated no effect on fertility. A study conducted in Turkey with boron exposed mine workers showed that mean blood concentrations of the high exposure group is ~6 times and ~9 times lower than those of the highest no effect level of boron in blood with

regard to developmental and reprotoxic effects (respectively) in rats. With those findings, no unfavorable effects of boron exposure on reproductive indicators are observed in humans [3, 4].

STOT-single exposure

N.A.

STOT-repeated exposure

N.A.

Aspiration hazard

Boric acid has no aspiration hazard.

SECTION 12: Ecological information

12.1. Toxicity

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. To convert boric acid into equivalent boron (B) content, multiply by 0.1748.

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, *Pseudokirchneriella subcapitata*

72-hr EC_{50} –biomass = 40 mg B/L or 229 mg boric acid/L [10]

Invertebrate toxicity [7]

Daphnia, Daphnids, *Daphnia magna*

48-hr LC_{50} = 133 mg B/L or 760 mg boric acid/L [11]

Fish toxicity

Fish, Fathered minnow, *Pimephales promelas*

96-hr LC_{50} = 79.7 mg B/L or 456 mg boric acid/L [12]

12.2. Persistence and degradability

Boron is naturally occurring and ubiquitous in the environment. Boric acid decomposes in the environment to natural borate.

12.3. Bioaccumulative potential

Not bioacumulative.

12.4. Mobility in soil

The product is soluble in water and is leachable through normal soil.

12.5. Results of PBT and vPvB assessment

N.A.

12.6. Other adverse effects

No data available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Small quantities of Etiborik Asit 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.

SECTION 14: Transport information

Boric acid has no UN Number, and is not regulated under international rail, road or air transport regulations yet, it is classified as Group B under IMO resolution MSC.393 (95) for bulk product shipments.

14.1. UN number **:** N.A.

14.2. UN proper shipping name **:** N.A.

14.3. Transport hazard class(es) **:** N.A.

14.4. Packing group **:** N.A.

14.5. Environmental hazards **:** N.A.

14.6. Special precautions for user **:** N.A.

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code **:** N.A.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance

It should be noted that borates are safe under conditions of normal handling and use, besides, they are essential nutrients to plants, and research shows that they play a beneficial role in human health. CLP classification has been solely based on animal tests where animals were exposed to high doses of boric acid over long periods of time. These doses were many times higher than humans are exposed to under conditions of normal handling and use. Consequently, a precautionary decision was taken by the European Commission. Although we will comply with the body of legislation triggered by that decision, we are in process of all possible legal actions.

Clean Air Act (Montreal Protocol)

Boric acid was not manufactured with and does not contain any Class I or Class II ozone depleting substances.

Cosmetics

The EC Directive 76/768/EEC sets an upper limit of 5% Boric acid in talcs, 0.5% in oral hygiene products and 3% in other products. In addition, the talcs should not be used on children under 3 years of age.

German Water Hazard Class (WGK): Substances and mixtures can pose a hazard to water bodies. To protect the water bodies from detrimental changes to their characteristics it is required that substances and mixtures that are handled or stored in facilities in Germany are classified for their water hazard properties.

Classification is carried out on the basis of the Ordinance on facilities for handling substances that are hazardous to water (Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen (AwSV)) of 18 April 2017 (BGBI 2017, Teil I, Nr. 22, Seite 905).

There are three water hazard classes (WGK).

1: slightly hazardous to water

2: obviously hazardous to water

3: highly hazardous to water

Boric acid has been classified as WGK 1: slightly hazardous to water.

Boric acid Reg. No: 315.

Chemical inventory listing

- U.S. EPA TSCA : 10043-35-3
- Canadian DSL : 10043-35-3
- EINECS : 233-139-2
- South Korea : KE-03499
- South Korea PECs : 370
- Japan ENCS : MITI 1-63
- China IESCS : 10043-35-3
- China HazChem : 10043-35-3
- New Zealand NZIoC : 10043-35-3
- Philippines PICCS : 10043-35-3
- Australia AICS : 10043-35-3

Ensure all national/local regulations are observed.

EU Reach Regulation

Boric Acid is listed in the Candidate List of Substances of Very High Concern "SVHC" for eventual inclusion in Annex XIV to REACH Regulation 1907/2006 ("Authorisation List"). (18.06.2010-ED/30/2010).

Boric acid is listed in the Annex XVII of REACH Regulation 1907/2006 (EU No.109/2012) and its use in consumer products above specific concentration limits is restricted. Note that this restriction is only specific to consumer products and do not cover its industrial and/or professional applications. Boric acid can be used in consumer products below specific concentration limits (which is C ≥5.5% for boric acid).

15.2. Chemical safety assessment

Chemical Safety Assessment of Boric Acid has been carried out under REACH Regulation of the EU.

SECTION 16: Other information

16.1. Mainly changes made to the previous version of this Safety Data Sheet (SDS)

This SDS complies with ISO 11014; the requirements of REACH Title IV and was updated to be in compliance with Annex II of REACH duly amended by **Commission Regulation (EU) No 2015/830 of 28 May 2015**.

Revision No	Revision date	Revision content
07	February 2016	• This SDS was updated in accordance with the ECHA Guidance on the Compilation of Safety data Sheets, Ver. 3.1 dated November 2015.
08	February 2017	• This SDS was updated in accordance with the IMO resolution MSC.393(95).
08.1	January 2018	• This SDS was updated in line with "Standardization and Simplification of Bag Printings"
08.2	May 2018	• Control Parameters under Section 8.1 were updated in line with the Chemical Safety Report.
08.3	February 2019	• This SDS was updated to include German Water Hazard Class (WGK) info under Section 15.

16.2. List of abbreviation and acronyms used in this SDS

1st ATP : 1st Adaptation to Technical and scientific Progress
ACGIH : American Conference of Governmental Industrial Hygienists
AICS : Australian Inventory of Chemical Substances
Cal OSHA : The State of California Division of Occupational Safety and Health (DOSH)
Canadian DSL : Canadian Domestic Substances List
CAS N° : Chemical Abstracts Service number
CLP : Classification Labelling Packaging Regulation: Regulation (EC) N°1272/2008

CSR : Chemical Safety Report
DNEL : Derived No effect Level
EC N° : EINECS Number: European Inventory of Existing Commercial Substances
EC_{50} : Half maximal effective concentration
ENCS : Japan Inventory of Existing and New Chemical Substances
Eti Maden : Eti Maden İşletmeleri Genel Müdürlüğü
HazChem : Chinese Catalog of Hazardous Chemicals
IECSC : Inventory of Existing Chemical Substances Produced or Imported in China
IMO : International Maritime Organization
Index N° : Atomic number of the element most characteristic of the properties of the substance
KECI : South Korea Existing Chemicals List
LC_{50} : Lethal Concentration, 50%
LD_{50} : Median Lethal Dose
N.A. : Not Applicable
NZIoC : New Zealand Inventory of Chemicals
OSHA : Occupational Safety & Health Administration
PBT : Persistent, Bioaccumulative and Toxic substance
PECs : South Korea Priority Existing Chemicals
PEL : Permissible Exposure Limits
PICCS : Philippines Inventory of Chemicals and Chemical Substances
PNEC : Predicted No Effect Concentration
REACH : Registration, Evaluation, Authorisation and Restrictions of Chemicals Regulation (EC) N°1907/2006
Repr. Cat. 1B : Substance presumed human reproductive toxicant
SDS : Safety Data Sheet
TLV : Threshold Limit Value
U.S. EPA TSCA : United States Environmental Protection Agency Toxic Substances Control Act
UN : United Nations
vPvB : Very Persistent and Very Bioaccumulative

16.3. List of relevant hazard statements and precautionary statements used in this SDS

According to CLP Regulation
Hazard Statement
H360FD: May damage fertility or the unborn child
Precautionary Statements
Prevention **P201:** Obtain special instructions before use. **P202:** Do not handle until all safety precautions have been read and understood. **P280:** Wear protective gloves/protective clothing/eye protection/face protection. **Response** **P308+P313:** If exposed or concerned: get medical advice/attention. **Storage** **P405:** Store locked up. **Disposal:** **P501:** Dispose of contents/container to in accordance with local regulations.

16.4. Key literature references and sources for data

[1] Fail, P.A., George, J.D., Seely, J.C., Grizzle, T.B., & Heindel, J.J. (1991). Reproductive toxicity of boric acid in Swiss (CD-1) mice: Assessment using the continuous breeding protocol. Fundamental and Applied Toxicology, 17(2), 225-239.

[2] Scialli, A.R., Bonde, J.P., Brüske-Hohlfeld, I., Culver, D.B., Li, Y., & Sullivan, F.M. (2010). An overview of male reproductive studies of boron with an emphasis on studies of highly exposed Chinese workers. Reproductive Toxicology, 29(1), 10-24.

[3] Duydu, Y., Başaran, A., & Bolt, H. (2012). Exposure assessment of boron in Bandırma boric acid production plant. Journal of Trace Elements in Medicine and Biology, 26(2-3), 161-164.

[4] Başaran, N., Duydu, Y., & Bolt, H., (2012). Reproductive toxicity in boron exposed workers in Bandırma, Turkey. Journal of Trace Elements in Medicine and Biology, 26(2-3), 165-167.

[5] Litovitz, T.L., Norman, S.A., & Veltri, J.C. (1986). Annual Report of the American Association of Poison Control Centers National Data Collection System. The American Journal of Emergency Medicine, 4(5), 427-458.

[6] Denton, S.M. (1996). Acute oral toxicity study in the rat: anhydrous boric acid. Final report. Testing laboratory: Corning Hazleton (Europe) Otley Road, Harrogate, North Yorkshire, UK. Report no.: 1341/7-1032. Owner Company: Borax Europe Ltd. Report date: 1996-03-06.

[7] Weiner, A.S., Conine, D.L., & Doyle, R.L. (1982). Acute Dermal Toxicity Screen in Rabbits; Primary Skin Irritation Study in Rabbits of Boric Acid. Testing laboratory: Hill Top Research, Inc. Report no.: 82-0280-21. Owner Company: US Borax Chemical Corporation. Report date: 1982-03-15.

[8] Heindel, J.J., Price, C.J., Field, E.A., Marr, M.C., Myers, C.B., Morrissey, R.E. & Schwetz, B.A. (1992). Developmental toxicity of boric acid in mice and rats. Fundamental and Applied Toxicology, 18(2), 266-277.

[9] Price, C.J., Marr, M.C., Myers, C.B., Heindel, J.J., & Schwetz, B.A. (1991). Final Report on the Developmental Toxicity of Boric Acid (CAS No 10043-35-3) in New Zealand White Rabbits. National Toxicology Program, National Institute of Environmental Health Sciences. Testing laboratory: National Toxicology Program, National Institute of Environmental Health Sciences (TER 90-003; NTIS Accession No PB92-129550). Report no.: TER 90-003; NTIS Accession No PB92-129550.

[10] Hanstveit, A.O. & Oldersma, H. (2000). Determination of the effect of Boric acid, Manufacturing grade on the growth of the fresh water green alga Selenastrum capricornutum. Testing laboratory: TNO Nutrition and Food Research Institute. Report no.: V99.157. Owner Company: Borax Europe Limited. Study number: IMW-99-9047-05. Report date: 2000-03-06.

[11] Gersich, F.M. (1984a). Evaluation of a Static Renewal Chronic Toxicity Test Method for Daphnia magna straus using Boric Acid. Environmental Toxicology and Chemistry, 3(1), 89-94.

[12] Soucek, D., Dickinson, A., & Major, K. (2010). Acute and chronic toxicity of boron to freshwater organisms. Testing laboratory: Illinois Natural History Survey, University of Illinois, Champaign, Illinois. Owner Company: Illinois Natural History Survey, University of Illinois.

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'.

16.5. Disclaimer of Liability

The information in this SDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its accuracy, reliability or completeness. The conditions or methods of handling, storage use or disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. It is the user's responsibility to satisfy himself as to the suitableness and completeness of such information for his own particular use.

This SDS was prepared and is to be used only for this product. If the product is used as a component in another product, this SDS information may not be applicable.

Safety Data Sheet Prepared by Arzu DEMİŞ

Certificate Date: 15.12.2018

Certificate Number: TÜV/01.173.02