

Date of issue/ Date of revision : 05/01/2019  
Date of previous issue : 00/00/0000  
Version : 1.0

# SAFETY DATA SHEET

**Boric Acid**

## Section 1. Identification

GHS product identifier : Boric Acid  
Product type : Crystalline Solid

### Uses

Area of application : Not Applicable

### Supplier

Supplier's details : Greenway Biotech, Inc.

### Address

Street : 10632 Painter Ave  
Postal code : 90670  
City : Santa Fe Springs  
Country : United States

Telephone number : +1 562-351-5168

e-mail address of person responsible for this SDS : sales@greenwaybiotech.com

Emergency telephone number (with hours of operation) : US: Chemtrec 24-hours Emergency Response: 1-800-424-9300  
Canada: 24 Hour Emergency Service, (Canutec 613-996-6666)

### National advisory body/Poison Center

Name : The National Poisons Emergency number  
Telephone number : 1 800 222 1222

## Section 2. Hazards identification

Classification of the substance or mixture : Reproductive toxicity category 2



Hazard Pictograms :

Signal Word : Warning

- Hazard Statements** : H361: suspected of damaging fertility or the unborn child
- Precautionary Statements** : P202:Do not handle until all safety precautions have been read and understood  
P308+P313: IF exposed or concerned: Get medical advice/attention  
P501: Dispose of contents/container in accordance with local regulation.
- Hazards not otherwise classified** : None

### Section 3. Composition/information on ingredients

#### Substance

Chemical Name	CAS-Number	% Content
Boric Acid	10043-35-3	>99.9

### Section 4. First aid measures

#### Description of necessary first aid measures

**Protection of first-aiders:** No special protective clothing is required.

**Inhalation:** If symptoms such as nose or throat irritation are observed, remove to fresh air

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

**Skin contact:** No treatment necessary.

**Ingestion:** Swallowing small quantities (one teaspoon) will cause no harm to healthy adults. If larger amounts are swallowed, give two glasses of water to drink and seek medical attention.

**Most important symptoms and effects both acute and delayed:** Symptoms of accidental over-exposure to high doses of inorganic borate salts have been associated with ingestion or absorption through large areas of severely damaged skin. These may include nausea, vomiting, and diarrhea, with delayed effects of skin redness and peeling (See Section 11).

**Indication of any immediate medical attention and special treatment needed:** Note to physicians: supportive care only is required for adult ingestion of less than a few grams of the product. For ingestion of larger amounts, maintain fluid and electrolyte balance and maintain adequate kidney function. Gastric lavage is only recommended for heavily exposed, symptomatic patients in whom emesis has not emptied the stomach. Hemodialysis should be reserved for patients with massive acute absorption, especially for patients with compromised renal function. Boron analyses of urine or blood are only useful for verifying exposure and are not useful for evaluating severity of poisoning or as a guide in treatment.

## Section 5. Fire Fighting Measures

- Suitable extinguishing media** : Using extinguishing media that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing media** : None.
- Special hazards arising from the chemical** : None. The product is not flammable, combustible or explosive.
- Special protective equipment and precautions for fire fighters** : Not applicable. The product itself is flame retardant.

## Section 6. Accidental release measures

### Personal precaution, protective equipment and emergency procedures

#### **For non-emergency personnel:**

Eye goggles and gloves are not required for normal industrial exposures, but eye protection according to ANSI Z.87.1 or other national standard. Respirators should be considered if environment is excessively dusty.

#### **For emergency responders:**

Eye goggles and gloves are not required for normal industrial exposures, but eye protection according to ANSI Z.87.1 or other national standard. Respirators should be considered if environment is excessively dusty.

#### **Environmental precautions:**

The product is a water-soluble white powder that may cause damage to trees or vegetation by root absorption. Avoid contamination of water bodies during clean up and disposal. Advise local water authority that none of the water should be used for irrigation or for the abstraction of potable water quality standards.

### Methods and material for containment and cleaning up

- Appropriate containment** : Avoid spillage into water and cover drains
- Land Spill:** : Vacuum, shovel or sweep up and place in containers for disposal in accordance with applicable local regulations.
- Spillage into water** : Where possible, remove any intact containers from the water

## Section 7. Handling and storage

#### **Precautions for safe handling:**

Good housekeeping procedures should be followed to minimize dust generation and accumulation. Avoid spills. Do not eat, drink and smoke in work areas. Wash hands after use. Remove contaminated clothing and protective equipment before entering eating areas.

#### **Conditions for safe storage, including any incompatibilities:**

No special handling precautions are required, but dry, indoor storage is recommended. To maintain package integrity and to minimize caking of the product bags should be handled on a first-in first-out basis.

- Storage temperature** : Ambient
- Storage pressure** : Atmospheric
- Special sensitivity** : Moisture
-

## Section 8. Exposure controls/personal protection

**Occupational exposure limit values:** In the absence of a national OEL, Rio Tinto Borax recommends and applies internally an Occupational Exposure Limit (OEL) of 1 mg B/m<sup>3</sup>. To convert product into equivalent boron (B) content, multiply by 0.175. ACGIH, which is not a regulatory agency, has established a Threshold Limit Value (TLV) for borates.

Occupational Exposure Limits:

ACGIH	2 mg/m <sup>3</sup>	8-hr TWA OEL (mg/m <sup>3</sup> ) inhalable fraction – Borate Compounds, inorganic
ACGIH	6 mg/m <sup>3</sup>	15 min STEL (mg/m <sup>3</sup> ) inhalable fraction – Borate Compounds, inorganic
OSHA/PEL (total dust)	15 mg/m <sup>3</sup>	Particle Not Otherwise Classified or Nuisance Dust
OSHA/PEL (respirable dust)	5 mg/m <sup>3</sup>	Particle Not Otherwise Classified or Nuisance Dust
Cal OSHA/PEL	5 mg/m <sup>3</sup>	Particle Not Otherwise Classified or Nuisance Dust

**Appropriate engineering controls:** Use local exhaust ventilation to keep airborne concentrations of dust below exposure limits.

**Personal protection equipment:**

- Eye and face protection** : Eye protection according to ANSI Z.87.1 or other national standards may be warranted if environment is excessively dusty.
- Skin protection** : Standard work gloves (cotton, canvas or leather) may be warranted if environment is excessively dusty.
- Respiratory protection equipment** : Where airborne concentrations are expected to exceed exposure limits, respirators should be used.

## Section 9. Physical and chemical properties

### Appearance

- Physical state** : Crystalline solid.
- Color** : White.
- Odor** : Odorless.
- Odor threshold** : Not applicable.
- pH @ 20°C** : 6.1 (0.1% solution); 5.1 (1.0% solution); 3.7 (4.7% solution)
- Melting/freezing point** : 171°C.
- Boiling/condensation point** : Not applicable: melting point 171°C.
- Evaporation rate** : Not applicable: non-volatile.
- Flash point** : Not applicable: inorganic substance.
- Auto Flammability** : Not applicable: non-flammable.
- Flammability (solid, gas)** : Not Flammable (used as flame retardant).
- Explosion hazards** : Not explosive.
- Vapor pressure** : Not applicable.
- Relative density** : Not applicable.
- Solubility** : Water: 49.2 g/L @ 20° C.
- Partition coefficient: n-octanol/water** : Log P<sub>ow</sub> = -1.09 @ 22°C.
- Auto-ignition temperature** : Not applicable.
- Decomposition temperature** : If heated above 100°C water is lost and boric acid converts initially to metaboric acid (HBO<sub>2</sub>) and on further heating forms boric oxide

(B<sub>2</sub>O<sub>3</sub>).

<b>Viscosity</b>	: Not applicable: solid substance.
<b>Explosive Properties</b>	: Not explosive: does not contain chemical groups associated with explosive properties
<b>Oxidizing properties</b>	: Not oxidizing does not contain chemical groups associated with Oxidizing properties
<b>Molecular weight</b>	: 61.8
<b>Formula</b>	: H <sub>3</sub> BO <sub>3</sub>

## Section 10. Stability and Reactivity

<b>Reactivity</b>	: None known.
<b>Chemical stability</b>	: Under normal ambient temperatures (-40°C to +40°C), the product is stable. When heated it loses water, first forming metaboric acid (HBO <sub>2</sub> ), and on further heating it is converted into boric oxide (B <sub>2</sub> O <sub>3</sub> ).
<b>Possibility of hazardous Reactions</b>	: Boric acid is a weak acid that may cause corrosion of base metals. Reaction with strong reducing agents such as metal hydrides or alkali metals will generate hydrogen gas which could create an explosive hazard.
<b>Conditions to avoid</b>	: Avoid contact with strong reducing agents by storing according to good industrial practice.
<b>Incompatible materials</b>	: Strong reducing agents.
<b>Hazardous decomposition products</b>	: None

## Section 11. Toxicological information

### Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact)

Inhalation is the most significant route of exposure in occupational and other settings. Dermal exposure is not usually a concern because product is poorly absorbed through intact skin. Product is not intended for ingestion.

### Acute toxicity

Method: Acute Oral Toxicity Study – OECD Guideline 401

Species: rat

Dose: 2000 – 5000 mg/kg body weight

Routes of exposure: oral

Results: Low acute oral toxicity. The oral LD<sub>50</sub> value in male rats is 3,450 mg/kg bw, and in female rats is 4080 mg/kg bw.

Classification: Acute oral toxicity (oral) category 5 (Hazard statement: H303: May be harmful if swallowed)

Method: Acute Dermal Toxicity Study – U.S. EPA FIFRA Guidelines

Species: Rabbit

Dose: 2,000 mg/kg bw

Routes of exposure: Dermal

Results: Low acute dermal toxicity; LD<sub>50</sub> in rabbits is >2.0 mg/kg of body weight. Poorly absorbed through intact skin.

Based on the available data, the classification criteria are not met.

Method: Acute inhalation toxicity study – OECD Guideline 403

Species: Rat

Dose: 2.12 mg/L

Route of exposure: Inhalation

Results: Low acute inhalation toxicity; LC<sub>50</sub> in rats is >2.0 mg/l (or g/m<sup>3</sup>). Based on the available data, the classification criteria are not met.

#### **Skin corrosion / irritation:**

Method: Primary Dermal Irritation Study – U.S. EPA FIFRA Guidelines

Species: New Zealand White Rabbit

Dose: 0.5 g moistened with saline

Routes of exposure: Dermal

Results: No skin irritation. Mean Primary Irritation Score: 0.1. Based on the available data, the classification criteria are not met.

#### **Serious eye damage / irritation:**

Method: Eye Irritation Study – similar to OECD Guideline 405

Species: New Zealand White Rabbit

Dose: 0.1 g

Routes of exposure: eye

Results: Not irritating, corneal involvement or irritation clearing in 7 days.

Classification: Based on mean scores < 1, and the effects were fully reversible within 7 days, the classification criteria are not met. Many years of occupational exposure indicate no adverse effects on human eye.

#### **Respiratory or skin sensitization:**

Method: Buehler Test – OECD Guideline 406

Species: Guinea Pig

Dose: 0.4 g 95 % w/w/boric acid

Routes of exposure: Dermal

Results: Not a skin sensitizer. No respiratory sensitization studies have been conducted. There are no data to suggest that boric acid is a respiratory sensitizer. Based on the available data, the classification criteria are not met.

#### **Germ cell mutagenicity:**

Method: Several in vitro mutagenicity studies have been carried out on boric acid including gene mutation in mammalian cells, unscheduled DNA synthesis, chromosomal aberration and sister chromatid exchange in mammalian cells.

Species: L5178 mouse lymphoma, V79 Chinese hamster cells, C3H/10T1/2 cells, hepatocytes, Chinese hamster ovary (CHO cells)

Dose: 1.0 – 10.0 mg/ml (1000 – 10000 ppm) boric acid

Routes of exposure: in vitro

Results: Not mutagenic (Based on boric acid). Based on the available data, the classification criteria are not met.

#### **Carcinogenicity:**

Method: OECD 451 equivalent.

Species: B6C3F1 mice

Dose: 446 ; 1150 mg boric acid/kg bw/day

Routes of Exposure: Oral feeding study

Results: No evidence of carcinogenicity. Based on the available data, the classification criteria are not met.

#### **Reproductive toxicity:**

Method: Three-generation feeding study, similar to OECD 416 Two-Generation Study

Species: Rat

Dose: 0; 34 (5.9); 100 (17.5) and 336 (58.5) mg boric acid (mg B)/kg bw.

Routes of Exposure: Oral feeding study

Results: NOAEL in rats for effects on fertility in males in 100 mg boric acid/kg bw equivalent to 17.5 mg B/kg bw.

Method: Prenatal Development Toxicity study of boric acid – OECD Guideline 414

Species: Rat

Dose: 0; 19 (3.3); 36 (6.3); 55 (9.6); 76 (13.3) and 143 (25) mg boric acid (mg B)/kg bw.

Routes of Exposure: Oral feeding study

Results: NOAEL in rats for developmental effects on the fetus including fetal weight loss and minor skeletal

variations is 55 mg boric acid/kg bw or 9.6 mg B/kg.

Classification: Reproductive Toxicity Category 2 (Hazard statement: H361: Suspected of damaging fertility or the unborn child.)

Method: Occupational studies of evaluating sensitive sperm parameters in highly exposed borate workers. Epidemiological studies evaluating high environmental exposures to boron and developmental effects in humans have been conducted.

Species: Human

Dose: A subset of workers was exposed to 125 mg B/day.

Routes of exposure: Combined oral ingestion and inhalation

Results: No adverse fertility effects in male workers. Epidemiological studies of human developmental effects have shown an absence of effects in exposed borate workers and populations living in areas with high environmental levels of boron.

**STOT -single exposure:**

Method: Standard test method for estimating sensory irritancy of airborne chemicals – AASTM E981-04 (2004)

Species: Mouse

Dose: 221 – 1096 mg boric acid/m<sup>3</sup>

Routes of exposure: Inhalation

Results: The highest concentration of boric acid that was achievable with acceptable control of the arisol concentration was 1096 mg/m<sup>3</sup> with a %RD of 19%. The lowest exposure tested of 221 mg/m<sup>3</sup> boric acid resulted in a reduced respiration rate of 9%, graded as no irritation. Based on the available data, the classification criteria are not met.

Method: Sensory irritation in human volunteers

Species: Human

Dose: 2.5, 5, 10 mg boric acid/m<sup>3</sup>

Routes of exposure: Inhalation

Results: No irritation from boric acid was observed at exposures up to 10 mg/m<sup>3</sup> among male and female human volunteers under controlled laboratory conditions.

**STOT -repeated exposure:**

Method: Chronic toxicity study of boric acid, similar to OECD 452

Species: Rat

Dose: 0; 33 (5.9); 100 (17.5); 334 (58.5) mg boric acid (B)/kg bw per day (nominal in diet)

Routes of Exposure: oral: feed

Results: A NOAEL of 17.5 mg B/kg bw/day equivalent to 100 mg boric acid/kg bw/day was determined in a chronic feeding study (2 years) in rats and is based on testes effects. Other effects (kidney, haemopoietic system) are regarded only at even higher does levels. Based on the available data, the classification criteria are not met.

**Aspiration hazard:**

Physical form of solid powder indicates no aspiration hazard potential.

**Symptoms related to the physical, and chemical and toxicological characteristics:**

Products are not intended for ingestion. Small amounts (e.g. a teaspoonful) swallowed accidentally are not likely to cause effects. Symptoms of accidental over-exposure to high doses of inorganic borate salts have been associated with ingestion or absorption through large areas of severely damaged skin. These may include nausea, vomiting, and diarrhea, with delayed effects of skin redness and peeling.

**Delayed and immediate effects as well as chronic effects from short and long-term exposure:**

Human epidemiological studies show no increase in pulmonary disease in occupational populations with chronic exposures to boric acid and sodium borate dust. Human epidemiological studies indicate no effect on fertility in occupational populations with chronic exposures to borate dust and indicate no effect to a general population with high exposures to borates in the environment.

**Numerical measures of toxicity (such as acute toxicity)**

None. This product is a substance.

## Section 12. Ecological Information

**Ecotoxicity (aquatic and terrestrial, where available)**

Note that the data values are expressed as boron equivalents. To convert to this product divide the boron

equivalent by 0.175. Studies judged to be unreliable or with insufficient information to evaluate are not included.

## Freshwater

### Chronic studies

Taxonomic Group	Number of Taxa Tested	Range of Endpoint Values (geometric NOEC/EC10)	References
Algal	4	10 mg B/L ( <i>Chlorella pyrenoidosa</i> ) to 50 mg B/L ( <i>Anacystis nidulans</i> )	3, 4
Higher Plants	3	4.0 mg B/L ( <i>Phragmites australis</i> ) to 60 mg B/L ( <i>Lemna minor</i> )	5, 6
Invertebrate and protozoan	7	5.7 mg B/L ( <i>Micropterus salmoides</i> ) to 17 mg B/L ( <i>Carassius auratus</i> )	7, 8
Fish	6	2.9 mg B/L ( <i>Micropterus salmoides</i> ) to 17 mg B/L ( <i>Carassius auratus</i> )	9
Amphibian	2	29 mg B/L ( <i>Rana pipiens</i> ) to 41 mg B/L ( <i>Bufo fowleri</i> )	9

Results<sup>2</sup>: Based on the complete data set of 22 species, the HC<sub>5</sub> value of the species sensitivity distribution is 4.05 mg B/L.

### Acute Studies

Taxonomic Group	Number of Taxa Tested	Range of Endpoint Values (geometric EC/LC50)	References
Algal	2	10 mg B/L ( <i>Chlorella pyrenoidosa</i> ) to 28 mg B/L ( <i>Selenastrum capricornutum</i> )	3, 10
Invertebrate and protozoan	9	113 mg B/L ( <i>Ceriodaphnia dubia</i> ) to 1376 mg B/L ( <i>Chironomus decorus</i> )	11, 12
Fish	7	80 mg B/L ( <i>Pimephales promelas</i> ) to 627 mg B/L ( <i>Onchorhynchus tshawytscha</i> )	11, 13
Amphibian	2	86 mg B/L ( <i>Rana pipiens</i> ) to 104 mg B/L ( <i>Bufo fowleri</i> )	9

Results<sup>2</sup>: Based on the complete data set from 46 studies with 20 species, the HC<sub>5</sub> value of the species sensitivity distribution is 27.3 mg B/L.

Classification: Based on the acute data for freshwater species, this substance is not classified as hazardous to the environment.

## Marine and Estuarine Data

### Chronic studies

Taxonomic Group	Number of Taxa Tested	Range of Endpoint Values (geometric EC/LC50)	References
Algal	19	5 mg B/L ( <i>Emiliana huxleyi</i> ) to >100 mg B/L ( <i>Agmenellum quadruplicatum</i> , <i>Anacystis marina</i> , <i>Thalassiosira pseudonana</i> )	4

Results: No data are available for invertebrate or vertebrate species. The results from the freshwater data set are recommended as applicable to marine and estuarine species.

### Acute Studies

Taxonomic Group	Number of Taxa Tested	Range of Endpoint Values (geometric NOEC/EC10)	References
Invertebrate	3	45 mg B/L ( <i>Litopenaeus vannamei</i> ) to 83 mg B/L ( <i>Americamysis bahia</i> )	14, 15
Fish	2	74 mg B/L ( <i>Limanda limanda</i> ) to 600 mg B/L ( <i>Oncorhynchus tshawytscha</i> )	13, 16

No data are available for algal species.



## Sediment

Taxonomic Group	Number of Taxa Tested	Range of Endpoint Values (geometric EC/LC50)	References
Invertebrate	1	82.4 mg B/kg sediment dw (Chironomus riparius)	17,18

Results: Although limited, the data suggest that sediment organisms are within range of toxicity of aquatic organisms. In addition, the substance will not partition to the sediment, so a sediment/water partitioning approach is justified.

## Sewage Treatment Plants (STP)

Taxonomic Group	Number of Taxa Tested	Range of Endpoint Values (geometric NOEC/EC10)	References
Activated Sludge	NA	>17.5 mg B/L to 100 mg B/L	19
Microbes	3	10 mg B/L (Opercularia bimarginata) to 20 mg B/L (paramecium caudatum)	20

## Terrestrial Data

### Chronic Studies

Taxonomic Group	Number of Taxa Tested	Range of Endpoint Values (Geometric NOEC/EC10)	References
Plant	28	7.2 mg B/kg dw (Zea mays) to 56 mg B/kg dw (allium cepa)	21,22
Invertebrates	9	15.4 mg B/kg dw (Folsomia candida) to 87 mg B/kg dw (Caenorhabditis elegans)	23,24
Soil micro	3	12 mg B/kg dw (nitrogen mineralization and nitrification test) to 420 mg B/kg dw (soil nitrogen transformation test)	25,26

Results<sup>2</sup>: Based on the complete data set, the HC<sub>5</sub> value of the species sensitivity distribution is 10.8 mg B/kg dw.

**Phytotoxicity:** Boron is an essential micronutrient for healthy growth of plants. It can be harmful to boron sensitive plants in higher quantities. Care should be taken to minimize the amount of borate product released to the environment.

### Persistence and Degradability

Biodegradation is not an applicable endpoint since the product is an inorganic substance.

### Bioaccumulative potential

This product is soluble in water and is leachable through normal soil. Adsorption to soils or sediments is insignificant.

### Other adverse effects

None

## Section 13. Disposal Considerations

### Disposal Methods

Product packing should be recycled where possible.  
Local authorities should be consulted about any specific local requirements.

Such product should, if possible, be used for an appropriate application.

## Section 14. Transport information

<b>UN number</b>	: Not Regulated
<b>UN proper shipping name</b>	: Not Regulated
<b>Transport hazard class(es)</b>	: Not Regulated
<b>Packing Group</b>	: Not Regulated
<b>Environmental hazards</b>	: Not Regulated
<b>Special precautions for users</b>	: Not Regulated
<b>Transport in bulk according to Annex II of MARPOL 73/78 and The IBC Code</b>	: Not Regulated

## Section 15. Regulatory information

**Clean Air Act (Montreal Protocol) - Substances that deplete the ozone layer:** Not manufactured with and does not contain any Class I or Class II ozone depleting substances.

**Regulation (EC) No 689/2008 - Export and Import of Dangerous Chemicals:** Not listed.

**National Regulations:** Ensure all national/local regulations are observed.

**U.S. EPA RCRA:** This product is not listed as a hazardous waste under any sections of the Resource Conservation and Recovery Act (RCRA) or regulations (40 CFR 261 et seq).

**Superfund:** CERCLA/SARA. This product is not listed under CERCLA (Comprehensive Environmental Response Compensation and Liability Act) or its 1986 amendments, SARA (Superfund Amendments and Reauthorization Act), including substances listed under Section 313 of SARA, Toxic Chemicals, 42 USC 11023, 40 CFR 372.65, Section 302 of SARA, Extremely Hazardous Substances, 42 USC 11002, 40 CFR 355, or the CERCLA Hazardous Substances list, 42 USC 9604, 40 CFR 302.

**Safe Drinking Water Act (SDWA):** This product is not regulated under the SDWA, 42 USC 300g-1, 40 CFR 141 et seq.

Consult state and local regulations for possible water quality advisories regarding boron compounds.

**Clean Water Act (CWA) (Federal Water Pollution Control Act):** 33 USC 1251 et seq.

a) This product is not itself a discharge covered by any water quality criteria of Section 304 of the CWA, 33 USC 1314.

b) It is not on the Section 307 List of Priority Pollutants, 33 USC 1317, 40 CFR 129.

c) It is not on the Section 311 List of Hazardous Substances, 33 USC 1321, 40 CFR 116.

**IARC:** The International Agency for Research on Cancer (IARC) (a unit of the World Health Organization) does not list or categorize this product as a carcinogen.

**NTP Biennial Report on Carcinogens:** This product is not listed.

**OSHA carcinogen:** This product is not listed.

**California Proposition 65:** This product is not listed on the Proposition 65 list of carcinogens or reproductive toxicants.

**Chemical inventory listing:** The listing is sometimes under the Inventory number of the anhydrous form of this inorganic salt.

**U.S. EPA TSCA Inventory:** 10043-35-3

**Canada DSL:** 10043-35-3

**EINECS:** 233-139-2

**Australia AICS:** 10043-35-3

**China IECSC:** 10043-35-3

**Japanese METI & ISHL:** (1)-63

**New Zealand NZIoC:** 10043-35-3  
**Philippines PICCS:** 10043-35-3  
**South Korea KECI:** KE-0349

## Section 16. Other Information

**Date of Revision:** May 2019

**Revision Details:** Format change to GHS

### References:

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For general information on the toxicology of borates see ECETOC Technical Report No. 63 (1995); Patty's Toxicology, 6th Edition Vol. I, (2012) Chap. 23, 'Boron'. Culver, BD & Hubbard SA (1995) *Inorganic Boron Health Effects in Humans: An Aid to Risk Assessment and Clinical Judgment*. *Trace Elements in Experimental Medicine* 9(4):175-184.

### Abbreviations and acronyms:

EC: Effect concentration  
GHS: Global Harmonised System for classification and labelling of chemicals  
LC: Lethal Concentration  
LD: Lethal Dose  
STOT: Specific Target Organ Toxicity  
LOEC: Lowest Observed Effect Concentration  
NA: Not applicable.  
NOAEL: No observed adverse effect level NOEC: No Observed Effect Concentration  
STP: Sewage Treatment Plant

**Precautionary Phrases:**

KEEP OUT OF REACH OF CHILDREN.

Do not ingest.

Not for use in food, drugs or pesticides.

Refer to (material) safety data sheet.

**National Fire Protection Assoc. (NFPA) classification:**

Health 0

Flammability 0

Reactivity 0

**Hazardous Materials Information Systems (HMIS):**

Red: (Flammability) 0

Yellow: (Reactivity) 0

Blue: (Acute Health) 1\*

\*Chronic Effects

**Disclaimer:**

While the information contained herein are presented in good faith and believed to be accurate, it is provided for your guidance only. Because many factors may affect processing or application, we recommend that you make tests to determine the suitability of a product for your particular purpose prior to use. No warranties of any kind, either expressed or implied, including warranties of merchantability or fitness for a particular purpose, are made regarding products described or information set forth, or that the products, or information may be used without infringing the intellectual property rights of others. In no case shall the information provided be considered a part of our terms and conditions of sale. Further, you expressly understand and agree that the information furnished by our company hereunder are given gratis and we assume no obligation or liability for the information given or results obtained, all such being given and accepted at your risk.



