



# Safety Data Sheet according to OSHA-GHS (29 CFR part 1910.1200 HCS 2012)

## PRODUCT NAME **BORIC ACID**

Product Code

006/03\_US

Date of issue:

October 2012

Supersedes:

May 2008

### 1. PRODUCT AND COMPANY IDENTIFICATION

<b>Product identifier</b>	Boric acid (generic name) QBoric Acid
<b>Recommended uses:</b>	Formulation of borates into mixtures Industrial use resulting in manufacture of another substance (use of intermediates) Use of fertilizers
<b>Restrictions on uses:</b>	Restricted to industrial and professional users
<b>Supplier</b>	SQM North America 2727 Paces Ferry Rd, Bldg Two, Suite 1425 Atlanta, GA 30339
<b>Company Telephone/Fax</b>	(770) 916 9400 / (770) 916 9404
<b>Emergency Telephone Number</b>	(800) 424 9300 (CHEMTREC)

### 2. HAZARDS IDENTIFICATION

#### Classification of the substance or mixture

Classification of the chemical in accordance with 29CFR §1910.1200

Hazard classes and Hazard categories	Hazard statements
Toxic to reproduction cat. 1B	May damage fertility. May damage the unborn child.

#### Label elements

##### Hazard pictograms



##### Signal word

Danger

##### Hazard Statements

May damage fertility. May damage the unborn child.

##### Precautionary Statements

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

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

IF exposed or concerned: Get medical advice/attention.

Dispose of contents/container according to local/state/federal regulations.

##### Other hazards

None

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance name	CAS No	EINECS No	Concentration
Boric acid	10043-35-3	233-139-2	> 99.5%

### 4. FIRST AID MEASURES

#### Description of first aid measures

##### General information

In case of persisting adverse effects consult a physician.

Never give anything by mouth to an unconscious person or a person with cramps.

##### In case of inhalation

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

##### In case of skin contact

Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention.

##### In case of eye contact

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

##### In case of ingestion

If larger amounts are swallowed, give two glasses of water to drink and seek medical attention.



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### Most important symptoms and effects, both acute and delayed

The following symptoms may occur:

In case of inhalation	May be irritant to the respiratory tract
In case of skin contact	No effects are expected
In case of eye contact	No effects are expected
In case of ingestion	The following effects have been described: Nausea, vomiting, gastric discomfort, skin flushing, excitation, convulsions, depression and vascular collapse.

### Indication of any immediate medical attention and special treatment needed

Maintain adequate kidney function and force fluids.

## 5. FIRE FIGHTING MEASURES

### Extinguishing media

Boric acid is not flammable, combustible or explosive. The substance is a flame retardant.

Suitable extinguishing media: Use any suitable mean for extinguishing surrounding fire.

Unsuitable material: None, but attention should be paid to compatibility with chemicals surrounding.

### Specific hazards arising from the chemical

Thermal decomposition can lead to the escape of toxic/irritating gases and vapours.

Decomposition products: By heating, loose of water occurs, with final formation of boron oxide.

### Protective equipment and precautions for firefighters

Wear a self-contained breathing apparatus and chemical protective clothing.

## 6. ACCIDENTAL RELEASE MEASURES

### Personal precautions

Provide adequate ventilation. Avoid substance contact. Wear personal protection equipment.

### Environmental precautions

Avoid contamination of water bodies during clean up and disposal

### Methods and material for containment and cleaning up

Land spill: Vacuum, shovel or sweep up and place in containers for disposal in accordance with applicable local regulations.

Water spill: 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 level to its normal environmental background level.

Unsuitable material for taking up: None specified

### Other information

Refer to section 8 for recommended personal protection equipment.

## 7. HANDLING AND STORAGE

### Precautions for Safe Handling

Avoid generation of dust. Provide adequate ventilation. Wear personal protective equipment.

Wash hands before breaks and at the end of workday. Do no eat, drink or smoke when using this product.

Keep away from food, drink and animal feeding stuff. Good hygiene practices and housekeeping measures.

### Conditions for safe storage, including any incompatibilities

Reseal carefully any opened container and set upright to avoid leakages.

Keep/store only in original container. Keep the product tightly closed in a dry, in well-ventilated and cool place.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Exposure Guidelines

### Occupational exposure limits

### Boric Acid and Borate compounds

OSHA	PEL	Not Established	
	STEL/ceiling	Not Established	
ACGIH	TWA	2 mg/m <sup>3</sup> (Inhalable fraction)	(2012 TLVs® and BEIs®)
	STEL/ceiling	6 mg/m <sup>3</sup> (Inhalable fraction)	(2012 TLVs® and BEIs®)



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### Derived No-Effect Level (DNEL) suggested by the manufacturer

Workers (industrial/professional):	
DNEL Human, dermal, long term :	4800 mg B/day (systemic)

Derived No-Effect Level (DNEL) is the level of exposure to the substance above which humans should not be exposed.

### Engineering controls

Use local exhaust ventilation (LEV) to control the dispersion of airborne dust towards the worker.

### Personal Protective Equipment

Eye/face protection Safety glasses or goggles.

Skin Protection Overall and gloves.

Respiratory Protection Where LEV does not reduce inhalation exposure to boron below the inhalation DNEL, P2/P3 respirators (with a good face-fit) must be worn.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Information on basic physical and chemical properties

Appearance	White powder or crystals
Odor	Odourless
Odor Threshold	Not applicable
Physical state	Solid
pH value	4 - 5 (5% aqueous solution)
Melting point / freezing range	Decompose 336°F / 169°C (Transform to HBO <sub>2</sub> )
Boiling temperature / boiling range	Not applicable (decomposes)
Flash point	Not applicable (inorganic substance)
Vapourisation rate / Evaporation rate	No data available
Flammability	Non flammable (UN Test N.1)
Explosion limits (LEL, UEL)	Not applicable
Vapor pressure	9.9E-5 Pa
Vapour density	No data available
Relative Density	1.49 at 73°F / 23°C
Solubility	49.2 g/L at 68°F / 20°C (water)
Partition coefficient n-octanol /water	-1.09 at 22 °C, pH 7.5 (Log Pow)
Auto Ignition temperature (AIT)	Not applicable
Decomposition temperature (°F/°C)	336°F (169°C)
Viscosity	Not applicable
Explosive properties	Not explosive
Oxidizing properties	Not oxidizing

### Other information

Saturated boric acid solutions may be corrosive to metals.

## 10. STABILITY AND REACTIVITY

### Reactivity

No hazardous reaction when handled and stored according to provisions.

### Chemical stability

Stable under normal storage and temperature conditions.

### 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.

### Conditions to avoid

Contact with incompatible materials.

### Incompatible materials

Acetic anhydride, strong alkalis, strong reducing agents.

### Hazardous decomposition products

By heating, loose of water occurs, with final formation of boron oxide.



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## 11. TOXICOLOGY INFORMATION

### Likely routes of exposure (inhalation, ingestion, skin and eye contact)

Eye contact, skin contact and inhalation. Exposure by ingestion is not expected to occur through normal industrial use. For the inhalation route a 100% absorption of borates is assumed as worst case. Dermal absorption through intact skin is very low. A dermal absorption for borates of 0.5% is assumed as worst case.

### Symptoms related to the physical, chemical and toxicological characteristics

May be irritant to the respiratory tract. Ingestion may cause nausea, vomiting, gastric discomfort, skin flushing, excitation, convulsions, depression and vascular collapse.

### Information on toxicological effects from short and long term exposure

#### Acute toxicity

			Species:	Method:
Acute oral toxicity	LD50:	3765 mg/kg bw	Rat.	EU Method B.1/OECD Guideline 401
Acute dermal toxicity	LD50:	> 2000 mg/kg bw	Rabbit	
Acute inhalation toxicity	LC50:	> 2.03 mg/L air	Rat.	OECD Guideline 403
Assessment / classification:		Based on available data, the classification criteria is not met		

#### Irritant and corrosive effects

Primary irritation to the skin	Result:	Species:
	Not corrosive	Rabbit
	Not classified	Rabbit (New Zealand White)
Irritation to eyes	Result:	Species:
	Not irritating	Rabbit (New Zealand White)

Equivalent or similar to OECD Guideline 405

Assessment / classification Based on available data, the classification criteria is not met

#### Skin and respiratory sensitization

Skin sensitization	Result:	
	Not sensitizing	OECD Guideline 406
Respiratory sensitization	No information available	
Assessment / classification:	Based on available data, the classification criteria is not met	

#### Genetic effects

<i>In-vitro mutagenicity</i>	Method:	Result:
Bacterial reverse mutation assay	Equivalent or similar to OECD 471	Negative
Mammalian cell gene mutation	Equivalent or similar to OECD 476	Negative
Cytogenicity studies	Chromosome aberrations	Negative
<i>In vivo mutagenicity</i>		
Micronucleus assay	Equivalent or similar to OECD 474	negative
Assessment / classification:	Based on all available data, the classification criteria is not met	

#### Reproductive toxicity

##### Adverse effects on fertility

Multigeneration study NOAEL(fertility, male rats): 17.5 mg B/kg bw/day

Boron has been shown to adversely affect male reproduction in laboratory animals, however, male reproductive effects attributable to boron have not been demonstrated in studies of highly exposed workers.

##### Adverse effects on developmental toxicity

Benchmark dose (BMDL05) 10.3 mg B/kg bw/day

Developmental effects have been observed in laboratory animals. The critical effect is considered to be decreased fetal body weight in rats. There is no evidence of developmental effects in humans attributable to boron in studies of populations with high exposures to boron.

Assessment / classification: Boric acid is classified and labelled as **Presumed human reproductive toxicant, Category 1B**, in accordance with Appendix A to 29CFR section 1910.1200.

#### Specific target organ toxicity (single exposure)

##### Practical experience / human evidence

No relevant effect have been observed after single exposure to the substance. No reliable study supports the designation of boric acid as a respiratory irritant.

Assessment / classification: Based on available data, the classification criteria is not met



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### Specific target organ toxicity (repeated exposure)

NOAEL(chronic, rat): 17.5 mg B/kg bw/day Target organs: urogenital: testes

A number of studies on boric acid or disodium tetraborate decahydrate in diet or via drinking water for periods of 30 days to two years in rats, mice and dogs are available. Most studies support that boron can cause adverse haematological effects and that the main target organ of boron toxicity is the testis.

Assessment / classification: Boric acid is classified and labelled as **Presumed human reproductive toxicant, Category 1B**, in accordance with Appendix A to 29CFR section 1910.1200.

### Aspiration hazard

Physicochemical and toxicological data does not indicate a potential aspiration hazard.

Assessment / classification: Based on available data, the classification criteria is not met

### Carcinogenicity

NOAEL: 201 mg B/kg bw/day (mice)

A 2 year carcinogenicity study, equivalent to OECD Guideline 451, in mice is available. The study showed that boric acid was non-oncogenic by the oral route.

International Agency for Research on Cancer (IARC) Not listed

National Toxicology Program (NTP) Not listed

29 CFR part 1910, subpart Z Not listed

Prop 65 (California) Not listed

Assessment / classification: Based on all available data, the classification criteria is not met

## 12. ECOLOGICAL INFORMATION

### Ecotoxicity

#### Aquatic Toxicity

##### Acute Toxicity

96-h LC50	74 - 725 mg B/L	Fish	(literature information)
48-h EC50	45 - 1376 mg B/L	Aquatic invertebrates	(literature information)
72-h EC50	40 mg B/L	<i>Pseudokirchneriella subcapitata</i>	EU C.3/OECD guideline 201

##### Long-term toxicity

NOEC/EC10	2.89 - 16.65 mg B/L	Fish	(literature information)
NOEC/EC10	4 - 50 mg B/L	Higher plants/Alga/Clorophita	(literature information)
NOEC/EC10	5.67 - 40.62 mg B/L	Crustacea/Amphibian	(literature information)
3-h EC50	> 175 mg B/L	Aquatic micro-organisms	OECD guideline 209

Assessment / classification: Based on available data, the classification criteria are not met

### Persistence and degradability

The chemical species present in soil solution depend on concentration and pH being boric acid and borate ions the predominant forms. Boron as a natural element is not biodegradable. However, boron compounds are subject to chemical transformation processes (adsorption, complexation, precipitation, fixation).

### Bioaccumulative potential

Based on the n-octanol/water partition coefficient accumulation in organisms is not expected.

### Mobility in soil

Based on its high water solubility, relatively low sorption, low vapour pressure, partition coefficients and environmental distribution, boric acid is considered to be relatively mobile in the environment. Boron may leach or dissolve from solids, but rates will vary depending on the matrix.

### Other adverse effects

None specified.

## 13. DISPOSAL CONSIDERATIONS

Disposal should be in accordance with applicable federal and state laws.

It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal method in compliance with applicable Boric acid is not listed as a dangerous waste in Resource Conservation and Recovery Act (RCRA) 40 CFR 261.



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## 14. TRANSPORT INFORMATION

### US DOT (49CFR part 172)

UN-No.	Non dangerous good
Proper Shipping Name	Not applicable
Hazard class	Not applicable
Packing group	Not applicable
Marine pollutant	No
Hazard label	Not applicable

### International Maritime Organization (IMDG Code)

UN-No.	Non dangerous good
Proper Shipping Name	Not applicable
Hazard class	Not applicable
Packing group	Not applicable
Marine pollutant	No
Hazard label	Not applicable

### International Civil Aviation Organization (ICAO) and International Air Transport Association (IATA)

UN-No.	Non dangerous good
Proper Shipping Name	Not applicable
Hazard class	Not applicable
Packing group	Not applicable
Hazard label	Not applicable

### Special handling procedure

None

### Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

### Regulations 4.1.3 and 6.1.2.1 of MARPOL Annex V

This product is not considered harmful to the aquatic environment (HME).

### Other special precautions

None

## 15. REGULATORY INFORMATION

### US Federal

#### SARA Title III Rules

##### Section 311/312 Hazard Classes

Acute Health Hazard	No
Chronic Health Hazard	Yes
Fire Hazard	No
Release of Pressure	No
Reactive Hazard	No

#### Section 313 Toxic Chemicals

Not listed

#### Section 302 Extremely Hazardous Substances (EHS)/CERCLA Hazardous Substances

Not listed

#### NFPA 704: National Fire Protection Association

Health	1
Fire	0
Reactivity	0
Special	-

#### HMIS® III

Health	1
Flammability	0
Physical hazards	0

0=minimal, 1=slight hazard, 2=moderate hazard, 3=severe hazard, 4=extreme hazard

0=minimal hazard, 1=slight hazard, 2=moderate hazard, 3=serious hazard, 4=severe hazard

### Canada

WHMIS Classification

D2A

Very Toxic Material Causing Other Toxic Effects

Ingredient Disclosure List

Listed

This product has been classified according to the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all the information required by the CPR.



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### European Union

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Hazard classes and Hazard categories	Hazard statements
Repr. 1B	H360FD
Concentration limit	≥ 5.5 %

### Chemical Inventories

United States TSCA	Listed
Canada DSL	Listed
European Union (EINECS)	Listed
Japan (METI)	Listed

### US State Regulations

California Proposition 65	Not listed
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## 16. OTHER INFORMATION

This SDS complies with 29 CFR part 1910 subpart Z (2012), Canada Controlled Products Regulations (2010) and ANSI Standard Z400.1-2004

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### Indication of changes

All sections were reviewed and modified to comply with 29CFR part 1910 subpart Z (2012).