Version: 1.0

Revision date: 29.08.2023

Safety Data Sheet

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

SECTION 1: Identification

Product identifier

Trade name/designation:	ortho-Boric acid
Product No.:	0084
Synonyms:	none

Relevant identified uses of the substance or mixture and uses advised against

Recommended use	For Laboratory, Research or Manufacturing Use.
Uses advised against	Not determined.

Details of the supplier of the safety data sheet

Supplier

Avantor Performance Materials, LLC.

Street	100 Matsonford Rd, Suite 200
Postal code/City	Radnor, PA 19087, United States
Telephone	+1-855-282-6867
Telefax	+1-610-573-2610

Emergency phone number

Telephone	+1-800-424-9300 (Chemtrec, 24 hrs/day, 7 days/week, USA and Canada)

Preparation Information
Product Information Compliance

E-mail	SDS@avantorsciences.com

SECTION 2: Hazard identification

Classification of the substance or mixture

Label elements

Health hazards

Reproductive toxicity, category 1B

Hazard pictograms

Signal word: Danger

Hazard statements

H360 - May damage fertility or the unborn child.

Precautionary statements

Prevention:

P201 - Obtain special instructions before use.

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

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

Response:

P308+P313 - IF exposed or concerned: Get medical advice/attention.

Storage:

P405 - Store locked up.

Disposal:

P501 - Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Hazard(s) not otherwise classified (HNOC)

none

SECTION 3: Composition/information on ingredients

Substances

Substance name	ortho-Boric acid
Molecular formula	$B(OH)_3$
Molecular weight	61.83 g/mol
CAS No.	10043-35-3

SECTION 4: First aid measures

General information

IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician. If unconscious but breathing normally, place in recovery position and seek medical advice. Never give anything by mouth to an unconscious person or a person with cramps. Change contaminated, saturated clothing. Do not leave affected person unattended.

In case of inhalation

Call a POISON CENTER/doctor. Remove casualty to fresh air and keep warm and at rest. If breathing is irregular or stopped, administer artificial respiration.

In case of skin contact

After contact with skin, wash immediately with plenty of water and soap. Remove contaminated, saturated clothing immediately. In case of skin reactions, consult a physician.

After eye contact:

In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist. Protect uninjured eye. Remove contact lenses, if present and easy to do. Continue rinsing.

In case of ingestion

If accidentally swallowed rinse the mouth with plenty of water (only if the person is conscious) and obtain immediate medical attention. Do NOT induce vomiting. Give nothing to eat or drink.

Most important symptoms/effects, acute and delayed

Nausea. Gastrointestinal complaints.

Indication of any immediate medical attention and special treatment needed

no data available

SECTION 5: Fire fighting measures

Extinguishing media

Suitable extinguishing media

The product itself does not burn.
Co-ordinate fire-fighting measures to the fire surroundings.

Extinguishing media which must not be used for safety reasons

no restriction

Specific hazards arising from the chemical

In case of fire may be liberated:
Pyrolysis products, toxic

Advice for firefighters

DO NOT fight fire when fire reaches explosives.
Protective equipment and precautions for firefighters:
Wear a self-contained breathing apparatus and chemical protective clothing.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Avoid dust formation.

Environmental precautions

Do not allow to enter into surface water or drains.

Methods and material for containment and cleaning up

Spilled product must never be returned to the original container for recycling. Clean contaminated articles and floor according to the environmental legislation. Collect in closed and suitable containers for disposal.

Additional information

Clear spills immediately.

SECTION 7: Handling and storage

Precautions for safe handling

All work processes must always be designed so that the following is as low as possible:
Inhalation.
Skin contact.
Eye contact.
If handled uncovered, arrangements with local exhaust ventilation have to be used.
If local exhaust ventilation is not possible or not sufficient, the entire working area must be ventilated by technical means.
Handle under (Gas):
Protective gas, dry

Wash hands before breaks and after work. Avoid contact with eyes and skin. When using do not eat, drink or smoke. Provide eye shower and label its location conspicuously.

Conditions for safe storage, including any incompatibilities

Recommended storage temperature: Ambient temperature
Keep container tightly closed and in a well-ventilated place.

SECTION 8: Exposure controls/personal protection

Control parameters

Does not contain substances above concentration limits fixing an occupational exposure limit.

Engineering controls

Appropriate engineering controls

Technical measures and the application of suitable work processes have priority over personal protection equipment. If handled uncovered, arrangements with local exhaust ventilation have to be used.

Personal protection equipment (PPE)

Wear suitable protective clothing. When handling with chemical substances, protective clothing must be worn.

Eye/face protection

Eye glasses with side protection

Skin protection

Wear suitable gloves. When handling with chemical substances, protective gloves must be worn. In the case of wanting to use the gloves again, clean them before taking off and air them well. Check leak tightness/impermeability prior to use.

By short-term hand contact

Suitable material:	NBR (Nitrile rubber)
Thickness of the glove material:	0,12 mm
Breakthrough time	> 480 min

By long-term hand contact

Suitable material:	NBR (Nitrile rubber)
Thickness of the glove material:	0,38 mm
Breakthrough time	> 480 min

Respiratory protection

Usually no personal respirative protection necessary. Required when dusts are generated. Wear respiratory protection.

Additional information

Wash hands before breaks and after work. Avoid contact with eyes and skin. When using do not eat, drink or smoke. Provide eye shower and label its location conspicuously.

Environmental exposure controls

no data available

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

(a) Appearance	
Physical state:	solid
Color:	white
(b) Odor:	odorless
(c) Odor threshold:	no data available

Safety relevant basic data

(d) pH:	3.7 (46 g/l; H2O; 20 °C)
(e) Melting point/freezing point:	160 °C
(f) Initial boiling point and boiling range:	185 °C (1013 hPa)
(g) Flash point:	no data available
(h) Evaporation rate:	no data available
(i) Flammability (solid, gas):	not applicable
(j) Flammability or explosive limits	
Lower explosion limit:	no data available
Upper explosion limit:	no data available
(k) Vapor pressure:	2.7 hPa (20 °C)
(l) Vapor density:	no data available
(m) Density:	1.44 g/cm³ (25 °C)
(n) Solubility(ies)	
Water solubility:	46.5 g/l (20 °C)
Soluble (g/L) in Ethanol:	no data available
(o) Partition coefficient: n-octanol/water:	-1,09 (22°C)
(p) Auto-ignition temperature:	no data available
(q) Decomposition temperature:	185 °C (1013 hPa)
(r) Viscosity	
Kinematic viscosity:	no data available
Dynamic viscosity:	no data available
(s) Explosive properties:	not applicable
(t) Oxidising properties:	not applicable

Other information

Bulk density:	no data available
Refraction index:	1.462 (589 nm; 25 °C)
Dissociation constant:	no data available
Surface tension:	no data available
Henry's Law Constant:	no data available

SECTION 10: Stability and reactivity

Reactivity

no data available

Chemical stability

The product is chemically stable under standard ambient conditions (room temperature).

Possibility of hazardous reactions

Reaction with:
Reducing agent.
Alkali metals
Danger of dust explosion

Conditions to avoid

High temperature
Protect from moisture.
metals

Incompatible materials:

Reducing agent, strong.
Alkalis

Hazardous decomposition products

Hydrogen

SECTION 11: Toxicological information

Information on toxicological effects

Acute effects

Acute oral toxicity:
LD50: 3765 mg/kg - Rat - (IUCLID)

Acute dermal toxicity:
LD50: > 2000 mg//kg (24 h) - Rabbit - (IUCLID)

Acute inhalation toxicity:
LC50: > 2 mg/l (4 h) - Rat - (IUCLID)

Irritant and corrosive effects:

Primary irritation to the skin:
not applicable

Irritation to eyes:
not applicable

Irritation to respiratory tract:
not applicable

Respiratory or skin sensitization

In case of skin contact: not sensitizing
In case of inhalation: not sensitizing

STOT-single exposure

not applicable

STOT-repeated exposure

not applicable

CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)

Carcinogenicity

No indication of human carcinogenicity.

Germ cell mutagenicity
No indications of human germ cell mutagenicity exist.

Reproductive toxicity
May damage fertility or the unborn child.

Aspiration hazard
not applicable

Other adverse effects
no data available

SECTION 12: Ecological information

Ecotoxicity

Fish toxicity:
LC50: 487 mg/l (96 h) - Hamilton, S.J., and K.J. Buhl 1990. Acute Toxicity of Boron, Molybdenum, and Selenium to Fry of Chinook Salmon and Coho Salmon. Arch.Environ.Contam.Toxicol. 19(3):366-373

Daphnia toxicity:
EC50: 226 mg/l (48 h) - Office of Pesticide Programs 2000. Pesticide Ecotoxicity Database (Formerly: Environmental Effects Database (EEDB)). Environmental Fate and Effects Division, U.S.EPA, Washington, D.C.

LC50: 180 mg/l (48 h) - Gersich, F.M. 1984. Evaluation of a Static Renewal Chronic Toxicity Test Method for Daphnia magna Straus Using Boric Acid. Environ.Toxicol.Chem. 3(1):89-94

LC50: 91 mg/l (48 h) Mysidopsis bahia - Marcussen, C.E., and J.J. Yurk 1990. Boron: Acute Toxicity to Mysids (Mysidopsis bahia) Under Flow-Through Conditions. Lab.Proj.ID No.3903004000-0215-3140, ESE, Gainesville, FL :44 p.

Algae toxicity:
EC50: 52,4 mg/l (3 d) Pseudokirchneriella subcapitata - IUCLID

EC10: 17,5 mg/l (3 d) Pseudokirchneriella subcapitata - IUCLID

Bacteria toxicity:
NOEC: mg/l (72 h) - Guhl W., 2000. Einfluss von Bor auf die Lebensgemeinschaften des Systems Kläranlage-Vorfluter (Modelluntersuchungen), SÖFW-Journal, 126, Jahrgang 10-2000.

Persistence and degradability
Biodegradable.

Bioaccumulative potential
Partition coefficient: n-octanol/water: -1,09 (22°C)

Mobility in soil:
no data available

Other adverse effects
no data available

SECTION 13: Disposal considerations

Waste treatment methods

Appropriate disposal / Product
Dispose according to legislation. Consult the appropriate local waste disposal expert about waste disposal.

Appropriate disposal / Package
Dispose according to legislation. Handle contaminated packages in the same way as the substance itself.

SECTION 14: Transport information

Land transport (DOT)

No dangerous good in sense of this transport regulation.

Sea transport (IMDG)

No dangerous good in sense of this transport regulation.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
not relevant

Air transport (ICAO-TI / IATA-DGR)

No dangerous good in sense of this transport regulation.

SECTION 15: Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture

National regulations

Toxic Substances Control Act (TSCA)
Listed

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
Not listed.

SARA 313 Components

Not listed.

US State Regulations
Massachusetts Right To Know Components
Not listed.

Pennsylvania Right To Know Components

Not listed.

New Jersey Right To Know Components

Not listed.

California Prop. 65 Components

Not listed.

SECTION 16: Other information

Abbreviations and acronyms

ACGIH - American Conference of Governmental Industrial Hygiensts
DOT - Department of Transportation
IARC - International Agency for Research on Cancer
IATA-DGR - International Air Transport Association-Dangerous Goods Regulations
ICAO-TI - International Civil Aviation Organization-Technical Instructions
IMDG - International Maritime Code for Dangerous Goods
LTV - Long Term Value
NIOSH - National Institute for Occupational Safety and Health
NTP - National Toxicology Program
OSHA - Occupational Safety & Health Administration
PBT - Persistent, Bioaccumulative and Toxic
PEL - Permissible Exposure Limit
STV - Short Term Value
SVHC - Substances of Very High Concern
TDG - Transport of Dangerous Goods
TLV - Threshold Limit Value
vPvB - very Persistent, very Bioaccumulative

Key literature references and sources for data

This Safety Data Sheet has been prepared based on information available for public as TOXNET information, European Chemicals Agency (ECHA) substance dossier, papers from international cancer research institutes (IARC Monographs), U.S. National Toxicology Program data, U.S. Agency for Toxic Substances and Disease Control (ATSDR), PubChem websites and SDS from our raw material manufacturers.

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29.08.2023	1.0	2023-08-29

Additional information

Indication of changes:	Section 2 & 3 If you need an explanation of the change, contact the supplier (SDS@avantorsciences.com).

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