

Safety Data Sheet

Revision date: 06.12.2022

Version: 7.2

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

1.1 Product identifier

Trade name/designation:	Boron standard solution, 1,000 mg/l ARISTAR® standard for ICP
Product No.:	45512
CAS No.:	not applicable
Other means of identification:	none

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

Relevant identified uses:	General chemical reagent
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1.3 Details of the supplier of the safety data sheet

Singapore

VWR Singapore Pte Ltd.

Street	18 Gul Drive
Postal code/City	Singapore 629468
Telephone	+65 6505 0760
Telefax	+65 6264 3780
E-mail (competent person)	SDS@avantorsciences.com

1.4 Emergency phone number

Telephone	+65 (0) 6505 0760 (office hours: 8 am-5 pm)
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SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

Hazard classes and hazard categories	Hazard statements
Reproductive toxicity, category 1B	H360FD

2.2 Label elements

Hazard pictograms



Signal word: Danger

Hazard statements	
H360FD	May damage fertility. May damage the unborn child.

Precautionary statements	
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.
P308+P313	IF exposed or concerned: Get medical advice/attention.
P405	Store locked up.
P501	Dispose of contents/container to ...

2.3 Other hazards

none

SECTION 3: Composition / information on ingredients

3.1 Substances

not applicable

3.2 Mixtures

Composition / Information on ingredients

Substance name	Concentration	Identifier	Hazard classes and hazard categories
ortho-Boric acid	0.1 - 1%	CAS No.: 10043-35-3	Repr. 1B - H360FD

SECTION 4: First aid measures

4.1 Description of first aid measures

General information

When in doubt or if symptoms are observed, get medical advice. Change contaminated, saturated clothing. Wash contaminated clothing before reuse. Do not leave affected person unattended.

After inhalation

Remove casualty to fresh air and keep warm and at rest. Obtain medical attention if symptoms appear.

In case of skin contact

Gently wash with plenty of soap and water. In case of skin reactions, consult a physician.

After eye contact:

Rinse immediately carefully and thoroughly with eye-bath or water. Obtain medical attention if symptoms appear.

In case of ingestion

Rinse mouth thoroughly with water. Call a doctor if you feel unwell.

Self-protection of the first aider

First aider: Pay attention to self-protection!

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling see respective section.

4.3 Indication of any immediate medical attention and special treatment needed

No special information on medical attention and special treatment available.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

The product itself does not burn.

May intensify fire; oxidiser.

Co-ordinate fire-fighting measures to the fire surroundings.

Extinguishing media which must not be used for safety reasons

Full water jet.

5.2 Special hazards arising from the substance or mixture

In case of fire may be liberated:

Pyrolysis products, toxic

5.3 Advice for firefighters

Do not breathe gas/fumes/vapour/spray.

Oxidising properties

DO NOT fight fire when fire reaches explosives.

Special protective equipment for firefighters:

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

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

Additional information

no data available

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel: Remove victim out of the danger area. First Aid, decontamination, treatment of symptoms.

6.2 Environmental precautions

No special environmental measures are necessary.

6.3 Methods and material for containment and cleaning up

Take up mechanically, placing in appropriate containers for disposal. Dispose according to local legislation.

6.4 Additional information

Personal protection equipment: see section 8 Disposal information: see section 13

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advices on safe handling

No special measures are necessary.

Measures to prevent fire, aerosol and dust generation

No special measures are necessary.

Measures required to protect the environment

No special measures are necessary.

7.2 Conditions for safe storage, including any incompatibilities

Recommended storage temperature: no data available

Storage class: no data available

Storage: Store in a dry place. Store in a closed container. Keep the packing dry and well sealed to prevent contamination and absorption of humidity. Keep away from heat. Packaging materials: Polyethylene (PE) Unsuitable materials and coatings of containers/equipment: No information available.

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

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

8.2 Exposure controls

8.2.1 Appropriate engineering controls

no data available

8.2.2 Personal protection equipment

no data available

Eye/face protection

no data available

Recommendation: no data available

Skin protection

Wear suitable gloves. When handling with chemical substances, protective gloves must be worn with the CE-label including the four control digits. 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
Recommended glove articles:	VWR 112-0998

By long-term hand contact

Suitable material:	NBR (Nitrile rubber)
Thickness of the glove material:	0,12 mm
Breakthrough time::	> 480 min
Recommended glove articles:	VWR 112-0998

Respiratory protection

no data available

Suitable respiratory protection apparatus:	no data available
Recommendation:	no data available
Suitable material:	no data available
Recommendation:	no data available

Additional information

no data available

8.2.3 Environmental exposure controls

no data available

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

(a) Appearance	
Physical state:	liquid
Colour:	no data available
(b) Odour:	no data available
(c) Odour threshold:	no data available

Safety relevant basic data

(d) pH:	no data available
(e) Melting point/freezing point:	0 °C
(f) Initial boiling point and boiling range:	100 °C
(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) Vapour pressure:	17.5 mmHg (20 °C)
(l) Vapour density:	no data available
(m) Density:	1.000 g/cm ³ (20 °C)
(n) Solubility(ies)	
Water solubility:	no data available
(o) Partition coefficient: n-octanol/water:	no data available
(p) Auto-ignition temperature:	no data available
(q) Decomposition temperature:	not applicable
(r) Viscosity	
Kinematic viscosity:	no data available
Dynamic viscosity:	no data available
(s) Explosive properties:	not applicable
(t) Oxidising properties:	not applicable
(u) Particle characteristics:	does not apply to liquids

9.2 Other information

Bulk density:	no data available
Refraction index:	no data available
Dissociation constant:	no data available
Surface tension:	no data available
Henry's Law Constant:	no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

This material is non-reactive under normal conditions.

10.2 Chemical stability

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

10.3 Possibility of hazardous reactions

No further relevant information available.

10.4 Conditions to avoid

No further relevant information available.

10.5 Incompatible materials

No further relevant information available.

10.6 Hazardous decomposition products

No known hazardous decomposition products.

Decomposition products in case of fire: see section 5.

10.7 Additional information

no data available

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute effects

Acute oral toxicity:

ortho-Boric acid - LD50: 3765 mg/kg - Rat - (IUCLID)

Acute dermal toxicity:

ortho-Boric acid - LD50: > 2000 mg/kg (24 h) - Rabbit - (IUCLID)

Acute inhalation toxicity:

ortho-Boric acid - 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 sensitisation

In case of skin contact: not sensitising

After inhalation: not sensitising

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. May damage the unborn child.

Aspiration hazard

not applicable

Other adverse effects

no data available

Additional information

no data available

11.2 Endocrine disrupting properties:

This product does not contain a substance that has endocrine disrupting properties with respect to humans as no components meets the criteria.

SECTION 12: Ecological information**12.1 Ecotoxicity****Fish toxicity:**

ortho-Boric acid - 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:

ortho-Boric acid - 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.

ortho-Boric acid - 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

ortho-Boric acid - 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:

ortho-Boric acid - EC50: 52,4 mg/l (3 d) Pseudokirchneriella subcapitata - IUCLID

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

Bacteria toxicity:

ortho-Boric acid - 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.

12.2 Persistence and degradability

no data available

12.3 Bioaccumulative potential

Partition coefficient: n-octanol/water: no data available

12.4 Mobility in soil:

no data available

12.5 Results of PBT/vPvB assessment

not applicable

12.6 Endocrine disrupting properties

This product does not contain a substance that has endocrine disrupting properties with respect to the environment.

12.7 Other adverse effects

no data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Appropriate disposal / Product

Dispose according to local legislation. Consult the appropriate local waste disposal expert about waste disposal. Waste requires monitoring.

Waste code product: no data available

Appropriate disposal / Package

Dispose according to local legislation. Handle contaminated packages in the same way as the substance itself.

Additional information

no data available

SECTION 14: Transport information

Land transport (ADR/RID)

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

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

National regulations

- Workplace Safety and Health Act
- Workplace Safety and Health (Permissible Exposure Levels of Toxic Substances) Order
- Environmental Protection and Management Act (EPMA) - Second Schedule, Part 1, Control of Hazardous Substances
- Maritime and Port Authority of Singapore (MPA) - Dangerous Goods, Petroleum and Explosives Regulations

SECTION 16: Other information

Abbreviations and acronyms

ACGIH - American Conference of Governmental Industrial Hygienists
ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road
AGS - Committee on Hazardous Substances (Ausschuss für Gefahrstoffe)
CLP - Regulation on Classification, Labelling and Packaging of Substances and Mixtures
DFG - German Research Foundation (Deutsche Forschungsgemeinschaft)
DNEL - Derived No Effect Level
Gestis - Information system on hazardous substances of the German Social Accident Insurance (Gefahrstoffinformationssystem der Deutschen Gesetzlichen Unfallversicherung)
IATA-DGR - International Air Transport Association-Dangerous Goods Regulations
ICAO-TI - International Civil Aviation Organization-Technical Instructions
IMDG - International Maritime Code for Dangerous Goods
KOSHA - Korea Occupational Safety and Health Agency
LTV - Long Term Value
NIOSH - National Institute for Occupational Safety and Health
OSHA - Occupational Safety & Health Administration
PBT - Persistent, Bioaccumulative and Toxic
PNEC - Predicted No Effect Concentration
RID - Regulation concerning the International Carriage of Dangerous Goods by Rail
STV - Short Term Value
SVHC - Substances of Very High Concern
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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Additional information

Indication of changes

Section 2

If you need an explanation of the change, contact the supplier (SDS@avantorsciences.com).

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.