

Safety Data Sheet acc. to OSHA HCS (HazCom 2012)

Printing date 07/01/2022

Reviewed on 07/01/2022

1 Identification

- **Product identifier**
- **Trade name: Vario Free Chlorine Reagent Solution**
- **Catalogue number:** 424883, 531820, 531820-0
- **Application of the substance / the mixture:** Reagent for water analysis
- **Manufacturer/Supplier:**
Tintometer Inc.
6456 Parkland Drive
Sarasota, FL 34243
USA
phone: (941) 756-6410
fax: (941) 727-9654
www.lovibond.us
Made in Germany
- **Emergency telephone number:** + 1 866 928 0789 (English, French, Spanish)

* 2 Hazard(s) identification

- **Classification of the substance or mixture**



GHS08 Health hazard

Toxic to Reproduction 1B H360 May damage fertility or the unborn child.

- **Label elements**
- **GHS label elements** The product is classified and labeled according to the Hazard Communication Standard (HCS).
- **Hazard pictograms**



GHS08

- **Signal word** Danger
- **Hazard-determining components of labeling:**
boric acid
Potassium tetraborate tetrahydrate
- **Hazard statements**
H360 May damage fertility or the unborn child.
- **Precautionary statements**
P280 Wear protective gloves/protective clothing/eye protection.
P201 Obtain special instructions before use.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P308+P313 IF exposed or concerned: Get medical advice/attention.
P405 Store locked up.
- **Other hazards** No further relevant information available.

3 Composition/information on ingredients

- **Chemical characterization: Mixtures**
- **Description:** aqueous solution
- **Composition and Information on Ingredients:**
Percent ranges are used due to the confidential product information.

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CAS: 12045-78-2 EINECS: 215-575-5	Potassium tetraborate tetrahydrate	 Toxic to Reproduction 2, H361	0.1–≤2.5%
CAS: 10043-35-3 EINECS: 233-139-2 Index number: 005-007-00-2 RTECS: ED 4550000	boric acid	 Toxic to Reproduction 1B, H360	0.1–≤2.5%

· **Additional information:** For the wording of the listed hazard phrases refer to section 16.

4 First-aid measures

- **Description of first aid measures**
- **General information:** Immediately remove any clothing soiled by the product.
- **After inhalation:** Supply fresh air. Call a doctor.
- **After skin contact:**
Immediately wash with water and soap and rinse thoroughly.
Seek medical advice.
- **After eye contact:** Rinse opened eye for several minutes (at least 15 min) under running water. Then consult a doctor.
- **After swallowing:**
Rinse out mouth and then drink 1-2 glasses of water.
Seek medical treatment.
- **Most important symptoms and effects, both acute and delayed**
irritations
resorption
after absorption of large amounts:
diarrhoea
sickness
vomiting
CNS disorders
cardiovascular disorders
- **Indication of any immediate medical attention and special treatment needed:** No further relevant information available.

5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:** Use fire fighting measures that suit the environment.
- **Special hazards arising from the substance or mixture**
The product is not combustible.
Formation of toxic gases is possible during heating or in case of fire.
- **Advice for firefighters**
- **Protective equipment:**
Wear self-contained respiratory protective device.
Wear fully protective suit.
- **Additional information**
Collect contaminated fire fighting water separately. It must not enter the sewage system.
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.
Ambient fire may liberate hazardous vapours.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
- **Advice for non-emergency personnel:**
Wear protective equipment. Keep unprotected persons away.
Avoid substance contact.
Ensure adequate ventilation
- **Advice for emergency responders:** Protective equipment: see section 8
- **Environmental precautions:**
Do not allow product to reach sewage system or any water course.
Dilute with plenty of water.
- **Methods and material for containment and cleaning up:**
Ensure adequate ventilation.

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Absorb with liquid-binding material (sand, diatomite, universal binders).
Dispose contaminated material as waste according to item 13.

· **Reference to other sections**

See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

* 7 Handling and storage

· **Precautions for safe handling**

· **Advice on safe handling:** No special precautions are necessary if used correctly.

· **Hygiene measures:**

Do not get in eyes, on skin, or on clothing.
Take off immediately all contaminated clothing.
Store protective clothing separately.
Wash hands before breaks and at the end of work.
Do not eat, drink or smoke when using this product.

· **Conditions for safe storage, including any incompatibilities**

· **Requirements to be met by storerooms and receptacles:** Store in a cool location.

· **Information about storage in one common storage facility:** Not required.

· **Further information about storage conditions:**

Store locked up or with access restricted to technical experts or their assistants.
Ensure that persons do not handle until all safety precautions have been read and understood.
Protect from heat and direct sunlight.
Protect from exposure to the light.
Protect from humidity and water.

· **Recommended storage temperature:** 20°C +/- 5°C (approx. 68°F)

· **Specific end use(s)** No further relevant information available.

* 8 Exposure controls/personal protection

· **Control parameters**

· **Components with limit values that require monitoring at the workplace:**

The following constituent is the only constituent of the product which has a PEL, TLV or other recommended exposure limit.

CAS: 10043-35-3 boric acid

TLV (USA)	Short-term value: 6* mg/m ³ Long-term value: 2* mg/m ³ *as inhalable fraction, A4
EL (Canada)	Short-term value: 6 mg/m ³ Long-term value: 2 mg/m ³
EV (Canada)	Short-term value: 6 mg/m ³ Long-term value: 2 mg/m ³ inorganic, inhalable

· **Additional information:** The lists that were valid during the creation were used as basis.

· **Engineering measures:**

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.
See item 7.

· **Personal protective equipment:**

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled.

· **Breathing equipment:**

Under normal use conditions according to the instruction manual no personal protective equipment is needed.
If exposure limits are exceeded or health impacts are experienced use respiratory protective device against the effects of fume/dust/aerosol.

· **Recommended filter device for short term use:** Filter P3

· **Protection of hands:**

Preventive skin protection by use of skin-protecting agents is recommended.
After use of gloves apply skin-cleaning agents and skin cosmetics.

· **Material of gloves**

Nitrile rubber, NBR

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Recommended thickness of the material: ≥ 0.11 mm

- **Penetration time of glove material**

Value for the permeation: Level ≤ 1 (10 min)

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

- **Eye protection:**

Safety glasses

Use protective goggles that have been tested and approved in accordance with government standards (like NIOSH).

- **Body protection:** Protective work clothing

- **Limitation and supervision of exposure into the environment:**

Do not allow product to reach sewage system or any water course.

* 9 Physical and chemical properties

- **Information on basic physical and chemical properties**

- **Appearance:**

- **Form / Physical state:**

Solution

- **Color:**

Colorless

- **Odor:**

Characteristic

- **Odor threshold:**

Not determined.

- **pH-value at 20°C (68°F):**

> 12

- **Melting point/freezing point:**

Strongly alkaline

- **Initial boiling point and boiling range:**

Not determined.

- **Flash point:**

Not determined.

- **Flammability (solid, gas):**

Not applicable.

- **Ignition temperature:**

The product is not combustible.

- **Decomposition temperature:**

Not applicable.

- **Auto-ignition temperature:**

Not determined.

- **Danger of explosion:**

Product is not self-igniting.

- **Flammability or explosive limits:**

Product does not present an explosion hazard.

- **Lower:**

Not applicable.

- **Upper:**

Not applicable.

- **Oxidizing properties:**

none

- **Vapor Pressure:**

Not determined.

- **Density at 20°C (68°F):**

1.02 g/cm³ (8.51 lbs/gal)

- **Relative density:**

Not determined.

- **Vapor density:**

Not determined.

- **Evaporation rate:**

Not determined.

- **Solubility(ies)**

- **Water:**

Fully miscible.

- **Partition coefficient (n-octanol/water):**

Not applicable (mixture).

- **Viscosity:**

- **Kinematic:**

Not determined.

- **Other information**

- **Solids content:**

< 5 %

- **Solvent content:**

- **Organic solvents:**

0 %

- **Water:**

> 95 %

10 Stability and reactivity

- **Reactivity** see section "Possibility of hazardous reactions"

- **Chemical stability** Stable at ambient temperature (room temperature).

- **Possibility of hazardous reactions** No further relevant information available.

- **Conditions to avoid** To avoid thermal decomposition do not overheat.

- **Incompatible materials:** No further relevant information available.

- **Hazardous decomposition products:** see section 5

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*11 Toxicological information

- **Information on toxicological effects**

- **Acute toxicity:** Based on available data, the classification criteria are not met.

- **LD/LC50 values that are relevant for classification:**

CAS: 12045-78-2 Potassium tetraborate tetrahydrate

Oral	LD50.	>2000 mg/kg (rat)
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CAS: 10043-35-3 boric acid

Oral	LD50	2660 mg/kg (rat) (OECD 401) (GESTIS, ECHA registrant)
Dermal	LD50.	>2000 mg/kg (rat) (ECHA, registrant: no deaths occurred.)
	LD ₀	1500 mg/kg (child) (MERCK)
	NOAEL	9.6 mg/kg (rat) (NTP)

- **Primary irritant effect:**

- **on the skin:** Based on available data, the classification criteria are not met.

- **on the eye:** Based on available data, the classification criteria are not met.

- **Information on components:**

CAS: 10043-35-3 boric acid

Irritation of skin	OECD 404	(rabbit: no irritation) (Registrant, ECHA)
Irritation of eyes	OECD 405	(rabbit: slight irritation) (IUCLID)

- **Sensitization:** Based on available data, the classification criteria are not met.

- **Information on components:**

CAS: 10043-35-3 boric acid

Sensitization	OECD 406	(guinea pig: negative)
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- **Carcinogenic categories**

- **IARC (International Agency for Research on Cancer)**

None of the ingredients is listed.

- **NTP (National Toxicology Program)**

None of the ingredients is listed.

- **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

- **Other information:** see section 8 / 15

- **Synergistic Products:** None

- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction):**

The following statements refer to the mixture:

Toxic to Reproduction 1B

- **Germ cell mutagenicity** Based on available data, the classification criteria are not met.

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

- **Reproductive toxicity** May damage fertility or the unborn child.

- **STOT (specific target organ toxicity) -single exposure** Based on available data, the classification criteria are not met.

- **STOT (specific target organ toxicity) -repeated exposure** Based on available data, the classification criteria are not met.

- **Aspiration hazard** Based on available data, the classification criteria are not met.

- **Information on components:**

CAS 10043-35-3: evaluation for carcinogenicity: negative in animals (NTP)

OECD 414: Teratogenicity testing

OECD 473: Mutagenicity testing

OECD 471, 474, 476, 487: Germ cell mutagenicity testing

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CAS: 10043-35-3 boric acid	
OECD 471	(negative) (Bacterial Reverse Mutation Test - Ames test)
OECD 476	(negative) (In Vitro Mammalian Cell Gene Mutation Test) (mouse lymphoma test)
OECD 414	(negative) (oral, rat) (ECHA, registrant: no evidence of developmental toxicity up to 55 mg/kg bw. At 76 mg/kg bw there was reduced fetal bodyweight, short and wavy ribs, and these effects disappeared during the postnatal period.)
OECD 474	(negative) (in vivo, mice)

· **Additional toxicological information:**

CAS 10043-35-3: Absorption through gastro-intestinal tract, mucous membranes
Boric acid / Borate may cause developmental changes based on published data, at doses many times in excess of those that could occur through inhalation of dust in occupational settings.

CAS: 10043-35-3 boric acid	
(source: GESTIS)	
Main toxic effects:	
Acute: Slightly irritating to the eyes and skin; gastrointestinal disturbances, CNS-effects and (later) skin damage after massive poisoning	
Chronic: Irritation to the mucous membranes following inhalative exposure, effects to the gastrointestinal tract and CNS	
Further Information (Merck):	
"Toxicity reported for borates in humans: ingestion or absorption may cause nausea, vomiting, diarrhea, abdominal cramps, and erythematous lesions on the skin and mucous membranes.	
Other symptoms include: circulatory collapse, tachycardia, cyanosis, delirium, convulsions, and coma.	
Death has been reported to occur in infants from less than 5 grams and in adults from 5 to 20 grams."	
"Liver - Irregularities - Based on Human Evidence"	

12 Ecological information

· **Toxicity**

· **Aquatic toxicity:**

CAS: 10043-35-3 boric acid	
EC50	133 mg/l/48h (Daphnia magna) (ECOTOX)
LC50	50–100 mg/l/96h (rainbow trout) (ECOTOX)

· **Persistence and degradability .**

· **Other information:**

Mixture of inorganic compounds.
Methods for the determination of biodegradability are not applicable to inorganic substances.

· **Bioaccumulative potential**

Pow = n-octanol/wasser partition coefficient
log Pow < 1 = Does not accumulate in organisms.

CAS: 10043-35-3 boric acid	
log Pow	-1.09 (.) (OECD 107, 22°C) (Merck)

· **Mobility in soil** No further relevant information available.

· **Other adverse effects** Avoid transfer into the environment.

* 13 Disposal considerations

· **Waste treatment methods**

· **Recommendation:** Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

· **Uncleaned packaging:**

· **Recommendation:** Disposal must be made according to official regulations.

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· **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information

· UN-Number · DOT, IMDG, IATA	none
· UN proper shipping name · DOT, IMDG, IATA	none
· Transport hazard class(es) · DOT, IMDG, IATA · Class	none
· Packing group · DOT, IMDG, IATA	none
· Environmental hazards:	Not applicable.
· Special precautions for user	Not applicable.
· Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
· Transport/Additional information:	Not dangerous according to the above specifications.

*15 Regulatory information

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

· **Section 355 (Extremely hazardous substances):**

None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**

None of the ingredients is listed.

· **TSCA (Toxic Substances Control Act):**

CAS 12045-78-2 is not on the TSCA Inventory listed, because it is a hydrate.
It is listed on the CAS 1332-77-0 number for the anhydrous form.

All components have the value ACTIVE.

· **Hazardous Air Pollutants**

None of the ingredients is listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**

None of the ingredients is listed.

· **New Jersey Right-to-Know List:**

CAS: 12125-02-9 | ammonium chloride

· **New Jersey Special Hazardous Substance List:**

None of the ingredients is listed.

· **Pennsylvania Right-to-Know List:**

CAS: 12125-02-9 | ammonium chloride

· **Pennsylvania Special Hazardous Substance List:**

CAS: 12125-02-9 | ammonium chloride

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· EPA (Environmental Protection Agency)	
CAS: 10043-35-3	boric acid
· NIOSH-Ca (National Institute for Occupational Safety and Health)	
None of the ingredients is listed.	

· Information about limitation of use:

Observe national regulations where applicable:
 Employment restrictions concerning pregnant and lactating women must be observed.
 Employment restrictions concerning young persons must be observed.

· Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

* 16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· Relevant phrases

H360 May damage fertility or the unborn child.
 H361 Suspected of damaging fertility or the unborn child.

· Recommended restriction of use: professional/industrial use only

· Date of preparation / last revision 07/01/2022 / 2

· Abbreviations and acronyms:

OECD: Organisation for Economic Co-operation and Development
 STOT: specific target organ toxicity
 SE: single exposure
 RE: repeated exposure
 EC50: half maximal effective concentration
 IC50: half maximal inhibitory concentration
 NOEL or NOEC: No Observed Effect Level or Concentration
 ACGIH® - American Conference of Governmental Industrial Hygienists
 •A1 - Confirmed human carcinogen
 •A2 - Suspected human carcinogen
 •A3 - Confirmed animal carcinogen with unknown relevance to humans
 •A4 - Not classifiable as a human carcinogen
 •A5 - Not suspected as a human carcinogen
 IARC - International Agency for Research on Cancer
 •Group 1 - Carcinogenic to humans
 •Group 2A - Probably carcinogenic to humans
 •Group 2B - Possibly carcinogenic to humans
 •Group 3 - Not classifiable as to carcinogenicity to humans
 •Group 4 - Probably not carcinogenic to humans
 NTP - National Toxicology Program, U.S. Department of Health and Human Services
 •Group K - Known to be Human Carcinogens
 •Group R - Reasonably Anticipated to be Human Carcinogens
 IMDG: International Maritime Code for Dangerous Goods
 DOT: US Department of Transportation
 IATA: International Air Transport Association
 EINECS: European Inventory of Existing Commercial Chemical Substances
 ELINCS: European List of Notified Chemical Substances
 CAS: Chemical Abstracts Service (division of the American Chemical Society)
 LC50: Lethal concentration, 50 percent
 LD50: Lethal dose, 50 percent
 NIOSH: National Institute for Occupational Safety
 OSHA: Occupational Safety & Health
 TLV: Threshold Limit Value
 PEL: Permissible Exposure Limit
 REL: Recommended Exposure Limit
 Toxic to Reproduction 1B: Reproductive toxicity – Category 1B
 Toxic to Reproduction 2: Reproductive toxicity – Category 2

· Sources

Data arise from safety data sheets, reference works and literature.
 ECHA: European CHemicals Agency <http://echa.europa.eu>
 GESTIS- Stoffdatenbank (Substance Database, Germany)
 IUCLID (International Uniform Chemical Information Database)
 NTP (National Toxicology Program)

· * Data compared to the previous version altered.