

Boron trichloride

Print date 17.06.2024
Revision date 17.06.2024
Version 10.0 (en)
replaces version of 20.05.2021 (9.0)

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

* **1.1 Product identifier**

Trade name/designation	Boron trichloride
Art-Nr(n).	1900, 70190
Substance name	boron trichloride
Index No	005-002-00-5
EC No	233-658-4
REACH No.	01-2119962197-29
CAS No	10294-34-5

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

* **Use of the substance/mixture**
Basic substance

1.3 Details of the supplier of the safety data sheet

Supplier
GHC Gerling, Holz & Co. Handels GmbH
Ruhrstraße 113
D-22761 Hamburg
Telephone +49 40 853 123 0
E-mail hamburg@ghc.de
Website www.ghc.com

Department responsible for information:
GHC Gerling, Holz & Co. Handels GmbH
Telephone +49 40 853 123 0

E-mail (competent person):
msds@ghc.de

* **1.4 Emergency telephone number**

EN: Poison Information Center Mainz +49 6131 19240

* **SECTION 2: Hazards identification**

* **2.1 Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [CLP]	Classification procedure
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Press. Gas (Liq.), H280

Acute Tox. 2, H300

Acute Tox. 2, H330

Skin Corr. 1B, H314

Hazard statements for physical hazards

H280 Contains gas under pressure; may explode if heated.

Hazard statements for health hazards

H300 Fatal if swallowed.

H314 Causes severe skin burns and eye damage.

H330 Fatal if inhaled.

* **2.2 Label elements**

* **Labelling according to Regulation (EC) No 1272/2008 [CLP]**

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Hazard pictograms



GHS05



GHS06

Signal word

Danger

Hazard statements

H280 Contains gas under pressure; may explode if heated.
 H300 Fatal if swallowed.
 H314 Causes severe skin burns and eye damage.
 H330 Fatal if inhaled.

* **Precautionary statements**

P260 Do not breathe gas/vapours.
 P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
 P280 Wear protective gloves/protective clothing/eye protection/face protection.
 P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
 P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P315 Get immediate medical advice/attention.
 P403 Store in a well-ventilated place.
 P405 Store locked up.

* **Supplemental hazard information**

EUH014 Reacts violently with water.
 EUH071 Corrosive to the respiratory tract.

* **2.3 Other hazards**

* **Adverse human health effects and symptoms**

Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.
 Contact with liquid may cause cold burns/frostbite.

* **Results of PBT and vPvB assessment**

The substance/mixture does not contain components meeting the PBT/vPvB criteria of the Reach Regulation, Annex XIII, at levels of 0.1% or higher.

* **SECTION 3: Composition / information on ingredients**

* **3.1 Substances**

Substance name	boron trichloride
Index No	005-002-00-5
EC No	233-658-4
REACH No.	01-2119962197-29
CAS No	10294-34-5
ATE	ATE(inhalation gas): 2541 ppm

Additional information

Content: >= 99,9 %

3.2 Mixtures

not applicable

* **SECTION 4: First aid measures**

* **4.1 Description of first aid measures**

* **General information**

Remove contaminated, saturated clothing immediately.
 In the event of persistent symptoms obtain medical treatment.
 First aider: Pay attention to self-protection!

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Following inhalation

Remove casualty to fresh air and keep warm and at rest.
In case of respiratory standstill give artificial respiration by respiratory bag (Ambu bag) or respirator. Obtain medical assistance.
In the event of pulmonary irritation treat initially with corticoid spray, e.g. Ventolair- or Pulmicort- metered-dose aerosol (Ventolair and Pulmicort are registered trademarks).

* **Following skin contact**

In case of skin contact rinse with warm water.
In case of frostbite, wash with plenty of water; do not remove clothing.
In case of frostbite rinse with lukewarm (not hot) water for at least 15 minutes. Do not remove clothing frozen to the skin. Thaw with lukewarm water. Apply a sterile dressing. Obtain medical assistance.

After eye contact

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical assistance.

Following ingestion

Ingestion is not considered a potential route of exposure.

* **4.2 Most important symptoms and effects, both acute and delayed**

* **Symptoms**

Circulatory collapse
Corrosion
Dyspnoea
Convulsions

Effects

Pulmonary oedema

4.3 Indication of any immediate medical attention and special treatment needed

Notes for the doctor

Treat symptomatically.
Pulmonary oedema prophylaxis.
To supervise the blood circulation.

* **SECTION 5: Firefighting measures**

* **5.1 Extinguishing media**

* **Suitable extinguishing media**

The product itself does not burn. The product itself does not burn. Match extinguishing measures to surrounding fire.

Unsuitable extinguishing media

Full water jet

5.2 Special hazards arising from the substance or mixture

Hazardous combustion products

In case of fire formation of dangerous gases possible.
Hydrogen chloride (HCl)
Boric acid (H3BO3)
Chlorine (Cl2)

* **5.3 Advice for firefighters**

* **Special protective equipment for firefighters**

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

* **Additional information**

If possible, shut off gas valves and move containers to a safe location.
Use water spray jet to protect personnel and to cool endangered containers.
Exposure to fire may cause rupture / explosion of the containers.
Dispose of fire residues and contaminated extinguishing water in accordance with local, official regulations.

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* **SECTION 6: Accidental release measures**

* **6.1 Personal precautions, protective equipment and emergency procedures**

- * **For non-emergency personnel**
Use personal protection equipment.
Leave the danger area.
Keep people away and stay on the upwind side.

For emergency responders

Personal protection by wearing close-fitting protective clothing and breathing apparatus.
Pay attention to extension of gas especially at ground (heavier than air) and in direction of the wind.
Remove persons to safety.

* **6.2 Environmental precautions**

If possible, stop flow of product.
Do not allow to enter into soil/subsoil.
Do not allow to enter into surface water or drains.

* **6.3 Methods and material for containment and cleaning up**

- * **For containment**
If necessary, secure leaky pressure receptacles using a salvage container.
Prevent the liquid from spreading over a wide area (set up barriers, cover sewage systems).
Limit expansion of the gas (water spray jet).
- * **For cleaning up**
Leave to vapourize.
Provide adequate ventilation.

* **6.4 Reference to other sections**

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

* **SECTION 7: Handling and storage**

* **7.1 Precautions for safe handling**

- * **Protective measures**
Use only in well-ventilated areas.
Transfer and handle product only in closed systems.
Usual measures for fire prevention.
Containers' temperature should not be increased above 50 °C.
The working pressure in the receptacle must not exceed the saturation vapour pressure of the pure product resulting at a temperature of 50 °C.
Prevent cylinders from falling over.
Ensure valve protection device is correctly fitted.
Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
Open valve slowly to avoid pressure shock.
Do not allow backflow into the container.
Entering of water into the container must be prevented.
No water to valves, flanges and other fittings.
Purging of pipes and valves with inert gases - to avoid: water, solvents.
- * **Advices on general occupational hygiene**
When using do not eat, drink, smoke, sniff.
Wash hands before breaks and after work.
Remove contaminated clothing and protective equipment before entering eating areas.

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

- * **Requirements for storage rooms and vessels**
All regulations and local requirements for the storage of containers have to be respected.
Keep container tightly closed and in a well-ventilated place.
Containers' temperature should not be increased above 50 °C.
Prevent cylinders from falling over.
Only use containers specifically approved for the substance/product.
Information on suitable materials for receptacles and valves see ISO 11114.

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- * **Materials to avoid**
 Do not store together with explosives.
 Do not store together with flammable liquids.
 Do not store together with flammable solids.
 Do not store together with pyrophoric and self-heating substances.
 Do not store together with oxidizing liquids or oxidizing solids.
 Do not store together with toxic liquids or toxic solids.
 Do not store together with infectious substances.
 Do not store together with radioactive material.
 Do not store together with food or feed.

* **7.3 Specific end use(s)**

- * **Recommendation**
 An exposure scenario is not required.

* **SECTION 8: Exposure controls/personal protection*** **8.1 Control parameters*** **DNEL worker**

CAS No	Substance name	DNEL value	DNEL type	Remark
10294-34-5	boron trichloride	8 mg/m ³	long-term inhalative (local)	Assessment factor 1
10294-34-5	boron trichloride	16 mg/m ³	acute inhalative (local)	
10294-34-5	boron trichloride	16 mg/m ³	long-term inhalative (systemic)	

* **PNEC**

CAS No	Substance name	PNEC Value	PNEC type	Remark
10294-34-5	boron trichloride	11 µg/kg	soil	
10294-34-5	boron trichloride	16 µg/L	air	
10294-34-5	boron trichloride	39 µg/kg	sediment, freshwater	
10294-34-5	boron trichloride	39 µg/kg	aquatic, marine water	
10294-34-5	boron trichloride	39 µg/L	aquatic, marine water	Assessment factor 10
10294-34-5	boron trichloride	39 µg/L	aquatic, freshwater	Assessment factor 10
10294-34-5	boron trichloride	39 µg/L	sewage treatment plant (STP)	Assessment factor 10
10294-34-5	boron trichloride	48 µg/L	aquatic, intermittent release	

* **8.2 Exposure controls****Appropriate engineering controls**

Technical measures to prevent exposure
 Transfer and handle only in enclosed systems.

* **Personal protection equipment****Eye/face protection**

Protective goggles according to EN 166, in case of increased risk add protective face shield.

Hand protection

Safety gloves according to EN 374:
 Glove material specification [make/type, thickness, permeation time/life, wetting resistance]: FPM; 0,7 mm; >= 480 min

Body protection:

Safety shoes with steel toecap.
 Body covering work clothing or chemical resistant suit at increased risk.

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- * **Respiratory protection**
 Keep self contained breathing apparatus readily available for emergency use.
 Respiratory protection necessary at:
 high concentrations
 Respiratory protection complying with EN 137.
 Short term: filter apparatus, Filter B
 In case of rescue and maintenance activities in storage containers use environment-independent breathing apparatus because of risk of suffocation due to displacement of oxygen.
- * **Thermal hazards**
 Use cold-resistant protective equipment.
- * **Environmental exposure controls**
- * **Remark**
 Prevent release to the environment.

* **SECTION 9: Physical and chemical properties*** **9.1 Information on basic physical and chemical properties**

- * **Physical state**
 Gaseous / liquefied under pressure.

Colour
 colourless

Odour
 stinging

Safety relevant basis data

	Value	Method	Source, Remark
Odour threshold:			not determined
Melting point/freezing point			not applicable
Boiling point or initial boiling point and boiling range	12.5 °C		
flammability			The product itself does not burn.
Lower and upper explosion limit			not determined
Flash point			not applicable
Auto-ignition temperature			not determined
Decomposition temperature			not determined
pH			not applicable
Viscosity			
Solubility(ies)	Water solubility		hydrolysed (half-life < 12 hours)
Partition coefficient n-octanol/water (log value)			not applicable
Vapour pressure	1600 hPa (20°C)		
Density and/or relative density			not applicable
Relative vapour density	4.062		air = 1
particle characteristics			not applicable

* **9.2 Other information**

- * **Information with regard to physical hazard classes**
- * **Gases under pressure**

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Safety characteristics

	Value	Method, Result	Source, Remark
Critical temperature	178.8 °C		

* **Other information**
 Vapours are heavier than air.

*** SECTION 10: Stability and reactivity****10.1 Reactivity**

See section "Possibility of hazardous reactions".

*** 10.2 Chemical stability**

The substance is chemically stable under recommended conditions of storage, use and temperature.

*** 10.3 Possibility of hazardous reactions**

Reactions with numerous chemical compounds.
 Reacts violently with water.
 Reactions with damp air.

*** 10.4 Conditions to avoid**

Heat sources / heat - risk of bursting.
 Ignition sources, open flames, glowing metal surfaces, etc.
 Humidity.

*** 10.5 Incompatible materials**

Organic substances (fats, oils).
 Oxidising agent
 Fluorine
 Oxygen

10.6 Hazardous decomposition products

When handled and stored appropriately, no dangerous decomposition products are known.

*** SECTION 11: Toxicological information****11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008***** Acute toxicity***** Animal data**

	Effective dose	Method, Evaluation	Source, Remark
Acute oral toxicity			Study scientifically not necessary.
Acute dermal toxicity			Study scientifically not necessary.
Acute inhalation toxicity	CAS No10294-34-5 boron trichloride		
	Acute inhalation toxicity (gas)		
	LC50: 2541 ppm		
	Species Rat		
	Exposure time 1 h		

*** Assessment/classification**

Fatal if inhaled.
 Fatal if swallowed.

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*** Skin corrosion/irritation****Animal data**

Result / Evaluation	Method	Source, Remark
Corrosive.		

*** Assessment/classification**
Causes burns.*** Serious eye damage/irritation****Animal data**

Result / Evaluation	Method	Source, Remark
strongly irritant.		

*** Assessment/classification**
Risk of serious damage to eyes.*** Sensitisation to the respiratory tract***** Assessment/classification**
No data available*** Skin sensitisation****Animal data**

Result / Evaluation	Dose / Concentration	Method	Source, Remark
not sensitising.			

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

	Value	Method	Result / Evaluation	Remark
In vitro mutagenicity/genotoxicity	Species Salmonella typhimurium	OECD 471	negative	

*** Assessment/classification**
Based on available data, the classification criteria are not met.*** Carcinogenicity***** Assessment/classification**
No data available*** Reproductive toxicity****Animal data**

	Value	Method	Result / Evaluation	Remark
Reproductive toxicity	NOAEL(C): 100 mg/kg bw/day Species Rat			

*** Assessment/classification**
Based on available data, the classification criteria are not met.*** STOT-single exposure***** STOT SE 1 and 2***** Assessment/classification**
Based on available data, the classification criteria are not met.

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* **STOT-repeated exposure*** **Animal data**

	Effective dose	Method	Specific effects:	Organs affected:	Source, Remark
Oral specific target organ toxicity (repeated exposure)	NOAEL(C): 100 mg/kg	Species Rat			
Inhalative specific target organ toxicity (repeated exposure)	NOAEL(C): 103.9 mg/m ³	Species Rat			

* **Assessment/classification**

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

* **Aspiration hazard**

* **Assessment/classification**
 Study technically not feasible.

11.2 Information on other hazards

No data available

* **SECTION 12: Ecological information*** **12.1 Toxicity*** **Aquatic toxicity**

	Effective dose	Method, Evaluation	Source, Remark
Acute (short-term) fish toxicity	LC50: ≥ 22 mg/L		
Chronic (long-term) fish toxicity	not determined		
Acute (short-term) toxicity to crustacea	EC50 ≥ 0.49 mg/L		
Chronic (long-term) toxicity to aquatic invertebrate	not determined		
Acute (short-term) toxicity to algae and cyanobacteria	EC50 ≥ 0.73 mg/L		
Chronic (long-term) toxicity to aquatic algae and cyanobacteria	not determined		
Toxicity to other aquatic plants/organisms	not determined		
Toxicity to microorganisms	EC50 ≥ 0.12 mg/L		

* **12.2 Persistence and degradability**

No data available

* **12.3 Bioaccumulative potential**

No data available

* **12.4 Mobility in soil**

Assessment/classification
 Adsorption in soil is not likely.

* **12.5 Results of PBT and vPvB assessment**

The substance/mixture does not contain components meeting the PBT/vPvB criteria of the Reach Regulation, Annex XIII, at levels of 0.1% or higher.

* **12.6 Endocrine disrupting properties**

No data available

* **12.7 Other adverse effects**

No data available

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*** SECTION 13: Disposal considerations***** 13.1 Waste treatment methods****Waste codes/waste designations according to EWC/AVV**

Waste code product	Waste name
160504 *	gases in pressure containers (including halons) containing hazardous substances

*** Appropriate disposal / Product**
 Waste disposal according to directive 2008/98/EC, covering waste and dangerous waste.
 Prevent release to the environment. No disposal via the sewage.

Appropriate disposal / Package
 Transportable pressure equipment (empty, residual pressure): Return to supplier / manufacturer.

*** SECTION 14: Transport information**

	Land transport (ADR/RID)	Sea transport (IMDG)	Air transport (ICAO-TI / IATA-DGR)
14.1 UN number or ID number	UN 1741	UN 1741	UN 1741
14.2 UN proper shipping name	BORON TRICHLORIDE	BORON TRICHLORIDE	Boron trichloride
14.3 Transport hazard class(es)	2.3 (8)	2.3 (8)	2.3 (8)
14.4 Packing group	-	-	-
14.5 Environmental hazards	No	No	No

14.6 Special precautions for user

The protective measures listed in Sections 6, 7 and 8 of the Safety Data Sheet have to be considered.

14.7 Maritime transport in bulk according to IMO instruments

No carriage in bulk.

Land transport (ADR/RID)

UN number or ID number	UN 1741
UN proper shipping name	BORON TRICHLORIDE
Transport hazard class(es)	2.3 (8)
Hazard label(s)	2.3+8
Classification code	2TC
Packing group	-
Environmental hazards	No
Limited quantity (LQ)	0
Special provisions	-
Tunnel restriction code	C/D

*** Sea transport (IMDG)**

UN number or ID number	UN 1741
UN proper shipping name	BORON TRICHLORIDE
Transport hazard class(es)	2.3 (8)
Packing group	-
Environmental hazards	No
Limited quantity (LQ)	0
Marine pollutant	No
EmS	F-C, S-U

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*** Air transport (ICAO-TI / IATA-DGR)**

UN number or ID number	UN 1741
UN proper shipping name	Boron trichloride
Transport hazard class(es)	2.3 (8)
Packing group	-
Environmental hazards	No

*** SECTION 15: Regulatory information***** 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture***** EU legislation***** Restrictions of occupation**

Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers.
 Observe restrictions to employment for juvenils according to the 'juvenile work protection guideline' (94/33/EC).

*** Other regulations (EU)***** To follow:**

Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances.
 National and local regulations concerning chemicals shall be observed.

*** 15.2 Chemical Safety Assessment***** National regulations**

For this substance a chemical safety assessment has been carried out.

*** SECTION 16: Other information***** Abbreviations and acronyms**

Press. Gas (Liq.): Liquefied gas (LG)
 Acute Tox. 2, H300: Acute Toxicity (oral), Category 2
 Skin Corr. 1B: Skin corrosion, Sub-category 1B
 Acute Tox. 2, H330: Acute Toxicity (inhalation), Category 2

Key literature references and sources for data

Information from our suppliers and data from the "GESTIS Substances Database" and the "Registered Substances" database of the European Chemicals Agency (ECHA) were used to create this safety data sheet.

*** Additional information**

The information contained herein is based on the state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

Relevant H- and EUH-phrases (Number and full text)

H300	Fatal if swallowed.
H314	Causes severe skin burns and eye damage.
H330	Fatal if inhaled.

Indication of changes

* Data changed compared with the previous version