

Material Safety Data Sheet



Boron trichloride

Section 1. Chemical product and company identification

Commercial name(s) : Boron trichloride
Synonym : Boron chloride.
Material uses : Various.
Supplier/Manufacturer : Air Liquide Canada Inc.
1250, René-Lévesque West, Suite 1700
Montreal, QC H3B 5E6
In case of emergency : (514) 878-1667

Section 2. Hazards identification

Physical state : Gas.
Emergency overview : DANGER!
MAY BE FATAL IF INHALED. CAUSES RESPIRATORY TRACT, EYE AND SKIN BURNS. HIGH PRESSURE GAS. CAN CAUSE TARGET ORGAN DAMAGE.
Keep away from heat (<52°C/125°F). Extremely hazardous gas under pressure. Keep cylinder valve closed when the product is not used. Use only with adequate ventilation. Wash thoroughly after handling. Gas may accumulate in confined areas.

Routes of entry : Dermal contact. Eye contact. Inhalation.
Potential acute health effects
Inhalation : May be fatal if inhaled. Corrosive to the respiratory system.
Skin : Corrosive to skin on contact.
Eyes : Corrosive to eyes.
Ingestion : May cause burns to mouth, throat and stomach. As this product is a gas, refer to the inhalation section.

Potential chronic health effects : Carcinogenic effects: Not classified or listed by IARC, NTP, OSHA, EU and ACGIH.
Mutagenic effects: Not available.
Teratogenic effects: Not available.

Medical conditions aggravated by over-exposure : Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

See toxicological information (section 11)

Section 3. Composition, Information on Ingredients

	CAS number	mole %
Canada Boron trichloride	10294-34-5	100

This material is classified hazardous under the WHMIS Controlled Product Regulation in Canada.
See Sections 8, 11, 14 and 15 for details.

Section 4. First aid measures

Prompt medical attention is mandatory in all cases of overexposure to this gas. Rescue personnel should wear a self-contained breathing apparatus.

Inhalation : In case of inhalation, all persons, still conscious, must be brought far from the contaminated area and allowed to breath fresh air. The short time taken for this operation is essential. All unconscious persons must be carried outside from the contaminated area and given cardiopulmonary resuscitation (CPR) with a supplementary of oxygen. Others should be treated according to their symptoms and needs. Get medical attention immediately.

- Skin contact** : In case of contact, immediately flush skin with plenty of water. Get medical attention if symptoms occur.
- Eye contact** : Individual in contact with a gas should not wear contact lenses. Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 20 minutes. Get medical attention immediately.
- Ingestion** : Since the product is a gas, it will probably be inhaled rather than ingested. Consider first the preventive measures in case of inhalation.
- Notes to physician** : Effects of contact or inhalation may be delayed. Provide general supportive measures. Oxygen may be beneficial. The medical doctor must be warned that the person inhaled a very toxic gas.

Section 5. Fire fighting measures

- Flammability of the product** : Non-flammable.
- Products of combustion** : Decomposition products may include the following materials:
halogenated compounds
- Explosion hazards in the presence of various substances** : Container explosion may occur under fire conditions or when heated.
- Fire-fighting media and instructions** : Use an extinguishing agent suitable for the surrounding fire.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

- Personal precautions** : EVACUATE ALL PERSONNEL FROM AFFECTED AREA.
Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is on container or container valve, contact the closest Air Liquide Canada location.
- Environmental precautions** : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- Methods for cleaning up** : Immediately contact emergency personnel. Stop leak if without risk. Note: see section 1 for emergency contact information and section 13 for waste disposal.

Section 7. Handling and storage

- Handling** : Valve protection caps must remain in place unless cylinder is secured with valve outlet piped to usage point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure regulator when connecting cylinder to lower pressure piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow to the cylinder. Do not tamper with (valve) safety device. Close valve after each use and when empty.
- Storage** : Protect cylinders from physical damage. Store in cool, dry, well-ventilated area of non combustible construction away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 52°C/125°F. Cylinders must be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in - first out" inventory system to prevent full cylinders being stored for excessive periods of time. Post "No Smoking or Open Flames" signs in the storage or use area. There should be no source of ignition in the storage or use area.

Section 8. Exposure controls/personal protection

- Engineering controls** : Ventilation is normally required when handling or using this product. Ensure that eyewash stations and safety showers are close to the workstation location.
- Personal protection**
- Respiratory** : Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Hands** : Wear suitable gloves for the application.
- Eyes** : Splash goggles.
- Skin/Body** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Overalls buttoned to the neck and wrist.
Metal cap, safety shoes are recommended when handling cylinders.



Some applications of this product may require additional or other specific protective clothing. Please consult your supervisor.

- Personal protection in case of a major leak** : Safety glasses, goggles or face shield. Impervious gloves. Full suit. Metal cap, safety boots. Wear MSHA/NIOSH-approved self-contained breathing apparatus or equivalent and full protective gear.

- Exposure limits** : Not available.

Consult local authorities for acceptable exposure limits.

Section 9. Physical and chemical properties

- Physical state** : Gas.
- Color** : Colorless.
- Odor** : Acrid.
- Molecular weight** : 117.16 g/mole
- Molecular formula** : BCl_3
- Boiling/condensation point** : 12.5°C (54.5°F)
- Melting/freezing point** : -107°C (-160.6°F)
- Critical temperature** : 177.9°C (352.2°F)
- Specific gravity** : 1.35
- Vapor density** : 4 [Air = 1]

Section 10. Stability and reactivity

- Stability and reactivity** : The product is stable.
- Incompatibility with various substances** : Decomposes in water.
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.
- Hazardous polymerization** : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Toxicity data

Acute Effects

- Inhalation** : May be fatal if inhaled. Corrosive to the respiratory system.
- Skin** : Corrosive to skin on contact.
- Eyes** : Corrosive to eyes.
- Ingestion** : May cause burns to mouth, throat and stomach. As this product is a gas, refer to the inhalation section.

Potential chronic health effects

- : Carcinogenic effects: Not classified or listed by IARC, NTP, OSHA, EU and ACGIH.
 Mutagenic effects: Not available.
 Teratogenic effects: Not available.

Target organs

- : Causes damage to the following organs: mucous membranes, skin, eye, lens or cornea.

Section 12. Ecological information

- Products of degradation** : These gases are released as is in the atmosphere.

Section 13. Disposal considerations

- Disposal** : Do not attempt to dispose of waste or unused quantities. Return in the shipping container properly labeled, with any valve outlet plugs or caps secured and valve protection cap in place to Air Liquide Canada for proper disposal. For emergency disposal, contact the closest Air Liquide Canada location.

Section 14. Transport information

NAERG : 125

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label
TDG Classification	UN1741	BORON TRICHLORIDE	2.3 (8)	-	 
IMDG Class	UN1741	BORON TRICHLORIDE	2.3 (8)	-	 
IATA-DGR Class	UN1741	BORON TRICHLORIDE	2.3 (8)	-	 

PG* : Packing group

Additional information

Cylinders should be transported in a secure position, in a well ventilated vehicle. The transportation of compressed gas cylinders in automobiles or in closed-body vehicles can present serious safety hazards and should be discouraged.

UN

-

TDG

-

IMDG

-

IATA

Passenger and Cargo Aircraft
 Quantity limitation: Forbidden

Section 15. Regulatory information

Canada

WHMIS (Canada)

- : Class A: Compressed gas.
- Class D-1A: Material causing immediate and serious toxic effects (Very toxic).
- Class E: Corrosive material



Canadian lists

- : **CEPA Toxic substances:** This material is not listed.
- Canadian ARET:** This material is not listed.
- Canadian NPRI:** This material is not listed.
- Alberta Designated Substances:** This material is not listed.
- Ontario Designated Substances:** This material is not listed.
- Quebec Designated Substances:** This material is not listed.

Canada inventory (DSL/NDSL)

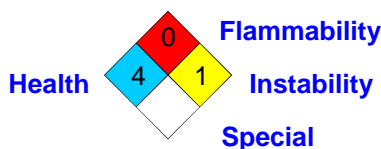
- : This material is listed or exempted.

Section 16. Other information

Hazardous Material Information System (U.S.A.)

Health	*	4
Fire hazard		0
Physical Hazard		1
Personal protection		G

National Fire Protection Association (U.S.A.)



HAZARD RATINGS

- 4- Extreme
- 3- Serious
- 2- Moderate
- 1- Slight
- 0- Minimal

See section 8 for more detailed information on personal protection.

References

- : ANSI Z400.5, MSDS Standard, 2004. - Manufacturer's Material Safety Data Sheet. - Canada Gazette Part II, Vol. 122, No. 2. Registration SOR/88-64, 31 December 1987. Hazardous Products Act "Ingredient Disclosure List" - Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2005. CGA C-7 Guide to the Preparation of Precautionary Labels and Marking of Compressed Gas Containers. CGA P-20 Standard for Classification of Toxic Gas Mixtures. CGA P-23 Standard for Categorizing Gas Mixtures Containing Flammable and Nonflammable Components.

- Date of issue** : 04/30/2008
- Date of previous issue** : 06/30/2005
- Version** : 4

Notice to reader

THE INFORMATION, RECOMMENDATIONS AND DATA CONTAINED IN THIS DOCUMENT ARE INTENDED TO BE USED BY PROPERLY TRAINED AND QUALIFIED PERSONNEL ONLY AND AT THEIR SOLE RISKS AND DISCRETION. THE INFORMATION, RECOMMENDATIONS AND DATA HEREIN CONTAINED ARE DERIVED FROM SOURCES WHICH WE BELIEVE TO BE RELIABLE. HOWEVER, AIR LIQUIDE CANADA INC. MAKES NO REPRESENTATION AND GIVES NO WARRANTY OF ANY KIND WHATSOEVER WITH RESPECT TO THEIR ACCURACY OR COMPLETENESS AND ASSUMES NO LIABILITY FOR DAMAGES OR LOSS ARISING DIRECTLY OR INDIRECTLY FROM THEIR USE, WHETHER PROPER OR IMPROPER.