

## Boron trifluoride

### Section 1. Chemical product and company identification

<b>Commercial name(s)</b>	: Boron trifluoride/Boron <sup>11</sup> trifluoride
<b>Synonym</b>	: Boron fluoride; Borane, trifluoro-; Trifluoroborane
<b>Material uses</b>	: Various.
<b>Supplier/Manufacturer</b>	: Air Liquide Canada Inc. 1250, René-Lévesque West, Suite 1700 Montreal, QC H3B 5E6
<b>In case of emergency</b>	: (514) 878-1667

### Section 2. Hazards identification

<b>Physical state</b>	: Gas.
<b>Emergency overview</b>	: DANGER! MAY BE FATAL IF INHALED. CAUSES SEVERE RESPIRATORY TRACT AND EYE BURNS. CAUSES SKIN BURNS. HIGH PRESSURE GAS. CAN CAUSE TARGET ORGAN DAMAGE. Keep away from heat (<52°C/125°F). Use only with adequate ventilation. Extremely hazardous gas under pressure. Keep cylinder valve closed when the product is not used. Wash thoroughly after handling. Gas may accumulate in confined areas.
<b>Routes of entry</b>	: Dermal contact. Eye contact. Inhalation.
<b>Potential acute health effects</b>	
<b>Inhalation</b>	: May be fatal if inhaled. Severely corrosive to the respiratory system.
<b>Skin</b>	: Corrosive to skin on contact.
<b>Eyes</b>	: Corrosive to eyes.
<b>Ingestion</b>	: May cause burns to mouth, throat and stomach. As this product is a gas, refer to the inhalation section.
<b>Potential chronic health effects</b>	: Carcinogenic effects: Not classified or listed by IARC, NTP, OSHA, EU and ACGIH. Mutagenic effects: Not available. Teratogenic effects: Not available.
<b>Medical conditions aggravated by over-exposure</b>	: 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 %
<b>Canada</b> Boron trifluoride	7637-07-2	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.

<b>Inhalation</b>	: 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.
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- 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.

### Product name

#### Canada

Boron trifluoride

### Exposure limits

**CA Alberta Provincial (Canada, 10/2006).**

15 min OEL: 2.8 mg/m<sup>3</sup> 15 minute(s).

**CA Ontario Provincial (Canada, 3/2007).**

CEV: 1 ppm

**CA Quebec Provincial (Canada, 12/2006).**

STEV: 1 ppm 15 minute(s).

Consult local authorities for acceptable exposure limits.

In Canadian provinces where no value is specifically suggested, the lowest value above should be used.

## Section 9. Physical and chemical properties

- Physical state** : Gas.
- Color** : Colorless.
- Odor** : Pungent.
- Molecular weight** : 67.81 g/mole
- Molecular formula** : BF<sub>3</sub>
- Boiling/condensation point** : -100.55°C (-149°F)
- Melting/freezing point** : -127.22°C (-197°F)
- Specific gravity** : 1.57
- Vapor density** : 2.4 [Air = 1]

## Section 10. Stability and reactivity

- Stability and reactivity** : The product is stable.
- 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**
- IDLH** : 25 ppm
- Acute Effects**
- Inhalation** : May be fatal if inhaled. Severely 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: kidneys, upper respiratory tract, 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
<b>TDG Classification</b>	UN1008	BORON TRIFLUORIDE, COMPRESSED	2.3 (8)	-	 
<b>IMDG Class</b>	UN1008	BORON TRIFLUORIDE, COMPRESSED	2.3 (8)	-	 
<b>IATA-DGR Class</b>	UN1008	BORON TRIFLUORIDE, COMPRESSED	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

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TDG

**Special provisions**  
79, 102

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 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)

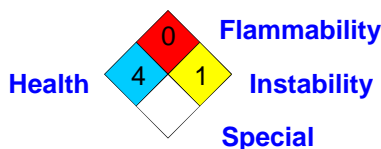
- : This material is listed or exempted.

## Section 16. Other information

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

Health	*	4
Fire hazard		0
Physical Hazard		0
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.

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#### Notice to reader

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