

Material Safety Data Sheet



Bromine trifluoride

Section 1. Chemical product and company identification

Commercial name(s) : Bromine trifluoride
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 : Liquid. [Clear.]
Emergency overview : DANGER!
MAY BE FATAL IF INHALED. CAUSES SEVERE RESPIRATORY TRACT AND EYE BURNS. CAUSES SKIN BURNS. STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE.
Avoid contact with eyes, skin and clothing. Use only with adequate ventilation. Wash thoroughly after handling.
Routes of entry : Dermal contact. Eye contact. Inhalation.
Potential acute health 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.
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 : None known.

See toxicological information (section 11)

Section 3. Composition, Information on Ingredients

	CAS number	mole %
Canada Bromine trifluoride	7787-71-5	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 product. 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** : Flush contaminated skin with plenty of water. Continue to rinse for at least 20 minutes. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Chemical burns must be treated promptly by a physician. Get medical attention immediately.
- Eye contact** : Get medical attention immediately. Immediately flush eyes with plenty of water for at least 20 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention immediately.
- Ingestion** : Keep person warm and at rest. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.
- 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 has been in contact with a very toxic product.

Section 5. Fire fighting measures

- Flammability of the product** : Non-flammable.
- Products of combustion** : Decomposition products may include the following materials:
halogenated compounds
- Fire-fighting media and instructions** : If safe, shut-off the source of trifluoride immediately. Use an extinguishing agent suitable for the surrounding fire. Do not use water or foam.
- This material increases the risk of fire and may aid combustion. Contact with combustible material may cause 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** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- Methods for cleaning up** : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Do not absorb in sawdust or other combustible material. It may lead to a fire risk when it dries out. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. 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 clothings. 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 : Liquid. [Clear.]

Color : Yellowish.

Odor : Suffocating.

Molecular weight : 136.91 g/mole

Molecular formula : BrF₃

Boiling/condensation point : 125.75°C (258.4°F)

Melting/freezing point : 8.8°C (47.8°F)

Specific gravity : 2.52

Vapor density : 4.72 [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

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.
- 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.

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 : 144

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label
TDG Classification	UN1746	BROMINE TRIFLUORIDE	5.1 (6.1, 8)	I	  
IMDG Class	UN1746	BROMINE TRIFLUORIDE	5.1 (6.1, 8)	I	  

Bromine trifluoride

IATA-DGR Class	UN1746	BROMINE TRIFLUORIDE	5.1 (6.1, 8)	I	
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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

-

IMDG

-

IATA

Passenger and Cargo Aircraft

Quantity limitation: Forbidden

Section 15. Regulatory information

Canada

WHMIS (Canada)

- : Class C: Oxidizing material.
- 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)

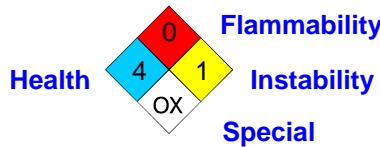
- : This material is not listed in DSL but is listed in NDSL.

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.

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