



# Material Safety Data Sheet

## 1. Product and Company Identification

Product name : **Boron Trifluoride, Compressed**

Chemical formula : BF<sub>3</sub>

Synonyms : Boron fluoride; Trifluoroborane

Company : Specialty Gases of America, Inc  
6055 Brent Dr.  
Toledo, OH 43611

Telephone : 419-729-7732

Emergency : 800-424-9300

## 2. Composition/Information on Ingredients

Components	CAS Number	% Volume
Boron Trifluoride	7637-07-2	99+%

## 3. Hazards Identification

### Emergency Overview

Toxic, corrosive high-pressure gas.  
May be fatal if inhaled.  
Can cause eye, skin, and respiratory tract burns.  
May cause kidney damage.

### Potential Health Effects

Inhalation : May be fatal if inhaled at high concentrations. Extremely irritating to the mucous membranes and the upper respiratory tract. May cause coughing, a choking sensation, chills, chest pain, pulmonary edema, and death.

Eye contact : Severely irritating; causes mild excess redness and swelling of the conjunctiva. High concentrations may cause corneal burns.

Skin contact : Severely irritates the skin, producing marked local redness and swelling. High concentrations may cause burns, which could result in absorption of potentially harmful amounts of material.

Ingestion : A highly unlikely route of exposure. This product is a gas at normal temperature and pressure.

Chronic Health Hazard : Repeated overexposure may cause dryness of the nasal membranes, nosebleed, dental fluorosis (discoloration of the teeth), bronchiolitis (asthma), and pneumonitis (chemical pneumonia).

## 4. First Aid Measures

General advice : None.

Eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes. Hold the eyelids open and away from the eyeballs to ensure all surfaces are flushed thoroughly. See a physician, preferably an ophthalmologist, immediately.

Skin contact : Do not breathe vapor. Immediately remove contaminated clothing and shoes,

and flush skin with plenty of water. Soak burned areas in an iced aqueous Epsom salt (MgSO<sub>4</sub>) solution for at least 30 minutes. Call a physician. Wash clothing before reuse.

- Ingestion : An unlikely route of exposure; this product is gas at normal temperature and pressure.
- Inhalation : Immediately remove to fresh air. If not breathing, give artificial respiration. Qualified personnel should give oxygen at half-hour intervals for 3 or 4 hours. Call a physician immediately.

## 5. Fire-Fighting Measures

- Suitable extinguishing media : Boron trifluoride cannot catch fire. Use media appropriate for surrounding fire. Note: Contact with water causes violent reaction.
- Specific hazards : Nonflammable, poisonous, corrosive gas. Heat of fire can build pressure in cylinder and cause it to rupture. No part of a cylinder should be subjected to a temperature higher than 125 F (52 C). Boron trifluoride cylinders are equipped with a pressure relief device. (Exceptions may exist where authorized by DOT). Vapors are extremely irritating and may burn skin and eyes on contact.
- Fire fighting : DANGER! Toxic, corrosive, high-pressure gas. Immediately evacuate all personnel from danger area. Do not approach area without self-contained breathing apparatus and protective clothing. Immediately cool cylinders with water spray from maximum distance; then move them away from fire if without risk. Reverse flow into cylinders may cause rupture. On site fire fighters must comply with OSHA 29 CFR 1910.156.

## 6. Accidental Release Measures

- Personal precautions : None.
- Environmental precautions : Prevent waste from contaminating the surrounding environment. Keep personnel away. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with federal, state and local regulations. If necessary, call your local supplier for assistance.
- Methods for cleaning up : Immediately evacuate all personnel from danger area. Do not approach area without self-contained breathing apparatus and protective clothing. Reduce vapors with fog or fine water spray. Reverse flow into cylinders may cause rupture. Shut off flow if without risk. Ventilate area or move cylinder to a well-ventilated area. Prevent runoff from contaminating surrounding environment. Poisonous, corrosive vapors may spread from spill. Before entering area, especially a confined area, check atmosphere with an appropriate device.
- Additional advice : None.

## 7. Handling and Storage

### Handling

Protect cylinders from damage. Use a suitable hand truck to move cylinders; do not drag, roll, slide or drop. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. Never insert an object (e.g. wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Open valve slowly. If valve is hard to open, discontinue use and contact your supplier.

### Storage

Store and use with adequate ventilation. Firmly secure cylinders upright to keep them from falling or being knocked over. Screw valve protection caps firmly in place by hand. Store only where temperature will not exceed 125 F (52 C). Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full cylinders for long periods.

## 8. Exposure Controls / Personal Protection

### Engineering measures

Use a corrosion-resistant local exhaust ventilation system with sufficient air flow velocity to maintain concentration below the TLV in the worker's breathing zone.

### Personal protective equipment

Respiratory protection : Select per OSHA 29 CFR 1910.134 and ANSI Z88.2. Use air-supplied respirators or self-contained breathing apparatus for concentrations up to 10 ppm. For higher concentrations, a full-face, self-contained breathing apparatus operated in the pressure demand mode must be worn.

Hand protection : Neoprene.

Eye protection : Wear safety glasses when handling cylinders.

Skin and body protection : Metatarsal shoes for container handling and protective clothing where needed. Regardless of protective equipment, never touch live electrical parts.

Remarks : None.

## **9. Physical and Chemical Properties**

Form : Gas.

Color : Colorless.

Odor : Pungent, suffocating odor.

Molecular weight : 67.81

Vapor pressure : Not applicable.

Vapor density : 0.192 lb/ft<sup>3</sup> (3.08 kg/m<sup>3</sup>) @ 70 F (21.1 C)

Specific gravity : 2.38 @ 70 F (21.1 C) (air = 1)

Boiling point : -147.64 F (-99.8 C)

Melting point : -198.5 F (-128 C)

Water solubility : Appreciable in cold water; reacts with hot water.

## **10. Stability and Reactivity**

Stability : Stable under normal conditions.

Conditions to avoid : None known.

Materials to avoid : Rubber, water, many plastics, organics, alkali metals, alkaline earth metals (except magnesium), calcium oxide, silver.

Hazardous decomposition products : Thermal decomposition may produce boron and fluorine. Reacts with water to form hydrates of boron trifluoride and other toxic fluorides.

## **11. Toxicological Information**

### Toxicity Data

LC50 = 806 ppm, 1 hour, rat (time adjusted).

### Acute Health Hazard

Ingestion : Not available.

Inhalation : Not available.

Skin : Not available.

## **12. Ecological Information**

No known effects.

## **13. Disposal Considerations**

Waste from residues : Do not attempt to dispose of residual or unused quantities. Return cylinder to  
/ unused products supplier.  
Contaminated : Return cylinder to supplier.  
packaging

#### 14. Transport Information

##### DOT (US only)

Proper shipping name : Boron trifluoride, Compressed  
Class : 2.3  
UN/ID No. : UN1008  
Labeling : Poison Gas

##### Further information

Cylinders should be transported in a secure upright position in a well ventilated truck.

#### 15. Regulatory Information

##### OSHA Process Safety (29 CFR 1910.119) Hazard Class(es)

Boron trifluoride is listed in Appendix A as a highly hazardous chemical in quantities of 250 lb (113.4 kg) or greater.

##### TCSA

Material is listed in TSCA inventory.

##### SARA Sections 302/304 (40 CFR 355)

Threshold Planning Quantity (TPQ): 500 lb (226.8 kg)  
Extremely Hazardous Substances (EHS) RQ: 500 lb (226.8 kg)

##### SARA Sections 311/312

Immediate: Yes  
Delayed: Yes  
Pressure: Yes  
Reactivity: No  
Fire: No

##### SARA Section 313 (40 CFR 372.65)

Boron trifluoride is subject to the reporting requirements of Section 313.

##### CERCLA (40 CFR Parts 117 and 302)

Reportable Quantity (RQ): None

#### 16. Other Information

Prepared by : Specialty Gases of America, Inc.  
For additional information, please visit our website at [www.americangasgroup.com](http://www.americangasgroup.com).