

Common Name: **BORON TRIFLUORIDE**

Synonyms: Borane, Trifluoro-; Boron Fluoride; Trifluoroborane

CAS No: 7637-07-2

Molecular Formula:  $\text{BF}_3$ 

RTK Substance No: 0246

Description: Colorless gas with a strong odor that forms dense, white fumes in moist air

### HAZARD DATA

Hazard Rating	Firefighting	Reactivity
<b>4 - Health</b> <b>0 - Fire</b> <b>1 - Reactivity</b> <b>DOT#:</b> UN 1008 <b>ERG Guide #:</b> 125 <b>Hazard Class:</b> 2.3 (Poisonous gas)	CORROSIVE Extinguish fire using an agent suitable for type of surrounding fire. <b>Boron Trifluoride</b> itself does not burn. Stop flow of gas and use water spray to disperse vapors. POISONOUS GASES ARE PRODUCED IN FIRE, including <i>Hydrogen Fluoride</i> and <i>Boric Acid</i> . CONTAINERS MAY EXPLODE IN FIRE. Use water spray to keep fire-exposed containers cool. <b>Boron Trifluoride</b> may be shipped or stored in complexes with flammable solvents (such as <i>Ethyl Ether</i> ). These complexes may be a fire risk.	<b>Boron Trifluoride</b> reacts with WATER to form toxic <i>Hydrogen Fluoride</i> gas. <b>Boron Trifluoride</b> reacts violently with ALKALI METALS (such as LITHIUM, SODIUM and POTASSIUM); ALKYL NITRATES (such as AMYL NITRATE, BUTYL NITRATE and NITROCELLULOSE); CALCIUM OXIDE; and LIME (CALCIUM HYDROXIDE). <b>Boron Trifluoride</b> attacks many METALS in the presence of WATER.

### SPILL/LEAKS

**Isolation Distance:**
**Small spill:** 30 meters (100 feet)

**Large spill:** 150 meters (500 feet)

**Fire:** 1,600 meters (1 mile)

Stop flow of gas. If source of leak is a cylinder and the leak cannot be stopped in place, remove the leaking cylinder to a safe place in the open air, and repair leak or allow cylinder to empty.

**Boron Trifluoride** may be hazardous to the environment, especially to aquatic organisms.

### PHYSICAL PROPERTIES

<b>Odor Threshold:</b>	1.6 ppm
<b>Flash Point:</b>	Nonflammable
<b>Vapor Density:</b>	2.4 (air = 1)
<b>Vapor Pressure:</b>	760 mm Hg at -149°F (-100.6°C)
<b>Specific Gravity:</b>	2.9 (water = 1)
<b>Water Solubility:</b>	Soluble/Reacts
<b>Boiling Point:</b>	-148°F (-100°C)
<b>Freezing Point:</b>	-197°F (-127°C)
<b>Critical Temp:</b>	10°F (-12.2°C)
<b>Ionization Potential:</b>	15.5
<b>Molecular Weight:</b>	67.8

### EXPOSURE LIMITS

**OSHA:** 1 ppm, Ceiling

**NIOSH:** 1 ppm, Ceiling

**ACGIH:** 1 ppm, Ceiling

**IDLH:** 25 ppm

The Protective Action Criteria values are:

PAC-1 = 1 ppm   PAC-2 = 1 ppm   PAC-3 = 1 ppm

### PROTECTIVE EQUIPMENT

<b>Gloves:</b>	Insulated Viton/Butyl (>8-hr breakthrough)
<b>Coveralls:</b>	Tychem® BR, CSM and TK (>8-hr breakthrough)
<b>Respirator:</b>	>1 ppm - SCBA

### HEALTH EFFECTS

**Eyes:** Irritation and burns

**Skin:** Irritation and burns, contact with liquid causes frostbite (skin absorbable)

**Inhalation:** Nose, throat and lung irritation, with coughing, and severe shortness of breath (pulmonary edema)

### FIRST AID AND DECONTAMINATION

**Remove** the person from exposure.

**Flush** eyes with large amounts of water for at least 30 minutes. Remove contact lenses. Seek medical attention.

**Quickly** remove contaminated clothing and wash contaminated skin with large amounts of water. Seek medical attention.

**In** case of contact with *liquid Boron Trifluoride*, immerse affected part in warm water. Seek medical attention.

**Begin** artificial respiration if breathing has stopped and CPR if necessary.

**Transfer** promptly to a medical facility.

**Medical** observation is recommended as symptoms may be delayed.