

MATERIAL
SAFETY
DATA SHEET

PRODUCT NAME Boron Trifluoride	CAS# 7637-07-2
TRADE NAME AND SYNONYMS Boron Trifluoride, Compressed (D.O.T.)	DOT I.D. NO. UN 1008
CHEMICAL NAME AND SYNONYMS Boron Trifluoride, Boron Fluoride	DOT HAZARD CLASS Division 2.3 (Poison Gas)
ISSUE DATE AND REVISIONS Revised January 2007	FORMULA BF ₃

HEALTH HAZARD DATA

EMERGENCY OVERVIEW

Boron Trifluoride is a colorless, poisonous, corrosive, toxic high pressure gas with a pungent, suffocating odor. It will cause eyes, nose, skin and respiratory irritation. Higher concentrations cause severe burns of the skins, inflammation and congestion of the lungs and severe irritation of the eyes and eyelids.

SYMPTOMS OF EXPOSURE

Inhalation: May cause coughing, choking sensation, chest pain, pulmonary edema, inflammation and congestion of the lungs, other respiratory irritation and death. Concentrations as low as 50 molar ppm may be fatal if inhaled for approximately one hour.

Skin Contact: May cause "stinging" of the skin, local redness and swelling. At high concentrations will cause severe burns.

Eye Contact: Very irritating with redness and swelling of the conjunctiva. High concentrations can cause severe irritation of the eyes and eyelids.

RECOMMENDED FIRST AID TREATMENT

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO BORON TRIFLUORIDE. RESCUERS SHOULD BE EQUIPPED WITH ADEQUATE PERSONAL PROTECTIVE APPARATUS.

Inhalation: Remove patients to an uncontaminated area and breathe fresh air. Give artificial respiration if not breathing. Qualified personnel may give oxygen if breathing is difficult. Keep the victim warm and quiet.

Skin Contact: Remove contaminated clothing as rapidly as possible and flush affected area with water.

Eye Contact: PERSONS WITH POTENTIAL EXPOSURE TO BORON TRIFLUORIDE SHOULD NOT WEAR CONTACT LENSES. Immediately flush eyes with copious quantities of water and continue flushing for at least 30 minutes. Part eyelids with fingers to assure complete flushing.

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES

Decomposes in hot water releasing hydrogen fluoride.

PHYSICAL DATA

BOILING POINT -148.5 °F (-100.3 °C)	LIQUID DENSITY AT BOILING POINT (0 °C) 99.2 lb/ft ³ (1589 kg/m ³)
VAPOR PRESSURE @ 70 °F (21.1 °C) above the critical temperature of 9.86 °F (-12.3 °C)	GAS DENSITY AT 70 °F, 1 atm) 0.178 lb/ft ³ (2.85 kg/m ³)
SOLUBILITY IN WATER Very soluble in cold water; decomposes in hot water	FREEZING POINT -199.7 °F (-128.7 °C)
EVAPORATION RATE N/A (Gas)	SPECIFIC GRAVITY (AIR=1) @ 70 °F (21.1 °C) = 2.38
APPEARANCE AND ODOR Colorless gas with a pungent suffocating odor forms thick acidic fumes.	

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) N/A	AUTO IGNITION TEMPERATURE N/A	FLAMMABLE LIMITS % BY VOLUME LEL N/A UEL N/A
EXTINGUISHING MEDIA Nonflammable gas.		ELECTRICAL CLASSIFICATION Nonhazardous
SPECIAL FIRE FIGHTING PROCEDURES In case of fire, move cylinders out of affected area immediately.		
UNUSUAL FIRE AND EXPLOSION HAZARDS If cylinders are involved in a fire, safely relocate or keep cool with water spray.		

REACTIVITY DATA

STABILITY		CONDITIONS TO AVOID N/A
Unstable		
Stable	X	
INCOMPATIBILITY (Materials to avoid) Moist gas is corrosive to most metallic materials and some plastics.		
HAZARDOUS DECOMPOSITION PRODUCTS HF on hydrolysis.		
HAZARDOUS POLYMERIZATION		CONDITIONS TO AVOID None
May Occur		
Will Not Occur	X	

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Evacuate all personnel from affected area. Use appropriate protective equipment. Wear Self-Contained Breathing Apparatus and protective clothing. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is in container or container valve, contact HSG for special advice.
WASTE DISPOSAL METHOD Do not attempt to dispose of waste or unused quantities. Waste disposal must be in accordance with appropriate Federal, State, and local regulations. For emergency disposal assistance, contact HSG for specific advice.

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type) Positive pressure air line with mask or self-contained breathing apparatus should be available for emergency use.	
VENTILATION Hood with forced ventilation.	SPECIAL N/A
MECHANICAL (Gen.) N/A	OTHER N/A
LOCAL EXHAUST To prevent accumulation above the ceiling limit.	
PROTECTIVE GLOVES Plastic or rubber.	
EYE PROTECTION Safety goggles or glasses	
OTHER PROTECTIVE EQUIPMENT Safety shoes and protective clothing, safety shower.	

SPECIAL PRECAUTIONS*

SPECIAL LABELING INFORMATION DOT Shipping Name: Boron Trifluoride DOT Shipping Label: Poison Gas	DOT Hazard Class: Division 2.3 I.D. No.: UN 1008
SPECIAL HANDLING RECOMMENDATIONS Use only in well-ventilated areas. Valve protection caps must remain in place unless cylinder is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure-reducing 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 into the cylinder.	
SPECIAL STORAGE RECOMMENDATIONS Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 125°F (52 °C). Cylinders should 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.	
OTHER RECOMMENDATIONS OR PRECAUTIONS Mercury manometers should not be used since boron trifluoride is soluble in mercury. Keep equipment meticulously dry. Many of the metal fluorides are water-soluble so that the passive film corrosion protection may be destroyed if wetted with water. Compressed gas cylinders should not be refilled except by qualified producers of compressed gases.	

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