

INTERNATIONAL\_GASES\_AND\_CHEMICALS\_LTD

MATERIAL SAFETY DATA SHEETS

DATE: 10/02/97

SUPPLIER ADDRESS: SPEEDWELL RD  
PARKHOUSE EAST  
NEWCASTLE-U-LYME

EMERGENCY PHONE: (178) 256-5556  
NUMBER

---

1. CHEMICAL PRODUCT

---

PRODUCT NAME: BORON TRIFLUORIDE

SYNONYMS: Boron fluoride

---

2. COMPOSITION, INFORMATION ON INGREDIENTS

---

Ingredient Name	Formula	CAS#	Concentration	Exposure Limits (PPM)			
				ACGIH TLV	OSHA PEL	MAC	Other STEL
BORON TRIFLUORIDE	BF3	7637-07-2	99+%	1.0c	1.0c	1.0	1.0c

c = ceiling

---

3. HAZARD IDENTIFICATION

---

## \*\*\* EMERGENCY OVERVIEW \*\*\*

Poisonous, corrosive, high pressure gas.  
Can cause eye, skin, and respiratory tract burns.  
May cause kidney damage.

## POTENTIAL HEALTH EFFECTS

ROUTES OF ENTRY: Inhalation , Skin , Eye

ACUTE EFFECTS: It is severely irritating and corrosive to the eyes, mucous membranes and upper respiratory tract. It is highly toxic. Inhalation causes irritation to the throat, coughing, and difficulty in breathing. Concentrations of 50 ppm for 30 to 60 minutes can cause death by inflammation and congestion of the lungs. Contact with the skin and eyes can cause redness, pain, and serious burns. May damage liver and kidney. Possible central nervous system depression.

CHRONIC EFFECTS: Pneumonitis, dental fluorosis and hypocalcemia.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: None known

OTHER EFFECTS OF OVEREXPOSURE: None

## CARCINOGENICITY (US Only):

NTP - No  
IARC MONOGRAPHS - No  
OSHA REGULATED - No

Continued ...

---

#### 4. FIRST AID MEASURES

**INHALATION:** Immediately remove victim to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.

**EYE CONTACT:** Immediately flush with copious amounts of water for at least 15 minutes.

**SKIN CONTACT:** Immediately flush with copious amounts of water for at least 15 minutes while removing contaminated clothing. Continue washing for 2-4 hours with water or preferably, soak in iced sephiran (13%), epsom salt or 70% denatured ethyl alcohol solution for 1-4 hours depending on severity of burns.

**INGESTION:** None

**IN EVENT OF EXPOSURE, CONSULT A PHYSICIAN**

**NOTE TO PHYSICIAN:** Victim should be retained for observation. Signs and symptoms of pulmonary edema can be delayed for several hours.

---

#### 5. FIRE FIGHTING MEASURES

**FLASH POINT:** Nonflammable

**AUTOIGNITION TEMPERATURE:** N/Ap

**FLAMMABLE LIMITS:** Nonflammable

**LOWER:**

**UPPER:**

**EXTINGUISHING MEDIA:** Use what is appropriate for surrounding fire.

**SPECIAL FIRE FIGHTING INSTRUCTION AND EQUIPMENT:** Wear self-contained breathing apparatus and full protective clothing. Keep fire exposed cylinders cool with water spray. Do not permit boron trifluoride to contact water. It reacts with water to yield fluoboric and boric acid. These may react with metals to release hydrogen gas.

**HAZARDOUS COMBUSTION PRODUCTS:** None

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** Cylinder rupture may occur under fire

conditions. Emits toxic fumes under fire conditions.

---

#### 6. ACCIDENTAL RELEASE MEASURES

**CLEAN UP PROCEDURES:** Evacuate and ventilate area. Remove leaking cylinder to exhaust hood or safe outdoor area.

**SPECIALIZED EQUIPMENT:** None

---

#### 7. HANDLING AND STORAGE

**PRECAUTIONS TO BE TAKEN IN HANDLING:** Secure cylinder when using to protect from falling. Use suitable hand truck to move cylinders.

**PRECAUTIONS TO BE TAKEN IN STORAGE:** Store in well ventilated areas. Keep valve protection cap on cylinders when not in use.

---

#### 8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

**ENGINEERING CONTROLS:** Provide adequate general and local exhaust ventilation to maintain concentration below exposure limits.

#### PERSONAL PROTECTION

**EYE/FACE PROTECTION:** Safety glasses

**SKIN PROTECTION:** Protective gloves.

**RESPIRATORY PROTECTION:** In case of leakage, use self-contained breathing apparatus.

**OTHER PROTECTIVE EQUIPMENT:** Safety shoes when handling cylinders.

---

#### 9. PHYSICAL AND CHEMICAL PROPERTIES

**APPEARANCE:** Colorless

**ODOR:** Suffocating pungent odor.

**PHYSICAL STATE:** Gas

**VAPOR PRESSURE:** N/Ap

**VAPOR DENSITY (AIR=1):** 2.38

**BOILING POINT (C):** -100.4

**SOLUBILITY IN WATER:** Soluble

**SPECIFIC GRAVITY (H2O=1):** N/Av

**EVAPORATION RATE:** Gas

**ODOR THRESHOLD:** N/Av

Continued ...

---

## 10. STABILITY AND REACTIVITY

---

STABILITY: Stable under normal storage conditions.

CONDITIONS TO AVOID: Storage in poorly ventilated areas. Storage near a heat source.

MATERIALS TO AVOID: Water, alkali metals, alkaline earth metals, alkyl nitrates, and CaO.

HAZARDOUS POLYMERIZATION: Will not occur.

HAZARDOUS DECOMPOSITION: Fluoboric acid, boric acid, and fluorine compounds.

---

## 11. TOXICOLOGICAL INFORMATION

---

LETHAL CONCENTRATION (LC50): 806 ppm, rat 1 hour

LETHAL DOSE 50 (LD50): N/Ap

TERATOGENICITY: N/Ap

REPRODUCTIVE EFFECTS: N/Ap

MUTAGENICITY: N/Ap

---

## 12. ECOLOGICAL INFORMATION

---

No adverse ecological effects are expected.

---

## 13. DISPOSAL CONSIDERATIONS

---

WASTE DISPOSAL METHOD: Dispose of non-refillable cylinders in accordance with federal, state and local regulations. Allow gas to vent slowly to atmosphere in an unconfined area or exhaust hood. If the cylinders are the refillable type, return cylinders to supplier with any valve outlet plugs or caps secured and valve protection caps in place.

---

## 14. TRANSPORT INFORMATION

---

CONCENTRATION: 99+%

DOT DESCRIPTION (US ONLY):

PROPER SHIPPING NAME: Boron trifluoride, compressed

HAZARD CLASS: 2.3 (poison), Hazard Zone B

IDENTIFICATION NUMBER: UN1008

REPORTABLE QUANTITIES: None

LABELING: POISON GAS

ADR/RID (EU Only): Class 2, 1tc

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

---

## 15. REGULATORY INFORMATION

---

OSHA: Process Safety Management: Material is listed in appendix A of 29 CFR 1910.119 as highly hazardous chemical.

TSCA: Material is listed in TSCA inventory.

SARA: The threshold planning quantity for this material is 250 lbs.

EU NUMBER: 231-569-5

NUMBER IN ANNEX 1 OF DIR 67/548: Not listed in annex 1.

EU CLASSIFICATION: N/Av

R: 14-26-35

S: 9-26-28-36-45

---

## 16. OTHER INFORMATION

---

OTHER PRECAUTIONS: Protect containers from physical damage. Do not deface cylinders or labels. Cylinders should be refilled by qualified producers of compressed gas. Shipment of a compressed gas cylinder which has not been filled by the owner or with his written consent is a violation of federal law (49 CFR).

ABBREVIATIONS:

N/Ap - Not Applicable

N/Av - Not Available

SA - Simple Asphyxiant

NE - None Established

DISCLAIMER: Information included in this document is given to the best of our knowledge, however, no warranty is made that the information is accurate or complete. We do not accept any responsibility for damages by the use of the document.