



# MATERIAL SAFETY DATA SHEET

## BORON TRICHLORIDE

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### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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**TAIYU INDUSTRIAL GASES Limited**  
16/F, Kowloon building,  
555 Nathan Road, Mongkok  
Kowloon,  
Hong Kong  
TELEPHONE NUMBER: (852)22979277

**Chengdu Taiyu Industrial Gases Co.,Ltd**  
Chengluo Avenue, Longquan District,  
Chengdu City, China (Mainland)  
TELEPHONE NUMBER: (86) 28-88455212(commonly)

#### **SUBSTANCE: BORON TRICHLORIDE**

#### **TRADE NAMES/SYNONYMS:**

MTG MSDS 8; BORON CHLORIDE; CHLORURE DE BORE; TRICHLOROBORANE;  
TRICHLOROBORON; BORANE, TRICHLORO-; BORON CHLORIDE (BCL3); UN 1741; BCL3;  
MAT03310; RTECS ED1925000

**CHEMICAL FAMILY:** non-metallic, halides

**CREATION DATE:** Jan 24 1989

**REVISION DATE:** Mar 19 2003

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### 2. COMPOSITION, INFORMATION ON INGREDIENTS

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**COMPONENT:** BORON TRICHLORIDE

**CAS NUMBER:** 10294-34-5

**PERCENTAGE:** 100.0

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### 3. HAZARDS IDENTIFICATION

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**NFPA RATINGS (SCALE 0-4):** HEALTH=3 FIRE=0 REACTIVITY=2

#### **EMERGENCY OVERVIEW:**

**COLOR:** colorless

**PHYSICAL FORM:** fuming liquid, gas

**ODOR:** pungent odor

**MAJOR HEALTH HAZARDS:** respiratory tract burns, skin burns, eye burns, mucous membrane burns

**PHYSICAL HAZARDS:** Containers may rupture or explode if exposed to heat. May react on contact with water. Releases toxic, corrosive, flammable or explosive gases.

#### **POTENTIAL HEALTH EFFECTS:**

**INHALATION:**

**SHORT TERM EXPOSURE:** burns

**LONG TERM EXPOSURE:** same as effects reported in short term exposure

**SKIN CONTACT:**

**SHORT TERM EXPOSURE:** burns

**LONG TERM EXPOSURE:** same as effects reported in short term exposure

**EYE CONTACT:**

**SHORT TERM EXPOSURE:** burns

**LONG TERM EXPOSURE:** same as effects reported in short term exposure

**INGESTION:**

**SHORT TERM EXPOSURE:** burns

**LONG TERM EXPOSURE:** same as effects reported in short term exposure

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## **4. FIRST AID MEASURES**

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**INHALATION:** If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

**SKIN CONTACT:** Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get immediate medical attention. Thoroughly clean and dry contaminated clothing and shoes before reuse. Destroy contaminated shoes.

**EYE CONTACT:** Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

**INGESTION:** If swallowed, drink plenty of water, do NOT induce vomiting. Get immediate medical attention.

**NOTE TO PHYSICIAN:** For inhalation, consider oxygen. Avoid gastric lavage or emesis.

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## **5. FIRE FIGHTING MEASURES**

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**FIRE AND EXPLOSION HAZARDS:** Negligible fire hazard. Containers may rupture or explode if exposed to heat.

**EXTINGUISHING MEDIA:** carbon dioxide, regular dry chemical

Large fires: Use regular foam or flood with fine water spray.

**FIRE FIGHTING:** Do not get water inside container. Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. Keep unnecessary people away, isolate hazard area and deny entry.

**FLASH POINT:** not flammable

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## **6. ACCIDENTAL RELEASE MEASURES**

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**OCCUPATIONAL RELEASE:**

Stop leak if possible without personal risk. Reduce vapors with water spray. Do not get water directly on material. Do not get water inside container. Keep unnecessary people away, isolate hazard area and deny entry. Small spills: Flood with water. Large spills: Dike for later disposal. Stay upwind and keep out of low areas. Ventilate closed spaces before entering. Evacuation radius: 150 feet. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

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## 7. HANDLING AND STORAGE

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**STORAGE:** Store and handle in accordance with all current regulations and standards. Notify State Emergency Response Commission for storage or use at amounts greater than or equal to the TPQ (U.S. EPA SARA Section 302). SARA Section 303 requires facilities storing a material with a TPQ to participate in local emergency response planning (U.S. EPA 40 CFR 355.30). Store in a well-ventilated area. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. Store below 52 C. Store in a cool, dry place. Keep separated from incompatible substances.

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## 8. EXPOSURE CONTROLS, PERSONAL PROTECTION

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**EXPOSURE LIMITS:**

**BORON TRICHLORIDE:**

No occupational exposure limits established.

**VENTILATION:** Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

**EYE PROTECTION:** Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

**CLOTHING:** Wear appropriate chemical resistant clothing.

**GLOVES:** Wear appropriate chemical resistant gloves.

**PROTECTIVE MATERIAL TYPES:** butyl rubber, neoprene, polyvinyl chloride (PVC), polyethylene

**RESPIRATOR:** Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use.

Any chemical cartridge respirator with acid gas cartridge(s).

Any chemical cartridge respirator with a full facepiece and acid gas cartridge(s).

Any air-purifying respirator with a full facepiece and an acid gas canister.

**For Unknown Concentrations or Immediately Dangerous to Life or Health -**

Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.

Any self-contained breathing apparatus with a full facepiece

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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**PHYSICAL STATE:** gas

**COLOR:** colorless

**PHYSICAL FORM:** fuming liquid, gas

**ODOR:** pungent odor

**MOLECULAR WEIGHT:** 117.16

**MOLECULAR FORMULA:** B-CL<sub>3</sub>

**BOILING POINT:** 54.5 F (12.5 C)

**FREEZING POINT:** -161 F (-107 C)

**VAPOR PRESSURE:** 131.7 kPa @ 21.1 C

**VAPOR DENSITY (air=1):** 4.03

**SPECIFIC GRAVITY (water=1):** 1.349 @ 11 C

**WATER SOLUBILITY:** decomposes/reacts

**PH:** acidic

**VOLATILITY:** Not applicable

**ODOR THRESHOLD:** Not available

**EVAPORATION RATE:** Not applicable

**VISCOSITY:** 0.342 cP @ 0 C

**COEFFICIENT OF WATER/OIL DISTRIBUTION:** Not applicable

**SOLVENT SOLUBILITY:**

**Decomposes:** alcohol

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## 10. STABILITY AND REACTIVITY

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**REACTIVITY:** May react with evolution of heat on contact with water. Releases corrosive gases.

**CONDITIONS TO AVOID:** Minimize contact with material. Avoid inhalation of material or combustion by-products. Containers may rupture or explode if exposed to heat.

**INCOMPATIBILITIES:** combustible materials, amines

**HAZARDOUS DECOMPOSITION:**

Decomposition products on contact with water or moisture: boron compounds, hydrochloric acid

Thermal decomposition products: chlorine

**POLYMERIZATION:** Will not polymerize.

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## 11. TOXICOLOGICAL INFORMATION

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**BORON TRICHLORIDE:**

**TOXICITY DATA:**

2541 ppm/1 hour(s) inhalation-rat LC50

**LOCAL EFFECTS:**

Corrosive: inhalation, skin, eye, ingestion

**ACUTE TOXICITY LEVEL:**

Moderately Toxic: inhalation

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## 12. ECOLOGICAL INFORMATION

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Not available

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## 13. DISPOSAL CONSIDERATIONS

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Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D003.

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## 14. TRANSPORT INFORMATION

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**U.S. DOT 49 CFR 172.101:**

**PROPER SHIPPING NAME:** Boron trichloride

**ID NUMBER:** UN1741

**HAZARD CLASS OR DIVISION:** 2.3

**LABELING REQUIREMENTS:** 2.3; 8

**QUANTITY LIMITATIONS:**

**PASSENGER AIRCRAFT OR RAILCAR:** Forbidden

**CARGO AIRCRAFT ONLY:** Forbidden  
**ADDITIONAL SHIPPING DESCRIPTION:** Toxic-Inhalation Hazard Zone C  
**CANADIAN TRANSPORTATION OF DANGEROUS GOODS:**  
**SHIPPING NAME:** Boron trichloride  
**UN NUMBER:** UN1741  
**CLASS:** 2.3; 8

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## 15. REGULATORY INFORMATION

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**CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):** Not regulated.  
**SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.30):**  
**BORON TRICHLORIDE:** 500 LBS TPQ  
**SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.40):**  
**BORON TRICHLORIDE:** 500 LBS RQ  
**SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370.21):**  
ACUTE: Yes  
CHRONIC: No  
FIRE: No  
REACTIVE: Yes  
SUDDEN RELEASE: Yes  
**SARA TITLE III SECTION 313 (40 CFR 372.65):**  
**BORON TRICHLORIDE**  
**OSHA PROCESS SAFETY (29CFR1910.119):**  
**BORON TRICHLORIDE:** 2500 LBS TQ  
**STATE REGULATIONS:**  
**California Proposition 65:** Not regulated.  
**CANADIAN REGULATIONS:**  
**WHMIS CLASSIFICATION:** AD1E  
**NATIONAL INVENTORY STATUS:**  
**U.S. INVENTORY (TSCA):** Listed on inventory.  
**TSCA 12(b) EXPORT NOTIFICATION:** Not listed.  
**CANADA INVENTORY (DSL/NDSL):** Not determined

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## 16. OTHER INFORMATION

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