

**HONG KONG SPECIALTY GASES CO., LTD.**

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**MATERIAL  
SAFETY  
DATA SHEET**

<b>PRODUCT NAME</b> Boron Trichloride	<b>CAS#</b> 10294-35-3
<b>TRADE NAME AND SYNONYMS</b> Boron Trichloride	<b>DOT I.D. NO.</b> UN 1741
<b>CHEMICAL NAME AND SYNONYMS</b> Boron Trichloride, Boron Chloride, Trichloroborane	<b>DOT HAZARD CLASS</b> Division 2.3 (Poison Gas)
<b>ISSUE DATE AND REVISIONS</b> Revised March 2001	<b>FORMULA</b> BCl <sub>3</sub>

**HEALTH HAZARD DATA**

<b>EMERGENCY OVERVIEW</b> Boron Trichloride is a poisonous, corrosive, high pressure gas, which can cause eye, skin, and respiratory tract burns. Also, it may cause kidney damage.
<b>SYMPTOMS OF EXPOSURE</b> <u>Inhalation:</u> May cause coughing, choking sensation, chest pain, pulmonary edema and death. Concentrations as low as 50 molar ppm may be fatal if inhaled for approximately one hour.  <u>Skin Contact:</u> May cause “stinging” of the skin, local redness and swelling. At high concentrations will cause severe burns.  <u>Eye Contact:</u> Very irritating with redness and swelling of the conjunctiva. High concentrations can cause burns of the cornea.
<b>TOXICOLOGICAL PROPERTIES</b> TLV-TWA                      5 ppm LC <sub>50</sub> 2541 ppm
<b>RECOMMENDED FIRSTAID TREATMENT</b> PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO BORON TRICHLORIDE. RESCUERS SHOULD BE EQUIPPED WITH ADEQUATE PERSONAL PROTECTIVE APPARATUS.  <u>Inhalation:</u> Remove patients to fresh air. Give artificial respiration if not breathing. Qualified personnel may give oxygen if breathing is difficult.  <u>Skin Contact:</u> Remove contaminated clothing and flush affected area with water.  <u>Eye Contact:</u> PERSONS WITH POTENTIAL EXPOSURE TO BORON TRICHLORIDE SHOULD NOT WEAR CONTACT LENSES. Immediately flush eyes with copious quantities of water and continue flushing for at least 15 minutes.

## HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES

Decomposes in hot water releasing hydrogen chloride.
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## PHYSICAL DATA

<b>BOILING POINT</b> 54.5 °F	<b>CRITICAL TEMPERATURE</b> 353.8°F
<b>MOLECULAR WEIGHT</b> 117.17	<b>DENSITY, LIQUID (0 °C)</b> 1.373g/ml
<b>SOLUBILITY IN WATER</b> Soluble in cold water; decomposes in hot water	<b>DENSITY, GAS (21.1 °C, 1 atm)</b> 4.85g/ml
<b>EVAPORATION RATE</b> N/A	<b>SPECIFIC GRAVITY (AIR=1)</b> 4.04 at 70°F
<b>APPEARANCE AND ODOR</b> Colorless gas with an irritating acrid odor.	

## FIRE AND EXPLOSION HAZARD DATA

<b>FLASH POINT (Method used)</b> N/A	<b>AUTO IGNITION TEMPERATURE</b> N/A	<b>FLAMMABLE LIMITS % BY VOLUME</b> LEL N/A      UEL N/A	
<b>EXTINGUISHING MEDIA</b> Nonflammable gas. Use water to keep fire exposed cylinders cool. Shut-off cylinder when leaking. Wear full protective clothing including self-contained breathing apparatus.			
<b>SPECIAL FIRE FIGHTING PROCEDURES</b> In case of fire, move cylinders out of affected area immediately.			
<b>UNUSUAL FIRE AND EXPLOSION HAZARDS</b> Most combustible materials burn in Boron Trichloride as they do in oxygen. Reacts explosively or forms explosive compounds with many chemicals likes acetylene, turpentine, ether, ammonia gas, hydrogen, and finely divided metals. Under intense heat and/or flame, the cylinder can rupture.			

## REACTIVITY DATA

<b>STABILITY</b>		<b>CONDITIONS TO AVOID</b> N/A
Unstable		
Stable	X	
<b>INCOMPATIBILITY (Materials to avoid)</b> Reacts with most substances including water (forms HCl and H <sub>3</sub> BO <sub>3</sub> ), organics, hydrogen, ammonia, grease, oxygen, alcohols, nitrogen peroxide.		
<b>HAZARDOUS POLYMERIZATION</b>		<b>HAZARDOUS THERMAL DECOMPOSITION PRODUCTS</b> Thermal decomposition will produce toxic fumes of chlorides. BCl <sub>3</sub> is hydrolyzed by water or moisture to form hydrochloric and boric acids.
May Occur		
Will Not Occur	X	

## SPILL OR LEAK PROCEDURES

<b>STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED</b> Evacuate all personnel from affected area. Wear Self-Contained Breathing Apparatus and protective clothing.
<b>WASTE DISPOSAL METHOD</b> 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

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

## SPECIAL PRECAUTIONS\*

<b>SPECIAL LABELING INFORMATION</b> DOT Shipping Name: Boron Trichloride DOT Shipping Label: Poison Gas	DOT Hazard Class: Division 2.3 I.D. No.: UN 1741
<b>SPECIAL HANDLING RECOMMENDATIONS</b> 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 system. 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.	
<b>SPECIAL STORAGE RECOMMENDATIONS</b> Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavy traffic areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 130°F. 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.	
<b>OTHER RECOMMENDATIONS OR PRECAUTIONS</b> Keep equipment meticulously dry. Compressed gas cylinders should not be refilled except by qualified producers of compressed gases.	

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