

**SIGMA-ALDRICH**

**Material Safety Data Sheet**

Version 3.0  
Revision Date 04/30/2009  
Print Date 09/01/2009

**1. PRODUCT AND COMPANY IDENTIFICATION**

Product name : **Boron trichloride solution**  
Product Number : 178934  
Brand : Aldrich  
Company : Sigma-Aldrich  
3050 Spruce Street  
SAINT LOUIS MO 63103  
USA  
Telephone : +1 800-325-5832  
Fax : +1 800-325-5052  
Emergency Phone # : (314) 776-6555

**2. COMPOSITION/INFORMATION ON INGREDIENTS**

Formula : BCl<sub>3</sub>

CAS-No.	EC-No.	Index-No.	Concentration
<b>Boron trichloride</b>			
10294-34-5	233-658-4	005-002-00-5	9 %
<b>Methylene chloride</b>			
75-09-2	200-838-9	602-004-00-3	91 %

**3. HAZARDS IDENTIFICATION**

**Emergency Overview**

**OSHA Hazards**

Carcinogen, Target Organ Effect, Highly toxic by inhalation, Highly toxic by ingestion, Corrosive

**Target Organs**

Liver, pancreas, Blood, Central nervous system, Heart

**HMIS Classification**

Health Hazard: 4  
Chronic Health Hazard: \*  
Flammability: 0  
Physical hazards: 3

**NFPA Rating**

Health Hazard: 4  
Fire: 0  
Reactivity Hazard: 0  
Special hazard.: W

**Potential Health Effects**

**Inhalation** : May be fatal if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.  
**Skin** : May be harmful if absorbed through skin. Causes skin burns. May be fatal if absorbed through skin.  
**Eyes** : Causes eye burns.  
**Ingestion** : May be fatal if swallowed. Causes burns.

**4. FIRST AID MEASURES**

**General advice**  
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.  
**If inhaled**  
If breathed in, move person into fresh air. If not breathing give artificial respiration. Consult a physician.  
**In case of skin contact**  
Wash off with soap and plenty of water. Consult a physician.  
**In case of eye contact**  
Continue rinsing eyes during transport to hospital. Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.  
**If swallowed**  
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

**5. FIRE-FIGHTING MEASURES**

**Flammable properties**  
Flash point : no data available  
Ignition temperature : no data available  
**Suitable extinguishing media**  
Carbon dioxide (CO<sub>2</sub>) Dry powder  
**Extinguishing media which shall not be used for safety reasons**  
Water  
**Special protective equipment for fire-fighters**  
Wear self contained breathing apparatus for fire fighting if necessary.

**6. ACCIDENTAL RELEASE MEASURES**

**Personal precautions**  
Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.  
**Environmental precautions**  
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.  
**Methods for cleaning up**  
Soak up with inert absorbent material and dispose of as hazardous waste. Do not flush with water. Keep in suitable, closed containers for disposal.

**7. HANDLING AND STORAGE**

**Handling**  
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.  
Normal measures for preventive fire protection.

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**Storage**

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Never allow product to get in contact with water during storage.

Store under inert gas.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Components with workplace control parameters**

Components	CAS-No.	Value	Control parameters	Update	Basis
Methylene chloride	75-09-2	TWA	50 ppm	2007-01-01	USA, ACGIH Threshold Limit Values (TLV)
Remarks	Central Nervous System impairment Carboxyhemoglobinemia Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Confirmed animal carcinogen with unknown relevance to humans: The agent is carcinogenic in experimental animals at a relatively high dose, by route(s) of administration, at site(s), of histologic type(s), or by mechanism(s) that may not be relevant to worker exposure. Available epidemiologic studies do not confirm an increased risk of cancer in exposed humans. Available evidence does not suggest that the agent is likely to cause cancer in humans except under uncommon or unlikely routes or levels of exposure.				
	Substance listed; for more information see OSHA document 1910.1052				
	See 1910.1052				

**Personal protective equipment****Respiratory protection**

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or GEN (EU).

**Hand protection**

Handle with gloves.

**Eye protection**

Safety glasses

**Skin and body protection**

Choose body protection according to the amount and concentration of the dangerous substance at the work place.

**Hygiene measures**

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

**9. PHYSICAL AND CHEMICAL PROPERTIES****Appearance**

Form	liquid
Colour	dark yellow

**Safety data**

pH	no data available
Melting point	no data available
Boiling point	no data available
Flash point	no data available
Ignition temperature	no data available
Lower explosion limit	no data available
Upper explosion limit	no data available
Vapour pressure	2,048.5 hPa (1,536.5 mmHg) at 55 °C (131 °F)
Density	1.326 g/cm <sup>3</sup>
Water solubility	no data available

**10. STABILITY AND REACTIVITY****Storage stability**

Stable under recommended storage conditions.

**Conditions to avoid**

Heat.  
Exposure to moisture.

**Materials to avoid**

Reacts violently with water.

**Hazardous decomposition products**

Hazardous decomposition products formed under fire conditions. - Carbon oxides, Hydrogen chloride gas, Borane/boron oxides

**Hazardous reactions**

Reacts violently with water.

**11. TOXICOLOGICAL INFORMATION****Acute toxicity**

no data available

**Irritation and corrosion**

no data available

**Sensitisation**

no data available

**Chronic exposure**

IARC: 2B - Group 2B: Possibly carcinogenic to humans (Methylene chloride)

NTP: Reasonably anticipated to be a human carcinogen (Methylene chloride)

**Signs and Symptoms of Exposure**

Convulsions, Conjunctivitis., Pulmonary edema. Effects may be delayed., Irregular breathing., Stomach/intestinal disorders, Nausea, Vomiting, Increased liver enzymes., Drowsiness, Weakness

**Potential Health Effects**

**Inhalation** May be fatal if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.

**Skin** May be harmful if absorbed through skin. Causes skin burns. May be fatal if absorbed through skin.

**Eyes** Causes eye burns.

**Ingestion** May be fatal if swallowed. Causes burns.

**Target Organs** Liver, pancreas, Blood, Central nervous system, Heart.

## 12. ECOLOGICAL INFORMATION

### Elimination information (persistence and degradability)

no data available

### Ecotoxicity effects

no data available

### Further information on ecology

no data available

## 13. DISPOSAL CONSIDERATIONS

### Product

Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

### Contaminated packaging

Dispose of as unused product.

## 14. TRANSPORT INFORMATION

### DOT (US)

UN-Number: 2922 Class: 8 (6.1) Packing group: II  
 Proper shipping name: Corrosive liquids, toxic, n.o.s.  
 Marine pollutant: No  
 Poison Inhalation Hazard: No

### IMDG

UN-Number: 2922 Class: 8 (6.1) Packing group: II EMS-No: F-A, S-B  
 Proper shipping name: CORROSIVE LIQUID, TOXIC, N.O.S.  
 Marine pollutant: No

### IATA

UN-Number: 2922 Class: 8 (6.1) Packing group: II  
 Proper shipping name: Corrosive liquid, toxic n.o.s.

## 15. REGULATORY INFORMATION

### OSHA Hazards

Carcinogen, Target Organ Effect, Highly toxic by inhalation, Highly toxic by ingestion, Corrosive

### DSL Status

All components of this product are on the Canadian DSL list.

### SARA 302 Components

	CAS-No.	Revision Date
Boron trichloride	10294-34-5	1991-07-01

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### SARA 313 Components

	CAS-No.	Revision Date
Boron trichloride	10294-34-5	1991-07-01

### SARA 311/312 Hazards

Acute Health Hazard, Chronic Health Hazard

### Massachusetts Right To Know Components

	CAS-No.	Revision Date
Methylene chloride	75-09-2	2007-07-01
Boron trichloride	10294-34-5	1991-07-01

### Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Methylene chloride	75-09-2	2007-07-01
Boron trichloride	10294-34-5	1991-07-01

### New Jersey Right To Know Components

	CAS-No.	Revision Date
Methylene chloride	75-09-2	2007-07-01
Boron trichloride	10294-34-5	1991-07-01

### California Prop. 65 Components

	CAS-No.	Revision Date
WARNING! This product contains a chemical known in the State of California to cause cancer.	75-09-2	2007-09-28
Methylene chloride		

## 16. OTHER INFORMATION

### Further information

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