SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Boron tribromide

Product Number : 230367
Brand : Aldrich
Index-No. : 005-003-00-0
CAS-No. : 10294-33-4

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, Oral (Category 2), H300
Acute toxicity, Inhalation (Category 2), H330
Skin corrosion (Category 1A), H314
Serious eye damage (Category 1), H318

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements
**Signal Word**

Danger

**Hazard statement(s)**

- H300 + H330  
  Fatal if swallowed or if inhaled.
- H314  
  Causes severe skin burns and eye damage.

**Precautionary statement(s)**

- P260  
  Do not breathe mist or vapors.
- P264  
  Wash skin thoroughly after handling.
- P270  
  Do not eat, drink or smoke when using this product.
- P271  
  Use only outdoors or in a well-ventilated area.
- P280  
  Wear protective gloves/ protective clothing/ eye protection/ face protection.
- P284  
  Wear respiratory protection.
- P301 + P310 + P330  
  IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.
- P301 + P330 + P331  
  IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
- P303 + P361 + P353  
  IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
- P304 + P340 + P310  
  IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
- P305 + P351 + P338 + P310  
  IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
- P363  
  Wash contaminated clothing before reuse.
- P403 + P233  
  Store in a well-ventilated place. Keep container tightly closed.
- P405  
  Store locked up.
- P501  
  Dispose of contents/ container to an approved waste disposal plant.

**2.3 Hazards not otherwise classified (HNOC) or not covered by GHS**

Reacts violently with water.

Reacts violently with water.

---

**SECTION 3: Composition/information on ingredients**

**3.1 Substances**

**Synonyms**: Tribromoboron

**Formula**: $\text{BBr}_3$

**Molecular weight**: 250.52 g/mol

**CAS-No.**: 10294-33-4

**EC-No.**: 233-657-9

**Index-No.**: 005-003-00-0

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>boron tribromide</td>
<td>Acute Tox. 2; Skin Corr.</td>
<td>&lt;= 100 %</td>
</tr>
</tbody>
</table>

Aldrich - 230367
SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.

If inhaled
After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician immediately.

In case of eye contact
After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

If swallowed
If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible. Do not attempt to neutralise.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Carbon dioxide (CO2) Dry powder Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media
Water Foam
5.2 **Special hazards arising from the substance or mixture**
- Hydrogen bromide gas
- Borane/boron oxides
- Not combustible.
- May not get in touch with: Water
- Development of hazardous combustion gases or vapours possible in the event of fire.
- Ambient fire may liberate hazardous vapours.

5.3 **Advice for firefighters**
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 **Further information**
Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

---

**SECTION 6: Accidental release measures**

6.1 **Personal precautions, protective equipment and emergency procedures**
Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 **Environmental precautions**
Do not let product enter drains.

6.3 **Methods and materials for containment and cleaning up**
Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

6.4 **Reference to other sections**
For disposal see section 13.

---

**SECTION 7: Handling and storage**

7.1 **Precautions for safe handling**

*Advice on safe handling*
- Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.
- Keep workplace dry. Do not allow product to come into contact with water.

*Hygiene measures*
- Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.
For precautions see section 2.2.

7.2 **Conditions for safe storage, including any incompatibilities**

*Storage conditions*
Tightly closed. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons. Never allow product to get in contact with water during storage.

Light sensitive.

**Storage class**
Storage class (TRGS 510): 6.1A: Combustible, acute toxic Cat. 1 and 2 / very toxic hazardous materials

### 7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>boron tribromide</td>
<td>10294-33-4</td>
<td>C</td>
<td>0.7 ppm</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>C</td>
<td>1 ppm</td>
<td>USA. NIOSH Recommended Exposure Limits</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10 mg/m³</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>C</td>
<td>1 ppm</td>
<td>California permissible exposure limits</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10 mg/m³</td>
<td>for chemical contaminants (Title 8, Article</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>107)</td>
</tr>
</tbody>
</table>

### 8.2 Exposure controls

**Appropriate engineering controls**
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

**Personal protective equipment**

**Eye/face protection**
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles

**Body Protection**
protective clothing

**Respiratory protection**
Recommended Filter type: Filter type ABEK
The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented. required when vapours/aerosols are generated.

Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.
SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a) Appearance  Form: liquid  
   Color: colorless
b) Odor  No data available
c) Odor Threshold  No data available
d) pH  No data available
e) Melting point/freezing point  Melting point/range: -46 °C (-51 °F) - lit.
f) Initial boiling point and boiling range  90 °C 194 °F - lit.
g) Flash point  No data available
h) Evaporation rate  No data available
i) Flammability (solid, gas)  No data available
j) Upper/lower flammability or explosive limits  No data available
k) Vapor pressure  53 hPa at 14 °C (57 °F)
l) Vapor density  8.6 - (Air = 1.0)
m) Density  2.6 g/cm³ at 20 °C (68 °F) - lit.
   Relative density  No data available
n) Water solubility  No data available
o) Partition coefficient: n-octanol/water  No data available
p) Autoignition temperature  No data available
q) Decomposition temperature  No data available
r) Viscosity  No data available
s) Explosive properties  No data available
t) Oxidizing properties  No data available

9.2 Other safety information

Relative vapor density  8.6 - (Air = 1.0)
SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
Sensitive to moisture

10.3 Possibility of hazardous reactions
Violent reactions possible with:
Strong oxidizing agents

10.4 Conditions to avoid
Moisture.

10.5 Incompatible materials
Strong bases, Potassium, Sodium/sodium oxides, Alcohols, Metals

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
Acute toxicity estimate Oral - 5.1 mg/kg
(Expert judgment)
Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)
Acute toxicity estimate Inhalation - 4 h - 0.51 mg/l - vapor
(Expert judgment)
Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)
Dermal: No data available

Skin corrosion/irritation
Remarks: Causes severe burns.

Serious eye damage/eye irritation
Remarks: Causes serious eye damage.

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
No data available

Carcinogenicity
IARC: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA’s list of regulated carcinogens.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

11.2 Additional Information

RTECS: ED7400000
Vomiting, Diarrhea, Shock., Coma., spasm, inflammation and edema of the bronchi, Aspiration or inhalation may cause chemical pneumonitis., pulmonary edema, burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea, To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Liver - Irregularities - Based on Human Evidence

Liver - Irregularities - Based on Human Evidence

SECTION 12: Ecological information

12.1 Toxicity
Toxicity to daphnia and other aquatic invertebrates
EC5 - E.sulcatum - 116 mg/l
Remarks: (Hommel) (maximum permissible toxic concentration)

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Endocrine disrupting properties
No data available
12.7 Other adverse effects
No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

SECTION 14: Transport information

DOT (US)
UN number: 2692   Class: 8 (6.1I)   Packing group: I
Proper shipping name: Boron tribromide
Reportable Quantity (RQ): Poison Inhalation Hazard: Hazard Zone B

IMDG
UN number: 2692   Class: 8   Packing group: I   EMS-No: F-A, S-B
Proper shipping name: BORON TRIBROMIDE

IATA
UN number: 2692   Class: 8
Proper shipping name: Boron tribromide
IATA Passenger: Not permitted for transport
IATA Cargo: Not permitted for transport

SECTION 15: Regulatory information

SARA 302 Components
This material does not contain any components with a section 302 EHS TPQ.

SARA 313 Components
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

Aldrich - 230367
SECTION 16: Other information

Further information
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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