**Section 1 - IDENTIFICATION**

Manufacturer Information
MATHESON TRI-GAS, INC.
150 Allen Road, Suite 302
Basking Ridge, NJ 07920

General Information: 1-800-416-2505
Emergency #: 1-800-424-9300 (CHEMTREC)
Outside the US: 703-527-3887 (Call collect)

Product Identifier: BORON TRICHLORIDE

Trade Names/Synonyms
MTG MSDS 8; BORON CHLORIDE; CHLORURE DE BORE; TRICHLOROBORANE; TRICHLOROBORON;
BORANE, TRICHLORO--; BORON CHLORIDE (BCL3); UN 1741; BCL3; RTECS: ED1925000

Chemical Family
non-metallic, halides

Product Use
industrial

Restrictions on Use
None known.

**Section 2 - HAZARDS IDENTIFICATION**

GHS Classification
Gas under pressure, Liquefied gas
Acute toxicity, Category 3
Skin corrosion/irritation, Category 1
Eye damage/irritation, Category 1
Specific target organ systemic toxicity following single exposure, Category 2
Corrosive to metals, Category 1

GHS LABEL ELEMENTS

Symbol(s)

Signal Word
DANGER

Hazard Statement(s)
Contains gas under pressure; may explode if heated
Toxic if inhaled
Causes severe skin burns and eye damage
Causes serious eye damage
May cause damage to organs
May be corrosive to metals
Precautionary Statement(s)

Do not breathe gas. Do not eat, drink, or smoke when using this product. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Keep only in the original container. Wear protective gloves/clothing and eye/face protection. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF SWALLOWED: Do NOT induce vomiting. Rinse mouth. Immediately call a POISON CENTER or doctor/physician. Specific treatment is urgent, see first aid section of Safety Data Sheet. Store in a well-ventilated place. Store in corrosive resistant container with a resistant inner liner. Protect from sunlight. Store locked up. Dispose in accordance with all applicable regulations.

** *Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS* * *

<table>
<thead>
<tr>
<th>CAS#</th>
<th>Component</th>
<th>Percent</th>
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</thead>
<tbody>
<tr>
<td>10294-34-5</td>
<td>BORON TRICHLORIDE</td>
<td>100.0</td>
</tr>
</tbody>
</table>

** *Section 4 - FIRST AID MEASURES* * *

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

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 before reuse. Destroy contaminated shoes.

Eyes

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 Physicians

For inhalation, consider oxygen.
Avoid gastric lavage or emesis.

Symptoms: Immediate

respiratory tract burns, skin burns, eye burns, lung congestion

Symptoms: Delayed

respiratory tract burns, skin burns, eye burns

** *Section 5 - FIRE FIGHTING MEASURES* * *

See Section 9 for Flammability Properties

Specific Hazards Arising from the Chemical

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.

Unsuitable Extinguishing Media

None known.
Protective Equipment and Precautions for Firefighters
   Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

Fire Fighting Measures
   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.

Hazardous Combustion Products
   Combustion: chlorine

** **Section 6 - ACCIDENTAL RELEASE MEASURES** **

Personal Precautions
   Wear personal protective clothing and equipment, see Section 8.

Environmental Precautions
   Avoid release to the environment. 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).

Methods for Containment
   Do not touch spilled material. Stop leak if possible without personal risk. Stay upwind and keep out of low areas.

Cleanup Methods
   Do not touch spilled material. Reduce vapors with water spray. Keep unnecessary people away, isolate hazard area and deny entry. Isolate area until gas has dispersed. Ventilate closed spaces before entering. Damaged cylinders should be handled only by specialists.

** **Section 7 - HANDLING AND STORAGE** **

Handling Procedures
   Do not breathe gas, fumes, vapor, or spray. When using, do not eat, drink or smoke. Wash thoroughly after handling.

Storage Procedures

Incompatibilities
   combustible materials, amines

** **Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION** **

Component Exposure Limits
   ACGIH, EU, OSHA, and NIOSH have not developed exposure limits for any of this product's components.

Component Biological Limit Values
   There are no biological limit values for any of this product's components.

Engineering Controls
   Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.
PERSONAL PROTECTIVE EQUIPMENT

Eyes/Face
Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Protective Clothing
Wear appropriate chemical resistant clothing.

Glove Recommendations
Wear appropriate chemical resistant gloves.

Protective Materials
butyl rubber, neoprene, polyvinyl chloride (PVC), polyethylene

Respiratory Protection
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 a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.
Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

** *Section 9 - PHYSICAL AND CHEMICAL PROPERTIES**

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<tr>
<th>Physical State:</th>
<th>Gas</th>
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<tbody>
<tr>
<td>Color:</td>
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</tr>
<tr>
<td>Odor:</td>
<td>pungent odor</td>
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<tr>
<td>pH:</td>
<td>acidic</td>
</tr>
<tr>
<td>Boiling Point:</td>
<td>12.5 °C</td>
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<td>Decomposition:</td>
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<tr>
<td>Vapor Pressure:</td>
<td>131.7 kPa @ 21.1 °C</td>
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<tr>
<td>Specific Gravity (water=1):</td>
<td>1.349 @ 11 °C</td>
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<tr>
<td>Log KOW:</td>
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<tr>
<td>Viscosity:</td>
<td>0.342 cP @0 °C</td>
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<td>Molecular Formula:</td>
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Appearance: Not available
Physical Form: fuming liquid, gas
Odor Threshold: Not available
Melting/Freezing Point: -107 °C
Flash Point: not flammable
Evaporation Rate: Not available
Vapor Density (air = 1): 4.03
Water Solubility: decomposes/reacts
Auto Ignition: Not available
Molecular Weight: 117.16

Solvent Solubility
Decomposes: alcohol

** *Section 10 - STABILITY AND REACTIVITY**

Chemical Stability
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.
Possibility of Hazardous Reactions
Will not polymerize.

Incompatible Materials
combustible materials, amines

Hazardous Decomposition
Water or Moisture: boron compounds, hydrochloric acid

* * *Section 11 - TOXICOLOGICAL INFORMATION* * *

Acute and Chronic Toxicity
Component Analysis - LD50/LC50
The components of this material have been reviewed in various sources and the following selected endpoints are published:
BORON TRICHLORIDE (10294-34-5)
Inhalation LC50 Rat 2541 ppm 1 h

RTECS Acute Toxicity (selected)
The components of this material have been reviewed, and RTECS publishes the following endpoints:
BORON TRICHLORIDE (10294-34-5)
Inhalation: 2541 ppm/1 hour Inhalation Rat LC50

Acute Toxicity Level
BORON TRICHLORIDE (10294-34-5)
Moderately Toxic: inhalation

Immediate Effects
depressor tract burns, skin burns, eye burns, lung congestion

Delayed Effects
depressor tract burns, skin burns, eye burns

Irritation/Corrosivity Data
No animal testing data available for skin or eyes.

RTECS Irritation
The components of this material have been reviewed and RTECS publishes no data as of the date on this document.

Local Effects
BORON TRICHLORIDE (10294-34-5)
Corrosive: inhalation, skin, eye, ingestion

Respiratory Sensitizer
No data available.

Dermal Sensitizer
No data available.

Carcinogenicity
Component Carcinogenicity
None of this product's components are listed by ACGIH, IARC, NTP, OSHA or DFG.

RTECS Mutagenic
The components of this material have been reviewed, and RTECS publishes data for one or more components.

Reproductive Effects Data
No data available.

RTECS Tumorigenic
The components of this material have been reviewed, and RTECS publishes data for one or more components.
Specific Target Organ Toxicity - Single Exposure
respiratory system

Specific Target Organ Toxicity - Repeated Exposure
No data available.

Aspiration Hazard
Not applicable.

Medical Conditions Aggravated by Exposure
respiratory disorders

* * *Section 12 - ECOLOGICAL INFORMATION* * *

Component Analysis - Aquatic Toxicity
No LOLI ecotoxicity data are available for this product's components.

Abiotic Degradation
Hydrolyzes on contact with water releasing hydrogen chloride and hydrochloric acid.

Persistence and Degradability
No data available.

Bioaccumulative Potential
No data available.

Mobility in Environmental Media
No data available.

* * *Section 13 - DISPOSAL CONSIDERATIONS* * *

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

Component Waste Numbers
The U.S. EPA has not published waste numbers for this product's components.

* * *Section 14 - TRANSPORT INFORMATION* * *

US DOT Information

Shipping Name: Boron trichloride
UN/NA #: UN1741  Hazard Class: 2.3
Required Label(s): 2.3, 8
Additional Info.: Toxic-Inhalation Hazard Zone C

IMDG Information

Shipping Name: Boron trichloride
UN #: UN1741  Hazard Class: 2.3
Required Label(s): 8
**Section 15 - REGULATORY INFORMATION**

Component Analysis

U.S. Federal Regulations

This material contains one or more of the following chemicals required to be identified under SARA Section 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

**BORON TRICHLORIDE (10294-34-5)**

- **SARA 302**: 500 lb TPQ
- **SARA 304**: 500 lb EPCRA RQ
- **SARA 313**: 1.0 % de minimis concentration
- **OSHA (safety)**: 2500 lb TQ

SARA 311/312 Hazardous Categories

- **Acute Health**: Yes
- **Chronic Health**: No
- **Fire**: No
- **Pressure**: Yes
- **Reactive**: Yes

U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

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<th>Component</th>
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<td>10294-34-5</td>
<td>No</td>
<td>Yes</td>
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<td>Yes</td>
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Not regulated under California Proposition 65

Component Analysis - Inventory

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<thead>
<tr>
<th>Component</th>
<th>CAS</th>
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<th>AU</th>
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<tbody>
<tr>
<td>BORON TRICHLORIDE</td>
<td>10294-34-5</td>
<td>Yes</td>
<td>DSL</td>
<td>EIN</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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</tr>
</tbody>
</table>

**Section 16 - OTHER INFORMATION**

NFPA Ratings:

- **Health**: 3
- **Fire**: 0
- **Reactivity**: 2

Hazard Scale:

- 0 = Minimal
- 1 = Slight
- 2 = Moderate
- 3 = Serious
- 4 = Severe
Key / Legend
ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; RID - European Rail Transport; RTECS - Registry of Toxic Effects of Chemical Substances®; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States

Other Information
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End of Sheet MAT03310