



MATERIAL SAFETY DATA SHEET

1. IDENTIFICATION

MATHESON TRI-GAS, INC.
150 Allen Road Suite 302
Basking Ridge, New Jersey 07920
Information: 1-800-416-2505

Emergency Contact:
CHEMTREC 1-800-424-9300
Calls Originating Outside the US:
703-527-3887 (Collect Calls Accepted)

PRODUCT NAME: BORON TRICHLORIDE

TRADE NAMES/SYNONYMS:

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

CHEMICAL FAMILY: non-metallic, halides

PRODUCT USE: industrial

RESTRICTIONS ON USE: None known.

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 SYMBOL:



GHS SIGNAL WORD: DANGER

GHS HAZARD STATEMENT:

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

GHS PRECAUTIONARY STATEMENTS: 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.

EMERGENCY OVERVIEW:

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

3. COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT: BORON TRICHLORIDE

CAS NUMBER: 10294-34-5

EC NUMBER (EINECS): 233-658-4

EC INDEX NUMBER: 005-002-00-5

PERCENTAGE: 100.0



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 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 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.

SYMPTOMS/EFFECTS:

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

DELAYED: respiratory tract burns, skin burns, eye burns

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

5. FIRE FIGHTING MEASURES

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.

UNSUITABLE EXTINGUISHING MEDIA: None known.

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.

FIRE FIGHTING PROTECTIVE EQUIPMENT: Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

HAZARDOUS COMBUSTION PRODUCTS:

Thermal decomposition or combustion products: chlorine



6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:

Wear personal protective clothing and equipment, see Section 8.

EMERGENCY PROCEDURES:

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

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 AND MATERIALS FOR CONTAINMENT AND CLEANUP:

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.

7. HANDLING AND STORAGE

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

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 Part B). 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. Protect from sunlight.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE LIMITS:

BORON TRICHLORIDE:

No occupational exposure limits established.

BIOLOGICAL LIMIT VALUES:

BORON TRICHLORIDE:

No biological limit value(s) available.

ENGINEERING CONTROLS: 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 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.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: gas

COLOR: colorless

PHYSICAL FORM: fuming liquid, gas

ODOR: pungent odor

MOLECULAR WEIGHT: 117.16

MOLECULAR FORMULA: B-CL₃

BOILING POINT: 12.5 C

FREEZING POINT: -107 C

FLASH POINT: not flammable

LOWER FLAMMABLE LIMIT: Not available

UPPER FLAMMABLE LIMIT: Not available

AUTOIGNITION: Not available

DECOMPOSITION POINT: Not available

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
OCTANOL/WATER PARTITION COEFFICIENT (LOG Kow): Not available
SOLVENT SOLUBILITY:
Decomposes: alcohol

10. STABILITY AND REACTIVITY

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.

INCOMPATIBILITIES: combustible materials, amines

HAZARDOUS DECOMPOSITION:

Decomposition products on contact with water or moisture: boron compounds, hydrochloric acid
Thermal decomposition or combustion products: chlorine

POSSIBILITY OF HAZARDOUS REACTIONS: Will not polymerize.

11. TOXICOLOGICAL INFORMATION

BORON TRICHLORIDE:

LIKELY ROUTES OF EXPOSURE: inhalation, skin, eyes

ASPIRATION HAZARD: Not applicable.

SENSITIZER:

DERMAL: No data available.

RESPIRATORY: No data available.

EFFECTS FROM EXPOSURE:

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

DELAYED: respiratory tract burns, skin burns, eye burns

IRRITATION DATA: No animal testing data available for skin or eyes.

TOXICITY DATA: 2541 ppm/1 hour(s) inhalation-rat LC50; 20 ppm/7 hour(s) inhalation-mouse LCLo;
1650 mg/m³ inhalation-mammal LC50; 660 mg/m³/3 week(s) intermittent inhalation-mouse TCLo

CARCINOGEN STATUS: No data available.

LOCAL EFFECTS:

Corrosive: inhalation, skin, eye, ingestion

TARGET ORGANS: respiratory system, skin, eyes

CHRONIC EFFECTS:

respiratory tract burns, skin burns, eye burns

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: respiratory disorders

TUMORIGENIC DATA: No data available.



MUTAGENIC DATA: No data available.

REPRODUCTIVE EFFECTS DATA: No data available.

12. ECOLOGICAL INFORMATION

ECOTOXICITY DATA:

FISH TOXICITY: No data available.

INVERTEBRATE TOXICITY: No data available.

ALGAL TOXICITY: No data available.

FATE AND TRANSPORT:

BIODEGRADATION: No data available.

MOBILITY: No data available.

PERSISTENCE: No data available.

ABIOTIC DEGRADATION: Hydrolyzes on contact with water releasing hydrogen chloride and hydrochloric acid.

BIOACCUMULATION: No data available.

13. DISPOSAL CONSIDERATIONS

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

14. TRANSPORT INFORMATION

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

MARITIME TRANSPORT IMDG:

PROPER SHIPPING NAME: Boron trichloride



UN NUMBER: UN1741
CLASS OR DIVISION: 2.3
SUBSIDIARY RISK(S): 8

15. REGULATORY INFORMATION

U.S. REGULATIONS:

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4): Not regulated.

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355 Subpart B):

BORON TRICHLORIDE: 500 LBS TPQ

SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355 Subpart C):

BORON TRICHLORIDE: 500 LBS RQ

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370 Subparts B and C):

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 (29 CFR 1910.119):

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.



16. OTHER INFORMATION

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

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