

Product name: Trona® Boron Trichloride

Issue date: 20-April-2015

Revision date: -

Version #: 01

SDS No: B-5001

1. Chemical product and company identification

Product name	Trona® Boron Trichloride
Product code	Boron Trichloride
Manufacturer	
Company name	Tronox LLC
Address	3301 NW 150th Street Oklahoma City, OK 73134 USA
Email	ChemProdSteward@tronox.com
Telephone	+1-405-775-5000 (24-hours)
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Recommended use and Limitations on use

Recommended use	Chemical intermediate.
Limitations on use	Not available.
Issue date	20-April-2015
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Supersedes date	-
SDS No	B-5001

2. Hazards identification

The substance has been assessed and/or tested for its physical, health and environmental hazards and the following classification applies.

Emergency overview

Reacts violently with water.
Causes skin, eye and digestive tract burns. Causes severe respiratory tract irritation.

GHS-classification

Physical hazards	Gases under pressure	Compressed gas
Health hazards	Acute toxicity, oral	Category 2
	Acute toxicity, inhalation	Category 2
	Skin corrosion/irritation	Category 1B
	Serious eye damage/eye irritation	Category 1
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation
Environmental hazards	Not classified.	

Label elements

Pictograms



Signal word

Danger

Hazard statement

Contains gas under pressure; may explode if heated. Fatal if swallowed. Fatal if inhaled. Causes severe skin burns and eye damage. May cause respiratory irritation.

Precautionary statement

Prevention

Do not eat, drink or smoke when using this product. Do not breathe gas. Use only outdoors or in a well-ventilated area. Wear respiratory protection. Wear protective gloves/protective clothing/eye protection/face protection. Wash thoroughly after handling.

Response	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician.
Storage	Store in a well-ventilated place. Keep container tightly closed.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Physical and chemical hazards	Reacts violently with water.
Health hazards	Causes severe skin burns and eye damage. Contact with liquefied gas might cause frostbites, in some cases with tissue damage.
Environmental hazards	The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

3. Composition/information on ingredients

Substance/mixture	Substance	CAS Number	Concentration (%)
Chemical name			
Boron trichloride		10294-34-5	99.95

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First aid measures

Inhalation	Move injured person into fresh air and keep person calm under observation. For breathing difficulties, oxygen may be necessary. Get medical attention immediately. If breathing stops, provide artificial respiration.
Skin contact	Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Frostbite: Do not remove clothes, but flush with copious amounts of lukewarm water. Call an ambulance and continue to flush during transportation to hospital.
Eye contact	Flush thoroughly with water for at least 15 minutes. Get immediate medical assistance. If medical assistance is not immediately available, flush an additional 15 minutes. If frostbite occurs, immediately flush eyes with plenty of warm water (not exceeding 105°F/41°C) for at least 15 minutes. If easy to do, remove contact lenses.
Ingestion	This material is a gas under normal atmospheric conditions and ingestion is unlikely. If ingestion occurs: Call a physician or poison control center immediately. DO NOT induce vomiting. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person. If vomiting occurs, keep head lower than the hips to help prevent aspiration.
Most important symptoms and health effects	Contact with this material will cause burns to the skin, eyes and mucous membranes. Cough, shortness of breath, headache, nausea, vomiting. Swallowing may cause nausea; vomiting or diarrhea of blue-green materials are common and may be accompanied by dark blood.
Personal protection for first-aid responders	Be aware that symptoms of chemical pneumonia (shortness of breath) may occur several hours after exposure. Inhalation may result in delayed onset of dyspnea, chest pain, and pulmonary edema. Be alert to kidney involvement due to boron toxicity and concentration effects during excretion.

5. Fire-fighting measures

Extinguishing media	Carbon dioxide or dry powder.
Extinguishing media to avoid	Reacts with water. Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards	Containers can burst violently when heated, due to excess pressure build-up. Fire or high temperatures create: Hydrogen chloride gas. Chlorine. Boron oxides.

Special fire fighting procedures

Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also consider initial evacuation for 800 meters (1/2 mile) in all directions. ALWAYS stay away from tanks engulfed in flame. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. Move containers from fire area if you can do so without risk. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

Evacuate area. Cool containers exposed to flames with water. Do not get water inside container. Remove pressurized gas cylinders from the immediate vicinity. Close the valve if no risk is involved. Do not extinguish a leaking gas fire unless leak can be stopped. If leak cannot be stopped and no danger to surrounding area allow the fire to burn out. Fight fire from a protected location.

Protection of fire-fighters

In case of contact with water used for fire extinguishing, use chemical resistant protective suit.

General fire hazards

Containers can burst violently when heated, due to excess pressure build-up.

6. Accidental release measures**Personal precautions, protective equipment and emergency procedures****For non-emergency personnel**

If leakage cannot be stopped, evacuate area. Stay upwind. Ventilate closed spaces before entering. DO NOT touch spilled material. Avoid contact with cold gas. Avoid inhalation and contact with skin and eyes. In aqueous solution: Avoid contact with spilled material. Ensure suitable personal protection (including respiratory protection) during removal of spillages in a confined area. See Section 8 of the SDS for Personal Protective Equipment.

For emergency responders

Keep unnecessary personnel away. Use personal protection recommended in Section 8 of the SDS.

Environmental precautions

Stop leak if possible without any risk. Sewers must be covered and basements and workpits evacuated. Avoid release to the environment. Local authorities should be advised if significant releases cannot be contained.

Clean-up methods and materials and containment measures

Ventilate well, stop flow of gas or liquid if possible. Prevent entry into waterways, sewers, basements or confined areas. Use water spray to reduce vapors or divert vapor cloud drift. Do not put water directly on leak, spill area or inside container. Allow gas to dissipate into the atmosphere. Vapor can be controlled using a water fog. Water used for control of vapor may become corrosive or toxic and should be contained properly for later disposal.

Small Spills: In aqueous solution: Absorb spillage with non-combustible, absorbent material. Shovel up and place in a non-metal waste container for later disposal. Neutralize spill area and wash with plenty of water.

Large Spills: Dike flow of spilled material using soil or sandbags. Isolate area until gas has dispersed.

Prevention of secondary hazards

Evacuate area. Avoid release to the environment.

7. Handling and storage**Handling**

Use only with adequate ventilation. Avoid any exposure. Open valve slowly. Secure that cylinders are not exposed to heat. Immediately change contaminated clothes. When using, do not eat, drink or smoke. Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat and flame. Wear approved safety goggles. Wear protective gloves and appropriate clothing to prevent skin contact. See Section 8 of the SDS for Personal Protective Equipment. Observe good industrial hygiene practices.

Storage

Compressed gas storage. Store in a cool and well-ventilated place. Secure cylinders from falling or being knocked over.

8. Exposure controls/personal protection**Exposure limits**

No exposure limits noted for ingredient(s).

Biological limit values

No biological exposure limits noted for the ingredient(s).

Exposure guidelines

No exposure standards allocated.

Control parameters

Follow standard monitoring procedures.

Engineering measures

Provide adequate general and local exhaust ventilation. Eye wash facilities and emergency shower must be available when handling this product.

Personal protective equipment

Respiratory protection	Wear suitable respiratory protection. Respirator type: Chemical respirator with specific cartridge and full facepiece providing protection against the compound of concern. Seek advice from local supervisor.
Hand protection	Risk of contact: Wear cold insulating gloves. Suitable gloves can be recommended by the glove supplier.
Eye protection	Wear approved chemical safety goggles. Gas-proof goggles are recommended.
Skin and body protection	Risk of contact: Wear cold insulating gloves. Wear appropriate chemical resistant clothing to prevent any possibility of skin contact.

Hygiene measures

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Handle in accordance with good industrial hygiene and safety practice. Observe any medical surveillance requirements.

9. Physical and chemical properties

Appearance	Compressed liquefied gas.
Physical state	Gas.
Form	Compressed gas.
Color	Clear.
Odor	Pungent.
pH	Not applicable.
Melting point/freezing point	-161.14 °F (-107.3 °C) at 101.325 kPa
Boiling point, initial boiling point, and boiling range	54.32 °F (12.4 °C) at 101.325 kPa
Flash point	Not available.
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	131.7 kPa at 21.1 °C
Vapor density	Not available.
Relative density	4.12 (32 °F (0 °C))
Density	1.37 g/cm ³
Solubility(ies)	
Solubility (water)	Decomposes in contact with water.
Partition coefficient (n-octanol/water)	Not applicable. Not applicable.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Other data	
Bulk density	89 lb/ft ³
Dynamic viscosity	0.01 mPa.s
Molecular formula	B-Cl ₃
Molecular weight	117.19 g/mol

10. Stability and reactivity

Reactivity	Reacts with water.
Stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Reacts vigorously with water, liberating heat and forming hydrochloric acid and boric acid. Reacts with moist air, producing hydrochloric acid fumes and boric acid.
Conditions to avoid	Heat, sparks, flames, elevated temperatures. Do not allow water to get into container because of violent heat release reaction.
Incompatible materials	Because of its tendency to form hydrochloric acid, the material should be kept away from: Alcohols. Alkalis. Amines. Fats, grease. Organic material. Strong oxidizing agents. Water.
Hazardous decomposition products	Hydrogen chloride gas. Chlorine. Boron oxides.

11. Toxicological information

Acute toxicity	Fatal if inhaled. Fatal if swallowed. Causes skin, eye and digestive tract burns. Causes severe respiratory tract irritation.	
Product	Species	Test Results
Boron trichloride (CAS 10294-34-5)		
Acute		
<i>Inhalation</i>		
LC50	Rat	2541 ppm, 1 Hours
Routes of exposure	Inhalation. Skin contact. Eye contact.	
Symptoms	Contact with this material will cause burns to the skin, eyes and mucous membranes. Cough, shortness of breath, headache, nausea, vomiting. Swallowing may cause nausea; vomiting or diarrhea of blue-green materials are common and may be accompanied by dark blood.	
Skin corrosion/irritation	Causes skin burns.	
Serious eye damage/eye irritation	Causes severe eye burns.	
Respiratory or skin sensitization		
Respiratory sensitization	Based on available data, the classification criteria are not met.	
Skin sensitizer	Not a skin sensitizer.	
Germ cell mutagenicity	Based on available data, the classification criteria are not met.	
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.	
Toxic to reproduction	Boron: High doses have demonstrated effects on fertility, testes, and developmental effects on the fetus in laboratory animals. Relevance of these findings to humans is uncertain.	
Specific target organ toxicity following single exposure	May cause respiratory tract irritation.	
Specific target organ toxicity following repeated exposure	Based on available data, the classification criteria are not met.	
Aspiration hazard	Not applicable.	
Chronic effects	May cause damage to the kidneys.	
Other information	Be aware that symptoms of lung edema (shortness of breath) may develop up to 24 hours after exposure. May cause damage to the kidneys.	

12. Ecological information

Ecotoxicity	In aqueous solution: Substantial amounts of the product may lead to a local change in acidity in small water systems which may have adverse effects on aquatic organisms.
Persistence and degradability	Expected to degrade rapidly in water due to hydrolysis.
Bioaccumulation	The product is not expected to bioaccumulate.
Mobility in soil	The gas will disperse in the air.
Other hazardous effects	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

13. Disposal considerations

Residual waste	Dispose in accordance with applicable federal, state, and local regulations.
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied.
Local disposal regulations	The packaging should be collected for reuse. Dispose of this material and its container to hazardous or special waste collection point. Dispose in accordance with all applicable regulations.

14. Transport information

CNDG	
UN number	UN1741
UN proper shipping name	BORON TRICHLORIDE
Transport hazard class(es)	
Class	2.3
Subsidiary risk	8
Label(s)	2.3, 8
Packing group	-
Read safety instructions, SDS and emergency procedures before handling.	

IATA

UN number	UN1741
UN proper shipping name	Boron trichloride
Transport hazard class(es)	
Class	2.3
Subsidiary risk	8
Label(s)	2.3, 8
Packing group	Not applicable.
Environmental hazards	No.
ERG Code	2CP
Special precautions for user	Passenger and Cargo Aircraft Quantity limitation: Forbidden.

IMDG

UN number	UN1741
UN proper shipping name	BORON TRICHLORIDE
Transport hazard class(es)	
Class	2.3
Subsidiary risk	8
Label(s)	2.3, 8
Packing group	Not applicable.
Environmental hazards	
Marine pollutant	No.
EmS	F-C, S-U

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable. This product is a compressed or liquefied gas and when transported in bulk is covered under IGC code.

15. Regulatory information**Inventory of Existing Chemical Substances in China**

Country(s) or region	Inventory name	On inventory (yes/no)*
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

Applicable regulations**General Rule For Classification and Hazard Communication of Chemicals (GB 13690-2009) and Dangerous Chemical Products**

Boron trichloride (CAS 10294-34-5)

Occupational exposure limits for hazardous agents in the workplace (GBZ 2.1-2007)

Not listed.

Restricted Import/Export Toxic Chemical List (MEP and GCA Announcement No. 2008-66, Dec. 1, 2008, amended through MEP and Customs Notice No. 2013-85, December 30, 2013)

Not regulated.

Classification and code of dangerous goods (GB 6944-2012)

Regulated.

List of Dangerous Goods (GB 12268-2012)

Regulated.

The Principle of Classification of Transport Packaging Groups of Dangerous Goods (GB/T15098-2008)

Regulated.

General Specifications for Transport Packages of Dangerous Goods (GB 12463-2009)

Regulated.

Regulations on Road Transport of Dangerous Goods

Regulated.

Regulations on Rail Road Transport of Dangerous Goods

Regulated.

UN Recommendations on the Transport of Dangerous Goods (UN RTDG)

Regulated.

16. Other information

References

IARC Monographs. Overall Evaluation of Carcinogenicity (Volumes 1-106)
Chemical safety report.

Disclaimer

The information in the sheet was written based on the best knowledge and experience currently available.