SAFETY DATA SHEET

Revision Date 25-March-2024 **Revision Number** 3

1. Identification

Product Name **Boron trifluoride, 99+%**

Cat No. : **R37171**

CAS-No 7637-07-2
Synonyms No information available

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company
Importer/Distributor
Fisher Scientific
112 Colonnade Road,
Ottawa, ON K2E 7L6,
Canada
Tel: 1-800-234-7437

Emergency Telephone Number
For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No. **US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification

WHMIS 2015 Classification Classified as hazardous under the Hazardous Products Regulations (SOR/2015-17)

Gases under pressure	Liquefied gas
Acute Inhalation Toxicity	Category 2
Skin Corrosion/Irritation	Category 1 A
Serious Eye Damage/Eye Irritation	Category 1
Specific target organ toxicity - (repeated exposure)	Category 2
Target Organs - Heart, Liver, Kidney.	
Physical Hazards Not Otherwise Classified	Category 1
Reacts violently with water	
Health Hazards Not Otherwise Classified	Category 1
Corrosive to the respiratory tract	

Label Elements

Signal Word

Danger

Hazard Statements
Contains gas under pressure; may explode if heated
Fatal if inhaled
Causes severe skin burns and eye damage
May cause damage to organs through prolonged or repeated exposure
Reacts violently with water
Corrosive to the respiratory tract

Precautionary Statements
Prevention
Do not allow contact with water
Keep container tightly closed
Do not breathe dust/fumes/gas/mist/vapours/spray
Wash face, hands and any exposed skin thoroughly after handling
Use only outdoors or in a well-ventilated area
Wear protective gloves/protective clothing/eye protection/face protection
Wear respiratory protection
Response
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower
IF INHALED: Remove person to fresh air and keep comfortable for breathing
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
Wash contaminated clothing before reuse
Storage
Store locked up
Protect from sunlight. Store in a well-ventilated place
Disposal
Dispose of contents/container to an approved waste disposal plant

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Boron trifluoride	7637-07-2	<=100

4. First-aid measures

General Advice Remove from exposure, lie down. Immediate medical attention is required. Show this safety data sheet to the doctor in attendance.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

Skin Contact Immediate medical attention is required. Contact with product may cause frostbite. Wash off immediately with plenty of water for at least 15 minutes. Dermal burns may be treated with

	calcium gluconate gel or slurry in water or glycerine. This compound binds the active fluorides in an insoluble form and limits burn extension and pain.
Inhalation	Remove to fresh air. Get medical attention. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
Ingestion	Clean mouth with water and drink afterwards plenty of water. Do NOT induce vomiting. Get medical attention.
Most important symptoms/effects	Causes burns by all exposure routes. Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation
Notes to Physician	Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media	CO_2, dry chemical, dry sand, alcohol-resistant foam. Water mist may be used to cool closed containers.
Unsuitable Extinguishing Media	No information available
Flash Point	No information available
Method -	No information available
Autoignition Temperature	No information available
Explosion Limits	
Upper	No data available
Lower	No data available
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
Reacts violently with water. Cylinders exposed to fire may vent and release toxic and/or corrosive gas through pressure relief devices.

Hazardous Combustion Products
Oxides of boron. Hydrogen fluoride.
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
4	0	2	W

6. Accidental release measures

Personal Precautions	Use personal protective equipment as required. Do not breathe dust/fume/gas/mist/vapors/spray. Avoid contact with skin and eyes. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas.

Do not get water inside containers

Environmental Precautions	See Section 12 for additional Ecological Information. Do not flush into surface water or sanitary sewer system.
Methods for Containment and Clean Up	Ventilate the area. Wear self-contained breathing apparatus and protective suit. Prevent further leakage or spillage if safe to do so. Clean contaminated surface thoroughly. After cleaning, flush away traces with water.

7. Handling and storage

Handling

Do not allow contact with water. Contents under pressure. Do not breathe gas. Wear personal protective equipment/face protection. Ensure adequate ventilation. Avoid contact with skin, eyes or clothing. Contents may develop pressure upon prolonged storage.

Storage.

Keep at temperatures below 50°C. Corrosives area. Keep away from water or moist air. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep cool and protect from sunlight. Incompatible Materials. Strong bases. Acids. Water. Oxidizing agent.

8. Exposure controls / personal protection

Exposure Guidelines

Component	Alberta	British Columbia	Ontario TWAEV	Quebec	ACGIH TLV	OSHA PEL	NIOSH
Boron trifluoride	Ceiling: 1 ppm Ceiling: 2.8 mg/m³ TWA: 2.5 mg/m³	TWA: 0.1 ppm TWA: 2.5 mg/m³ Ceiling: 1 ppm	TWA: 0.1 ppm TWA: 2.5 mg/m³ CEV: 0.7 ppm	TWA: 0.1 ppm TWA: 2.5 mg/m³ Ceiling: 0.7 ppm	TWA: 0.1 ppm TWA: 2.5 mg/m³ Ceiling: 0.7 ppm	(Vacated) TWA: 2.5 mg/m³ Ceiling: 1 ppm Ceiling: 3 mg/m³ (Vacated) Ceiling: 1 ppm (Vacated) Ceiling: 3 mg/m³	IDLH: 25 ppm IDLH: 250 mg/m³ Ceiling: 1 ppm Ceiling: 3 mg/m³

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH: NIOSH - National Institute for Occupational Safety and Health

Engineering Measures

Ensure that eyewash stations and safety showers are close to the workstation location. Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

Personal protective equipment

Eye Protection Face protection shield or Goggles
Hand Protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Glove material	Breakthrough time	Glove thickness	Glove comments
Neoprene	See manufacturers recommendations	-	Splash protection only

Inspect gloves before use. observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information) gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion. gloves with care avoiding skin contamination.

Respiratory Protection
Maintain adequate ventilation. In case of inadequate ventilation wear respiratory protection.

Recommended Filter type: Particulates filter conforming to EN 143 Inorganic gases and vapours filter Type B Grey

Environmental exposure controls
Prevent product from entering drains.

Hygiene Measures
Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash hands before breaks and after work.

9. Physical and chemical properties

Physical State	Gas
Appearance	Colorless
Odor	pungent
Odor Threshold	No information available
pH	Not applicable
Melting Point/Range	-127.1 °C / -196.8 °F
Boiling Point/Range	-100.4 °C / -148.7 °F
Flash Point	No information available
Evaporation Rate	No information available
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	No information available
Vapor Density	No information available
Specific Gravity	0.003076 g/cm3
Solubility	No information available
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	No information available
Molecular Formula	BF3
Molecular Weight	67.81

10. Stability and reactivity

Reactive Hazard Yes

Stability Moisture sensitive.

Conditions to Avoid Exposure to moist air or water. Reacts with water, steam or acids to produce toxic vapors. Protect from sunlight and do not expose to temperatures exceeding 50 °C/122 °F.

Incompatible Materials Strong bases, Acids, Water, Oxidizing agent

Hazardous Decomposition Products Oxides of boron, Hydrogen fluoride

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions Reacts violently with water.

11. Toxicological information

Acute Toxicity

Product Information
Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Boron trifluoride	Not listed	Not listed	LC50 = 194 ppm (Rat) 4 h

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Boron trifluoride	7637-07-2	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known
STOT - repeated exposure Heart Liver Kidney

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity
Reacts violently with water.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Boron trifluoride	Not listed	Not listed	Not listed	EC50: = 21.3 mg/L, 48h (Daphnia magna)

Persistence and Degradability Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility Will likely be mobile in the environment due to its volatility.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT
UN-No UN1008
Proper Shipping Name BORON TRIFLUORIDE
Hazard Class 2.3
Subsidiary Hazard Class 8
TDG Forbidden
IATA FORBIDDEN FOR IATA TRANSPORT
UN-No UN1008
Proper Shipping Name BORON TRIFLUORIDE FORBIDDEN FOR IATA TRANSPORT

Hazard Class 2.3
Subsidiary Hazard Class 8

IMDG/IMO

UN-No UN1008
Proper Shipping Name BORON TRIFLUORIDE
Hazard Class 2.3
Subsidiary Hazard Class 8

15. Regulatory information

International Inventories

Component	CAS-No	DSL	NDSL	TSCA	TSCA Inventory notification - Active-Inactive	EINECS	ELINCS	NLP
Boron trifluoride	7637-07-2	X	-	X	ACTIVE	231-569-5	-	-

Component	CAS-No	IECSC	KECL	ENCS	ISHL	TCSI	AICS	NZIoC	PICCS
Boron trifluoride	7637-07-2	X	KE-03541	X	X	X	X	X	X

Legend:
X - Listed '-' - Not Listed
KECL - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
IECSC - Chinese Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
ENCS - Japanese Existing and New Chemical Substances
AICS - Australian Inventory of Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances

Canada

SDS in compliance with provisions of information as set out in Canadian Standard - Part 4, Schedule 1 and 2 of the Hazardous Products Regulations (HPR) and meets the requirements of the HPR (Paragraph 13(1)(a) of the Hazardous Products Act (HPA)).

Component	Canada - National Pollutant Release Inventory (NPRI)	Canadian Environmental Protection Agency (CEPA) - List of Toxic Substances	Canada's Chemicals Management Plan (CEPA)
Boron trifluoride	Part 1, Group A Substance		

Legend NPRI - National Pollutant Release Inventory

Other International Regulations

Authorisation/Restrictions according to EU REACH

Component	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Boron trifluoride	-	Use restricted. See item 75. (see link for restriction details)	-

REACH links
https://echa.europa.eu/substances-restricted-under-reach

Safety, health and environmental regulations/legislation specific for the substance or mixture

Component	CAS-No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Boron trifluoride	7637-07-2	Listed	Not applicable	Not applicable	Not applicable

Component	CAS-No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
Boron trifluoride	7637-07-2	5 tonne	20 tonne	Not applicable	Not applicable

16. Other information

Prepared By
Product Safety Department
Email: chem.techinfo@thermofisher.com
www.thermofisher.com

Revision Date 25-March-2024
Print Date 25-March-2024
Revision Summary New emergency telephone response service provider.

Disclaimer
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End of SDS