# Chemical Safety Data Sheet MSDS / SDS

## Bromine trifluoride SDS

Revision Date:2024-04-25 Revision Number:1



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

### Product identifier

Product name: Bromine trifluoride

CAS: 7787-71-5

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

Relevant identified uses: For R&D use only. Not for medicinal, household or other use.

Uses advised against: none

### Company Identification

Company: Chemicalbook.in

Address: 5 vasavi Layout Basaveswara Nilayam Pragathi Nagar Hyderabad, India -500090

Telephone: +91 9550333722

## SECTION 2: Hazards identification

### Classification of the substance or mixture

no data available

### GHS label elements, including precautionary statements

Signal word: no data available

**Hazard statement(s)**

no data available

**Precautionary statement(s)**

**Prevention**

no data available

**Response**

no data available

**Storage**

no data available

**Disposal**

no data available

**Other hazards which do not result in classification**

no data available

## SECTION 3: Composition/information on ingredients

**Substance**

| | |
|---|---|
| Chemical name: | Bromine trifluoride |
| Common names and synonyms: | Bromine trifluoride |
| CAS number: | 7787-71-5 |
| EC number: | 232-132-1 |
| Concentration: | 100% |

## SECTION 4: First aid measures

### Description of necessary first-aid measures

#### If inhaled

Move the victim into fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and consult a doctor immediately. Do not use mouth to mouth resuscitation if the victim ingested or inhaled the chemical.

#### Following skin contact

Take off contaminated clothing immediately. Wash off with soap and plenty of water. Consult a doctor.

#### Following eye contact

Rinse with pure water for at least 15 minutes. Consult a doctor.

#### Following ingestion

Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a doctor or Poison Control Center immediately.

### Most important symptoms/effects, acute and delayed

Inhalation causes severe irritation of upper respiratory system. Contact with liquid or vapor causes severe burns of eyes and can cause ulcers and blindness. Contact with skin causes severe burns. Ingestion causes severe burns of mucous membranes. (USCG, 1999)

### Indication of immediate medical attention and special treatment needed, if necessary

Basic treatment: Establish a patent airway (oropharyngeal or nasopharyngeal airway, if needed). Suction if necessary. Watch for signs of respiratory insufficiency and assist ventilations if necessary. Administer oxygen by nonrebreather mask at 10 to 15 L/min. Monitor for pulmonary edema and treat if necessary . Monitor for shock and treat if necessary . Anticipate seizures and treat if necessary . For eye contamination, flush eyes immediately with water. Irrigate each eye continuously with 0.9% saline (NS) during transport . Do not use emetics. For ingestion, rinse mouth and administer 5 ml/kg up to 200 ml of water for dilution if the patient can swallow, has a strong gag reflex, and does not drool. Administer activated charcoal . Cover skin burns with dry sterile dressings after decontamination . Bromine, methyl bromide, and related compounds

## SECTION 5: Firefighting measures

### Suitable extinguishing media

If material involved in fire: Do not use water on material itself. Use dry chemical or carbon dioxide. Cool all affected containers with flooding quantities of water. If large quantities of combustibles are involved, use water in flooding quantities as spray and fog. Use water spray to knock-down vapors.

### Specific hazards arising from the chemical

Behavior in Fire: Forms very toxic and irritating fumes. (USCG, 1999)

### Special protective actions for fire-fighters

Wear self-contained breathing apparatus for firefighting if necessary.

## SECTION 6: Accidental release measures

### Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Avoid breathing mist, gas or vapours.Avoid contacting with skin and eye. Use personal protective equipment.Wear chemical impermeable gloves. Ensure adequate ventilation.Remove all sources of ignition. Evacuate personnel to safe areas.Keep people away from and upwind of spill/leak.

### Environmental precautions

Prevent further spillage or leakage if it is safe to do so. Do not let the chemical enter drains. Discharge into the environment must be avoided.

### Methods and materials for containment and cleaning up

Evacuate and restrict persons not wearing protective equipment from area of spill or leak until cleanup is complete. Remove all ignition sources. Collect powdered material in the most convenient and safe manner and deposit in sealed containers. Ventilate area of spill or leak after clean-up is complete. It may be necessary to contain and dispose of this chemical as a hazardous waste. If material or contaminated runoff enters waterways, notify downstream users of potentially contaminated waters. Contact your Department of Environmental Protection or your regional office of the federal EPA for specific recommendations. If employees are required to clean-up spills, they must be properly trained and equipped. OSHA 1910.120(q) may be applicable. ... Distances shown are likely to be affected during the first 30 minutes after materials are spilled and could increase with time. If more than one tank car, cargo tank, portable tank, or large cylinder is involved in the incident is leaking, the protective action distance may need to be increased.

## SECTION 7: Handling and storage

### Precautions for safe handling

Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

### Conditions for safe storage, including any incompatibilities

Bromine Trifluoride must be stored to avoid contact with Water (which releases Hydrogen Fluoride gas), Ammonium Halides, Antimony Trioxide, Antimony Chloride and Solvents (such as Ether, Acetone, Acetic Acid and Toluene), since violent reactions occur. Store in tightly closed containers in a cool, well-ventilated area away from Organic and/or Combustible Materials (such as Wood, Cotton and Straw), Chloride and Bromide salts and many metals. Whenever Bromine Trifluoride is used, handled, manufactured, or stored, use explosion-proof electrical equipment and fittings. See OSHA standard 1910.104 and NFPA 43A Code for the Storage of Liquid and Solid Oxidizers for detailed handling and storage regulations

## SECTION 8: Exposure controls/personal protection

### Control parameters

### Occupational Exposure limit values

no data available

### Biological limit values

no data available

### Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

### Individual protection measures, such as personal protective equipment (PPE)

### Eye/face protection

Wear tightly fitting safety goggles with side-shields conforming to EN 166(EU) or NIOSH (US).

### Skin protection

Wear fire/flame resistant and impervious clothing. Handle with gloves. Gloves must be inspected prior to use. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

**Respiratory protection**

If the exposure limits are exceeded, irritation or other symptoms are experienced, use a full-face respirator.

**Thermal hazards**

no data available

## SECTION 9: Physical and chemical properties and safety characteristics

| | |
|---|---|
| Physical state: | Bromine trifluoride is a colorless to yellow, fuming liquid with a pungent odor. Solidifies at 48°F. Very toxic by inhalation and corrosive to metals and tissue. Containers exposed to prolonged heat may violently rupture and rocket. |
| Colour: | Colorless liquid; also reported to be pale yellow. Long prisms when solid. |
| Odour: | no data available |
| Melting point/freezing point: | 8.8°C |
| Boiling point or initial boiling point and boiling range: | 135°C at 760mmHg |
| Flammability: | no data available |
| Lower and upper explosion limit/flammability limit: | no data available |
| Flash point: | no data available |
| Auto-ignition temperature: | no data available |
| Decomposition temperature: | no data available |
| pH: | no data available |
| Kinematic viscosity: | no data available |

| | |
|---|---|
| Solubility: | no data available |
| Partition coefficient n-octanol/water: | no data available |
| Vapour pressure: | 2.8030 g/cu cm at 25 deg C |
| Density and/or relative density: | 2,803 g/cm3 |
| Relative vapour density: | no data available |
| Particle characteristics: | no data available |

## SECTION 10: Stability and reactivity

### Reactivity

Fumes in air. Reacts with water with explosive force, oxygen being evolved [Handbook of Chemistry and Physics]. HBr gas might also be produced upon reaction with water. Based on a scenario where the chemical is spilled into an excess of water (at least 5 fold excess of water), half of the maximum theoretical yield of Hydrogen Fluoride (hydrofluoric acid) gas will be created in 1.2 minutes. Experimental details are in the following: "Development of the Table of Initial Isolation and Protective Distances for the 2008 Emergency Response Guidebook", ANL/DIS-09-2, D.F. Brown, H.M. Hartmann, W.A. Freeman, and W.D. Haney, Argonne National Laboratory, Argonne, Illinois, June 2009.

### Chemical stability

no data available

### Possibility of hazardous reactions

Not combustible, but if involved in a fire decomp to produce hydrogen fluoride and hydrogen bromide.BROMINE TRIFLUORIDE is a very reactive oxidizing agent. Reacts violently on contact with water to evolve oxygen. Accelerates the burning of combustible material. Mixing with the following hydrogen-containing substances is likely to cause a fire or explosion: acetic acid, ammonia, benzene, ethanol, 2-pentanone, hydrogen, hydrogen sulfide, methane, cork, grease paper , wax. Mixing with acids, halogens, ammonium halides, metal halides, metals, nonmetals, or metal oxides at ambient or slightly above ambient temperatures has resulted in violent reactions. Specifically, reacts dangerously with nitric acid, sulfuric acid, chlorine, iodine, ammonium chloride, potassium iodide, boron powder, selenium, tellurium, aluminum powder, bismuth, cobalt powder, iron powder, arsenic, nickel powder, chromium trioxide, charcoal, red phosphorus, sulfur dioxide, magnesium oxide.

### Conditions to avoid

no data available

### Incompatible materials

Contact with rubber, plastics or other organic materials may be explosively violent and reaction with moisture is very vigorous.

### Hazardous decomposition products

If involved in a fire decomp to produce hydrogen fluoride and hydrogen bromide.

## SECTION 11: Toxicological information

### Acute toxicity

Oral: no data available

Inhalation: no data available

Dermal: no data available

### Skin corrosion/irritation

no data available

### Serious eye damage/irritation

no data available

### Respiratory or skin sensitization

no data available

### Germ cell mutagenicity

no data available

### Carcinogenicity

no data available

**Reproductive toxicity**

no data available

**STOT-single exposure**

no data available

**STOT-repeated exposure**

no data available

**Aspiration hazard**

no data available

## SECTION 12: Ecological information

**Toxicity**

Toxicity to fish: no data available

Toxicity to daphnia and other aquatic invertebrates: no data available

Toxicity to algae: no data available

Toxicity to microorganisms: no data available

**Persistence and degradability**

no data available

**Bioaccumulative potential**

no data available

**Mobility in soil**

no data available

### Other adverse effects

no data available

## SECTION 13: Disposal considerations

### Disposal methods

### Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

### Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

## SECTION 14: Transport information

### UN Number

ADR/RID: UN1746 (For reference only, please check.)
IMDG: UN1746 (For reference only, please check.)
IATA: UN1746 (For reference only, please check.)

### UN Proper Shipping Name

ADR/RID: BROMINE TRIFLUORIDE (For reference only, please check.)
IMDG: BROMINE TRIFLUORIDE (For reference only, please check.)
IATA: BROMINE TRIFLUORIDE (For reference only, please check.)

### Transport hazard class(es)

ADR/RID: 5.1 (For reference only, please check.)
IMDG: 5.1 (For reference only, please check.)
IATA: 5.1 (For reference only, please check.)

### Packing group, if applicable

ADR/RID: I (For reference only, please check.)
IMDG: I (For reference only, please check.)
IATA: I (For reference only, please check.)

### Environmental hazards

ADR/RID: No
IMDG: No
IATA: No

### Special precautions for user

no data available

### Transport in bulk according to IMO instruments

no data available

## SECTION 15: Regulatory information

### Safety, health and environmental regulations specific for the product in question

### European Inventory of Existing Commercial Chemical Substances (EINECS)

Listed.

### EC Inventory

Listed.

### United States Toxic Substances Control Act (TSCA) Inventory

Listed.

### China Catalog of Hazardous chemicals 2015

Listed.

### New Zealand Inventory of Chemicals (NZIoC)

Not Listed.

**(PICCS)**

Listed.

**Vietnam National Chemical Inventory**

Not Listed.

**IECSC)**

Not Listed.

**Korea Existing Chemicals List (KECL)**

Listed.

## SECTION 16: Other information

**Abbreviations and acronyms**

CAS: Chemical Abstracts Service

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

IMDG: International Maritime Dangerous Goods

IATA: International Air Transportation Association

TWA: Time Weighted Average

STEL: Short term exposure limit

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%

**References**

IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home

HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm

IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/

eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en

CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple

ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp

ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg

Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp

ECHA - European Chemicals Agency, website: https://echa.europa.eu/