Chemical Safety Data Sheet MSDS / SDS

Bromotrifluoromethane 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: Bromotrifluoromethane

CAS: 75-63-8

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

Specific target organ toxicity - single exposure, Category 3
Hazardous to the ozone layer, Category 1

GHS label elements, including precautionary statements

Pictogram(s)

Signal word Warning

Hazard statement(s)

H280 Contains gas under pressure; may explode if heated
H336 May cause drowsiness or dizziness
H420 Harms public health and the environment by destroying ozone in the upper atmosphere

Precautionary statement(s)

Prevention

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P271 Use only outdoors or in a well-ventilated area.

Response

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P319 Get medical help if you feel unwell.

Storage

P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.

Disposal

P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.
P502 Refer to manufacturer or supplier for information on recovery or recycling

Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

Substance

Chemical name:	Bromotrifluoromethane
Common names and synonyms:	Bromotrifluoromethane
CAS number:	75-63-8
EC number:	200-887-6
Concentration:	100%

SECTION 4: First aid measures

Description of necessary first-aid measures

If inhaled

Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.

Following skin contact

ON FROSTBITE: rinse with plenty of water, do NOT remove clothes. Refer for medical attention .

Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

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

Excerpt from ERG Guide 126 [Gases - Compressed or Liquefied (Including Refrigerant Gases)]: Vapors may cause dizziness or asphyxiation without warning. Vapors from liquefied gas are initially heavier than air and spread along ground. Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite. Fire may produce irritating, corrosive and/or toxic gases. (ERG, 2016)

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

If the diagnosis of solvent abuse is suspected it can be confirmed by biochemical examination of the blood or urine. Emergency

treatment is supportive and includes decontamination, oxygen, and any specific therapy required in a particular case such as antiarrhythmics or anticonvulsants. A few patients may require intermittent positive-pressure ventilation, dialysis, or treatment for hepatic failure. Solvent abuse

SECTION 5: Firefighting measures

Suitable extinguishing media

If material involved in fire: Extingiush fire using agent suitable for type of surrounding fire. (Material itself does not burn or burns with difficulty). Cool all affected containers with flooding quantities of water. Apply water from as far a distance as possible.

Specific hazards arising from the chemical

Excerpt from ERG Guide 126 [Gases - Compressed or Liquefied (Including Refrigerant Gases)]: Some may burn but none ignite readily. Containers may explode when heated. Ruptured cylinders may rocket. (ERG, 2016)

Special protective actions for fire-fighters

In case of fire in the surroundings, use appropriate extinguishing media. In case of fire: keep cylinder cool by spraying with water.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Ventilation. NEVER direct water jet on liquid. Personal protection: chemical protection suit including self-contained breathing apparatus.

Environmental precautions

Ventilation. NEVER direct water jet on liquid. Personal protection: chemical protection suit including self-contained breathing apparatus.

Methods and materials for containment and cleaning up

If trifluoromonobromomethane is leaked, the following steps should be taken: 1. Ventilate area of leak. 2. Stop flow of gas.

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

Fireproof if in building. Cool.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

TLV: 1000 ppm as TWA.MAK: 6200 mg/m3, 1000 ppm; peak limitation category: II(8); pregnancy risk group: C

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 safety goggles or eye protection in combination with breathing protection.

Skin protection

Cold-insulating gloves.

Respiratory protection

Use ventilation.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state:	Bromotrifluoromethane is a colorless, odorless gas at room conditions Shipped as a liquid confined under its own vapor pressure. Noncombustible. Nontoxic but can asphyxiate by the displacement of air. Contact with the unconfined liquid can cause frostbite by evaporative cooling. Exposure of the container to prolonged heat or fire can cause it to rupture violently and rocket.
Colour:	Colorless gas [Note: Shipped as a liquefied compressed gas.]
Odour:	Odorless gas.
Melting point/freezing point:	-168°C
Boiling point or initial boiling point and boiling range:	-58°C
Flammability:	Nonflammable Gas
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:	0.157 mPa.s @ 25 deg C (liq); 0.0154 mPa.s @ 25 deg C - 101.3 kPa (vapor)
Solubility:	0.03 % (NIOSH, 2016)
Partition coefficient n-octanol/water:	log Kow= 1.86

Vapour pressure:	greater than 1 atm (NIOSH, 2016)
Density and/or relative density:	1.58
Relative vapour density:	3.8 (AIR= 1)
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

Decomposes on contact with hot surfaces or flames. This produces toxic fumes including hydrogen bromide and hydrogen fluoride. Attacks plastics, rubber and coatings.

Chemical stability

Conditions contributing to instability: heat

Possibility of hazardous reactions

MONOBROMOTRIFLUOROMETHANE IS NOT FLAMMABLE; IT IS A GOOD FIRE EXTINGUISHER. The vapour is heavier than air and may accumulate in lowered spaces causing a deficiency of oxygen. BROMOTRIFLUOROMETHANE may react with aluminum to produce substantial heat. Other halogenated hydrocarbons, such as fluorotrichloromethane, dichlorodifluoromethane, chlorodifluoromethane, tetrafluoromethane produce sufficient heat in this way to melt aluminum pieces. The vigor of the reaction appears to depend on the degree of fluorination and the vapor pressure [Chem. Eng. News 39(27):44 1961].

Conditions to avoid

no data available

Incompatible materials

Incompatible with chemically-active metals such as calcium, powdered aluminum, zinc & magnesium.

Hazardous decomposition products

The fire extinguisher halon 1301 begins to decomp at 400-500 deg to halogen gases, which react with hydrogen to form hydrogen

halides. in oxygen, carbon dioxide, carbonyl fluoride & carbonyl bromide may form. hazards from decomp products are negligible as compared to those of other hazards associated with a fire.

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

The substance is irritating to the eyes. Rapid evaporation of the liquid may cause frostbite. The substance may cause effects on the central nervous system.

STOT-repeated exposure

no data available

Aspiration hazard

A harmful concentration of this gas in the air will be reached very quickly on loss of containment.

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

Based upon the highly halogenated structure of bromotrifluoromethane, biodegradation is expected to be slow(1).

Bioaccumulative potential

An estimated BCF of 5.4 was calculated for bromotrifluoromethane(SRC), using a log Kow of 1.86(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low.

Mobility in soil

The Koc of bromotrifluoromethane is estimated as 49(SRC), using a log Kow of 1.86(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that bromotrifluoromethane is expected to have very high mobility in soil.

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: UN1009 (For reference only, please check.)
IMDG: UN1009 (For reference only, please check.)
IATA: UN1009 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: BROMOTRIFLUOROMETHANE (REFRIGERANT GAS R 13B1) (For reference only, please check.)
IMDG: BROMOTRIFLUOROMETHANE (REFRIGERANT GAS R 13B1) (For reference only, please check.)
IATA: BROMOTRIFLUOROMETHANE (REFRIGERANT GAS R 13B1) (For reference only, please check.)

Transport hazard class(es)

ADR/RID: 2.2 (For reference only, please check.)
IMDG: 2.2 (For reference only, please check.)
IATA: 2.2 (For reference only, please check.)

Packing group, if applicable

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

Listed.

(PICCS)

Listed.

Vietnam National Chemical Inventory

Listed.

IECSC)

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/

Other Information

High concentrations in the air cause a deficiency of oxygen with the risk of unconsciousness or death. Check oxygen content before entering area. Turn leaking cylinder with the leak up to prevent escape of gas in liquid state.