

MATERIAL SAFETY DATA SHEET

SECTION – 1 : CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name : Bromotrifluoromethane (BTFM)

Synonyms : Bromotrifluoromethane (CBrF₃), Refrigerant gas R-13B1

Manufacturer/Supplier Name : M/s GUJARAT FLUOROCHEMICALS LIMITED

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SECTION – 2 : COMPOSITION, INFORMATION ON INGREDIENTS SECTION

Chemical Name : Bromotrifluoromethane

CAS No. : [75-63-8]

Physical Form : Colorless gas

SECTION – 3 : HAZARDS IDENTIFICATION

Classification (Regulation (EC) No 1272/2008):

Gases under pressure, Liquefied gas, H280- Contains gas under pressure; may explode if heated

Harms public health and the environment by destroying ozone in the upper atmosphere: H420

Classification (Directive 67/548/ECC):

N: R59-Dangerous to Ozone layer

Label elements (REGULATION (EC) No 1272/2008):

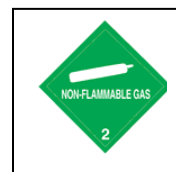
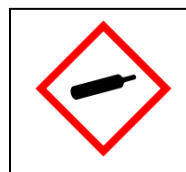
Hazardous components which must be listed on the label:

CAS NO: 75-63-8

Bromotrifluoromethane

GASES UNDER PRESSURE –

Hazard pictograms:



Signal word:

Danger

Hazard statements:

Contains gas under pressure: may explode if heated

Supplemental information

H420: Harms public health and the environment by destroying ozone in the upper atmosphere

P273- Avoid release to the environment

Signal word : Warning Hazard statements : Contains gas under pressure; may explode if heated. May cause frostbite. May displace oxygen and cause rapid suffocation. Harms public health and the environment by destroying ozone in the upper atmosphere.

Precautionary statements Prevention: Use and store only outdoors or in a well ventilated place. Response: Not applicable. Storage: Protect from sunlight. Protect from sunlight when ambient temperature exceeds 52°C/125°F. Store in a well-ventilated place. Disposal: Refer to manufacturer/supplier for information on recovery/recycling. GHS label elements General: Read and follow all Safety Data Sheets (SDS'S) before use. Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Always keep container in upright position.

Prevention: Use and store only outdoors or in a well ventilated place. Response: Not applicable.

Storage: Protect from sunlight. Protect from sunlight when ambient temperature exceeds 52°C/125°F. Store in a well-ventilated place. Disposal : Refer to manufacturer/supplier for information on recovery/recycling.

Potential Acute health effects:

Eyes : Contact with rapidly expanding gas may cause burns or frostbite.

Skin : Contact with rapidly expanding gas may cause burns or frostbite.

Inhalation : Act as a simple asphyxiant.

Ingestion : Ingestion is not a normal route of exposure for gases

SECTION – 4 : FIRST AID MEASURES

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 20 minutes and consult a physician.

Skin Contact:

In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get. Consult a physician.

Inhalation:

Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Ingestion:

Not applicable

Serious Ingestion:

Not Applicable

SECTION – 5 : FIRE FIGHTING MEASURES

Flammability of the Product : Non flammable.

Auto-Ignition Temperature : Not applicable.

Flash Points : Not applicable.

Flammable Limits : Not available.

- Extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.
- Special hazards arising from the substance or mixture** : Not available
- Advice for firefighting** : Wear self contained breathing apparatus for firefighting if necessary.
- Special Remarks on Fire Hazards** : Not available
- Special Remarks on Explosion Hazards** : Not available.

SECTION – 6 : ACCIDENTAL RELEASE MEASURES

Small Spill:

Immediately contact emergency personnel. Stop leak if without risk.

Large Spill:

Immediately contact emergency personnel. Stop leak if without risk. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Personal Precaution, protective equipment and emergency procedure:

If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For nonemergency personnel".

Environment Precautions:

Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). May be harmful to the environment if released in large quantities.

Methods and materials for containment and cleaning up:

If the product is in its solid form: Use a shovel to put the material into a convenient waste disposal container.

SECTION – 7 : HANDLING AND STORAGE SECTION

Precautions:

Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Do not get in eyes or on skin or clothing. Avoid breathing gas. Avoid release to the environment. Refer to special instructions/safety data sheet. Empty containers retain product residue and can be hazardous. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

Condition for safe storage:

Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Keep container tightly closed and sealed until ready for use. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).

SECTION – 8 : EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS: TRIFLUOROMONOBROMOMETHANE: 1000 ppm (6100 mg/m³) OSHA TWA 1000 ppm ACGIH TWA 1000 ppm (6100 mg/m³) NIOSH recommended TWA 10 hour(s).

VENTILATION: Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

EYE PROTECTION: For the gas: Eye protection not required, but recommended. For the liquid: Wear splash resistant safety goggles. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING: For the gas: Protective clothing is not required. For the liquid: Wear appropriate protective, cold insulating clothing.

GLOVES: Wear insulated gloves.

RESPIRATOR: The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA. 10,000 ppm

Any supplied-air respirator. 25,000 ppm Any supplied-air respirator operated in a continuous-flow mode. 40,000 ppm Any supplied-air respirator with a tight-fitting facepiece that is operated in a continuous-flow mode. Any self-contained breathing apparatus with a full facepiece. Any supplied-air respirator with a full facepiece. Emergency or planned entry into unknown concentrations or IDLH conditions - Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode. 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.

ESCAPE - Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted organic vapor canister. Any appropriate escape-type, self-contained breathing apparatus.

SECTION – 9 : PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	: Gas
COLOR	: colorless.
ODOR	: sweet odor, Faint ethereal odor
MOLECULAR WEIGHT	: 148.91
MOLECULAR FORMULA	: C-Br-F ₃
BOILING POINT	: -72 F (-58 C)
FREEZING POINT	: -270 F (-168 C)
VAPOR PRESSURE	: 10582 mmHg @ 21 °C
VAPOR DENSITY (air=1)	: 5.0 @ 25 °C
SPECIFIC GRAVITY (water=1)	: 1.536 @ 25 °C
WATER SOLUBILITY	: 0.03%
pH	: Not applicable
VOLATILITY	: Not applicable
ODOR THRESHOLD	: Not available
EVAPORATION RATE	: Not applicable

COEFFICIENT OF WATER/OIL DISTRIBUTION : Not applicable

SOLVENT SOLUBILITY : Soluble: chloroform, butane, benzene, toluene, carbon tetrachloride, alcohols, ketones Insoluble: phenols, glycols, glycerol

SECTION – 10 : STABILITY AND REACTIVITY

Stability: Stable under recommended storage conditions.

Conditions of Instability: Avoid excessive heat and light.

Incompatibility with various substances: Active metals, fires of metal hydrides, and materials containing own oxygen.

Corrosivity: Not Studied.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: Not available.

SECTION – 11 : TOXICOLOGICAL INFORMATION

Acute toxicity: LD50-LC50 mixture – 1 HR LC50 (RAT) = >700,000ppm

Skin Corrosion / irritation: Not Available

Eye irritation: Not Available

Respiratory or skin sensitization: Not available

Carcinogenicity: Not Available

Reproductive: Not available

SECTION – 12 : ECOLOGICAL INFORMATION

Toxicity: Not Available

SECTION – 13 : DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable regulations.

SECTION – 14 : TRANSPORT INFORMATION

Regulation	UN number	Proper shipping name	Class	Label	PG	Envi. hazardous	Other information
ADR	1009	Bromotrifluoromethane (Refrigerant Gas R 13 B1)	2	2.2	None	yes	
RID	1009	Bromotrifluoromethane (Refrigerant Gas R 13 B1)	2	2.2	None	yes	
IATA Cargo	1009	Bromotrifluoromethane	2.2	2.2	None	yes	
IATA Passenger	1009	Bromotrifluoromethane	2.2	2.2	None	yes	
IMDG	1009	Bromotrifluoromethane (Refrigerant Gas R 13 B1)	2.2	2.2	None	Marine pollutant	EmS Number: F-C, S-V Mark: MP

SECTION – 15 : REGULATORY INFORMATION

Number in Annex I of Dir 67/548	Not included in Annex I.
EC Classification	Proposed by the industry N;R59
-Symbols	N: Dangerous for the environment
Labelling of cylinders	
-Symbols	Label 2.2: non flammable non toxic gas
-Risk phrases	R59 Dangerous for the ozone layer.
-Safety phrases	S59 Refer to manufacturer/supplier for information on recovery/recycling
	S61 Avoid release to the environment. Refer to special instructions/Safety data sheets.

SECTION – 16 : ADDITIONAL INFORMATION

SARA/TITLE III HAZARD CATEGORIES AND LISTS - This chemical is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986, and 40 CFR Part 372.

Chronic Health No

Acute Health Yes

Fire Hazard No Pressure Hazard Yes

Reactivity Hazard No Extremely Hazardous Substance No

CERCLA Hazardous Substance No

Toxic Chemicals No.

MSDS Preparation Date : 30/04/2016

Last Updated : 23/10/2017 16.00 hrs

Legal disclaimer:

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Gujarat Fluorochemicals Limited - India shall not be held liable for any damage resulting from handling or from contact with the above product.