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MSDS: Bromine Trifluoride

PRODUCT INFORMATION

PRODUCT: Bromine Trifluoride
TRADE NAME: Bromine Trifluoride
CHEMICAL NAME: Bromine Trifluoride
SYNONYMS: None
FORMULA: BrF₃
CHEMICAL FAMILY: Halogen Fluoride
SUPPLIER'S NAME: MEGS Inc.
SUPPLIER'S ADDRESS: 2675 De Miniac
Ville St-Laurent, Qc, H4S 1E5
EMERGENCY PHONE NUMBER: (514) 956-7503
MOLECULAR WEIGHT: 136.9
PRODUCT USE: Various
**PRODUCT IDENTIFICATION UN 1746
NUMBER:**

HAZARDOUS INGREDIENTS

CHEMICAL ID	CONCENTRATION	CAS #	LD(50)	LC(50)
Bromine Trifluoride	100%	7787-71-5	None	None

PHYSICAL DATA

PHYSICAL STATE: Fuming liquid
APPEARANCE: Colorless to pale yellow, clear,
fuming liquid
ODOR: Choking, pungent odor
ODOR THRESHOLD: Unknown
SPECIFIC GRAVITY (H₂O = 1): 2.52

VAPOR PRESSURE: 1.0 kPa
VAPOR DENSITY (air = 1): 4.72
EVAPORATION RATE: Unknown
BOILING POINT: 125.75°C
FREEZING POINT: 8.87°C
pH: Acidic
GAS DENSITY: 2825 kg/m³ (Liquid) @ 15°C, 101.3 kPa
COEFFICIENT OF WATER/OIL DISTRIBUTION: Reacts violently with water and oil

FIRE OR EXPLOSION HAZARD

CONDITIONS OF FLAMMABILITY: Nonflammable liquid

MEANS OF EXTINCTION: Fires with bromine trifluoride as the oxidizer can only be extinguished by shutting off the source of bromine trifluoride. DO NOT USE WATER, use dry chemical, dry sand, or carbon dioxide.

FLASHPOINT AND METHOD OF DETERMINATION: Nonflammable liquid

UPPER EXPLOSION LIMIT (% BY VOL): Nonflammable liquid

LOWER EXPLOSION LIMIT (% BY VOL): Nonflammable liquid

AUTO-IGNITION TEMPERATURE: Nonflammable liquid

FLAMMABILITY CLASSIFICATION: Nonflammable liquid

HAZARDOUS COMBUSTION PRODUCTS: Nonflammable liquid

EXPLOSION DATA: Nonflammable liquid

SENSITIVITY TO STATIC DISCHARGE: None

REACTIVITY DATA

CHEMICAL STABILITY: Stable

INCOMPATIBLE MATERIALS: Reacts violently or explodes on contact with water, rubber, plastics and organic materials

CONDITIONS OF REACTIVITY: See Incompatible Materials, above

HAZARDOUS DECOMPOSITION PRODUCTS: Bromine, fluorine, bromine monofluoride, hydrogen fluoride

TOXICOLOGICAL PROPERTIES

ROUTES OF ENTRY:

SKIN CONTACT: Bromine trifluoride is irritating and corrosive to all living tissues. Toxic level exposure to skin tissue caused hydrofluoric acid burns and skin lesions resulting in tissue destruction and eventual scarring. Burn activity continues while any residual active fluorides remain.

SKIN ABSORPTION: None

EYE: Burns of the eye result in lesions and possible loss of vision.

INHALATION: Symptoms include lachrymation, cough, difficult breathing, abnormal fluids formation in the nose, mouth and throat. Inhalation of BrF₃ may cause pneumonitis and pulmonary edema which could be fatal. Symptoms of hydrofluoric acid burns are severe pain, redness, possible swelling and tissue destruction.

INGESTION: None

ACUTE OVER EXPOSURE EFFECTS: Bromine trifluoride is irritating and corrosive to all living tissues. Toxic level exposure to skin tissue causes hydrofluoric acid burns and skin lesions resulting in tissue destruction and eventual scarring. Burn activity continues while any residual active fluorides remain. Chemical pneumonitis and pulmonary edema result from exposure to the lower respiratory tract and deep lung. Residual pulmonary malfunction might also occur. Burns of the eye result in lesions and possible loss of vision. Extended low level systemic absorption of fluorides may cause fluorosis, an abnormal calcium accumulation in the bone structure. Symptoms of hydrofluoric acid burns are severe pain, redness, possible swelling and tissue destruction.

CHRONIC OVER EXPOSURE EFFECTS: See statement on fluorosis in Acute Over Exposure Effects, above.

EXPOSURE LIMITS: Fluorides as (F) = TWA of 2.5 mg/m³ (ACGIH 1995-1996)

IRRITANCY OF PRODUCT: Yes, see Toxicological Properties.

SENSITIZATION TO MATERIAL: Yes, to water and organics

CARCINOGENICITY, REPRODUCTIVE EFFECTS: None known

TERATOGENICITY, MUTAGENICITY: None known

TOXICOLOGICALLY SYNERGISTIC PRODUCTS: None known

PREVENTIVE MEASURES

PERSONAL PROTECTIVE EQUIPMENT: Chrome-leather gloves. Safety goggles or glasses plus a face shield made of BF₃ resistant material. Safety shoes, safety shower and eyewash "fountain" and chemical resistant overgarments.

SPECIFIC ENGINEERING CONTROLS: Most metals form a passive fluoride film that protects the metal from further corrosion below approximately 204°C. Monel® and nickel are preferred for higher temperature applications. Teflon® is the preferred gasket material.

LEAK AND SPILL PROCEDURES: EVACUATE ALL PERSONNEL FROM AFFECTED AREA.

Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is on container or container valve, contact the closest MEGS location.

WASTE DISPOSAL: Do not attempt to dispose of waste or unused quantities. Return in the shipping container properly labeled, with any valve outlet plugs or caps secured and valve protection cap in place to MEGS for proper disposal. For emergency disposal, contact the closest MEGS location.

HANDLING PROCEDURES AND EQUIPMENT: USE ONLY IN WELL-VENTILATED AREAS.

Valve protection caps must remain in place unless container is secured with valve outlet piped to the point of use. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder. Close valve after each use and when empty. Do not tamper with (valve) safety device.

STORAGE REQUIREMENTS: Protect cylinders from physical damage. Store in cool, dry, well-ventilated area of non combustible construction away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 52°C. Cylinders must be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in - first out" inventory system to prevent full cylinders being stored for excessive periods of time.

TDG CLASSIFICATION: 5.1 (6.1) (8)

WHMIS CLASSIFICATION: C, D1, E

SPECIAL SHIPPING INFORMATION: Always secure cylinders in an upright position before transporting them. NEVER transport cylinders in trunks of vehicles, enclosed vans, truck cabs or in passenger compartments. Transport cylinders secured in open flatbed or in open pick-up type vehicles.

FIRST AID MEASURES

SPECIFIC FIRST AID PROCEDURES: PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO BROMINE TRIFLUORIDE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS AND APPROPRIATE PROTECTIVE CLOTHING.

INHALATION: Move exposed personnel to an uncontaminated area. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Keep victim warm and quiet. Assure that mucous or vomited material does not obstruct the airway by use of positional drainage. Delayed pulmonary edema may occur. Keep patient under medical observation for at least 24 hours.

EYE CONTACT: PERSONS WITH POTENTIAL EXPOSURE TO BROMINE TRIFLUORIDE SHOULD NOT WEAR CONTACT LENSES.

Flush contaminated eye(s) with copious quantities of water. Hold eyelids open with fingers to assure complete flushing. Continue for minimum of 30 minutes.

SKIN CONTACT: Flush affected area with copious quantities of water. Remove affected clothing as rapidly as possible. Skin burns may be treated with a calcium gluconate gel or slurry in water or glycerine. This compound binds the active fluorides in an insoluble form, limits burn extension and relieves pain.

PREPARATION INFORMATION

PREPARED BY: Safety Department

DATE PREPARED: 09/01/1999

LAST REVISION DATE: 05/21/2002

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