

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MATHESON TRI-GAS, INC.
150 Allen Road Suite 302
Basking Ridge, New Jersey 07920
Information: 1-800-416-2505

Emergency Contact:
CHEMTREC 1-800-424-9300
Calls Originating Outside the US:
703-527-3887 (Collect Calls Accepted)

SUBSTANCE: BROMINE PENTAFLUORIDE

TRADE NAMES/SYNONYMS:

MTG MSDS 99; BROMINE FLUORIDE (BRF5); UN 1745; BrF5; MAT03370; RTECS EF9350000

CHEMICAL FAMILY: interhalogens

CREATION DATE: Jan 24 1989

REVISION DATE: Dec 11 2008

2. COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: BROMINE PENTAFLUORIDE

CAS NUMBER: 7789-30-2

PERCENTAGE: 99.9

3. HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4): HEALTH=3 FIRE=0 REACTIVITY=3



EMERGENCY OVERVIEW:

COLOR: colorless or yellow

PHYSICAL FORM: fuming liquid

ODOR: pungent odor, irritating odor

MAJOR HEALTH HAZARDS: respiratory tract burns, skin burns, eye burns, mucous membrane burns

PHYSICAL HAZARDS: May explode on contact with water. Strong oxidizer. Contact with combustible material may cause fire.

POTENTIAL HEALTH EFFECTS:

INHALATION:

SHORT TERM EXPOSURE: same as effects reported in short term ingestion, irritation (possibly severe), nausea, difficulty breathing, asthma, dizziness, bluish skin color, lung congestion

LONG TERM EXPOSURE: same as effects reported in long term ingestion, digestive disorders

SKIN CONTACT:

SHORT TERM EXPOSURE: same as effects reported in short term ingestion, irritation (possibly severe)

LONG TERM EXPOSURE: same as effects reported in short term exposure

EYE CONTACT:

SHORT TERM EXPOSURE: irritation (possibly severe)

LONG TERM EXPOSURE: same as effects reported in short term exposure

INGESTION:

SHORT TERM EXPOSURE: burns, rash, nausea, diarrhea, stomach pain, difficulty breathing, irregular heartbeat, headache, tingling sensation, visual disturbances, dilated pupils, bluish skin color, paralysis, convulsions, coma

4. FIRST AID MEASURES

INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

SKIN CONTACT: Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get immediate medical attention. Thoroughly clean and dry contaminated clothing before reuse. Destroy contaminated shoes.

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

INGESTION: Contact local poison control center or physician immediately. Never make an unconscious person vomit or drink fluids. Give large amounts of water or milk. Allow vomiting to occur. When vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious, turn head to side. Get medical attention immediately.

NOTE TO PHYSICIAN: For inhalation, consider oxygen. Avoid gastric lavage or emesis.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Negligible fire hazard. Oxidizer. May ignite or explode on contact with combustible materials. Containers may rupture or explode if exposed to heat.

EXTINGUISHING MEDIA: regular dry chemical, soda ash, water

Large fires: Flood with water. Apply water from a protected location or from a safe distance.

FIRE FIGHTING: Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is

impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Flood with water. Cool containers with water spray until well after the fire is out. Apply water from a protected location or from a safe distance. Stay upwind and keep out of low areas. Evacuate if fire gets out of control or containers are directly exposed to fire. Evacuation radius: 800 meters (1/2 mile).

FLASH POINT: No data available.

6. ACCIDENTAL RELEASE MEASURES

OCCUPATIONAL RELEASE:

Avoid contact with combustible materials. Do not touch spilled material. Stop leak if possible without personal risk. Reduce vapors with water spray. Do not get water inside container. Small spills: Flood with water. Large spills: Dike for later disposal. Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering.

7. HANDLING AND STORAGE

STORAGE: Store and handle in accordance with all current regulations and standards. Store in a tightly closed container. Store in a cool, dry place. Store in a well-ventilated area. Secure to prevent tipping. NFPA 430 Code for the Storage of Liquid and Solid Oxidizing Materials. Keep separated from incompatible substances.

HANDLING: Subject to handling regulations: U.S. OSHA 29 CFR 1910.119.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:

BROMINE PENTAFLUORIDE:

0.1 ppm (0.7 mg/m³) OSHA TWA (vacated by 58 FR 35338, June 30, 1993)

0.1 ppm ACGIH TWA

0.1 ppm (0.7 mg/m³) NIOSH recommended TWA 10 hour(s)

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

EYE PROTECTION: Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING: Wear appropriate chemical resistant clothing.

GLOVES: Wear appropriate chemical resistant gloves.

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

Measurement Element:

F

12.5 mg/m³

Any quarter-mask respirator.

25 mg/m³

Any particulate respirator equipped with an N95, R95, or P95 filter (including N95, R95, and P95 filtering facepieces) except quarter-mask respirators. The following filters may also be used: N99, R99, P99, N100, R100 or P100.

Any supplied-air respirator.

62.5 mg/m³

Any supplied-air respirator operated in a continuous-flow mode.

Any powered, air-purifying respirator with a high-efficiency particulate filter.

May need acid gas sorbent.

125 mg/m³

Any air-purifying, full-facepiece respirator equipped with an N100, R100, or P100 filter.

May need acid gas sorbent.

Any self-contained breathing apparatus with a full facepiece.

Any supplied-air respirator with a full facepiece.

250 mg/m³

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode.

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 operated in pressure-demand or other positive-pressure mode.

Escape -

Any air-purifying, full-facepiece respirator equipped with an N100, R100, or P100 filter.

May need acid gas sorbent.

Any appropriate escape-type, self-contained breathing apparatus.

Under conditions of frequent use or heavy exposure, respiratory protection may be needed.

Respiratory protection is ranked in order from minimum to maximum.

Consider warning properties before use.

Any chemical cartridge respirator with organic vapor cartridge(s).

Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s).

Any air-purifying respirator with a full facepiece and an organic vapor canister.

For Unknown Concentrations or Immediately Dangerous to Life or Health -

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 operated in pressure-demand or other positive-pressure mode.

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: liquid
COLOR: colorless or yellow
PHYSICAL FORM: fuming liquid
ODOR: pungent odor, irritating odor
MOLECULAR WEIGHT: 174.90
MOLECULAR FORMULA: Br-F5
BOILING POINT: 106 F (41 C)
FREEZING POINT: -78 F (-61 C)
VAPOR PRESSURE: 328 mmHg @ 20 C
VAPOR DENSITY (air=1): 6.05
SPECIFIC GRAVITY (water=1): 2.4604-2.482
WATER SOLUBILITY: reacts
PH: Not available
VOLATILITY: Not available
ODOR THRESHOLD: Not available
EVAPORATION RATE: Not available
COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available

10. STABILITY AND REACTIVITY

REACTIVITY: May explode on contact with water.

CONDITIONS TO AVOID: Avoid contact with combustible materials. Keep dry. Dangerous gases may accumulate in confined spaces. Keep out of water supplies and sewers.

INCOMPATIBILITIES: acids, combustible materials, metal salts, metals, bases, metal oxides, oxidizing materials, halo carbons, halogens, reducing agents

HAZARDOUS DECOMPOSITION:
Thermal decomposition products: acid halides

POLYMERIZATION: Will not polymerize.

11. TOXICOLOGICAL INFORMATION

BROMINE PENTAFLUORIDE:

LOCAL EFFECTS:

Corrosive: inhalation, skin, eye, ingestion

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: central nervous system disorders, bone, joint or tooth disorders, eye disorders, kidney disorders, respiratory disorders, skin disorders and allergies

ADDITIONAL DATA: May cross the placenta. May be excreted in breast milk.

12. ECOLOGICAL INFORMATION

Not available

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable regulations. Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001. D003.

14. TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:
PROPER SHIPPING NAME: Bromine pentafluoride
ID NUMBER: UN1745
HAZARD CLASS OR DIVISION: 5.1
PACKING GROUP: I
LABELING REQUIREMENTS: 5.1; 6.1; 8
QUANTITY LIMITATIONS:
PASSENGER AIRCRAFT OR RAILCAR: Forbidden
CARGO AIRCRAFT ONLY: Forbidden



CANADIAN TRANSPORTATION OF DANGEROUS GOODS:
SHIPPING NAME: Bromine pentafluoride
UN NUMBER: UN1745
CLASS: 5.1; 6.1; 8
PACKING GROUP/CATEGORY: I

15. REGULATORY INFORMATION

U.S. REGULATIONS:
CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4): Not regulated.

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355 Subpart B): Not regulated.

SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355 Subpart C): Not regulated.

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370 Subparts B and C):
ACUTE: Yes

CHRONIC: Yes
FIRE: No
REACTIVE: Yes
SUDDEN RELEASE: Yes

SARA TITLE III SECTION 313 (40 CFR 372.65): Not regulated.

OSHA PROCESS SAFETY (29 CFR 1910.119):
BROMINE PENTAFLUORIDE: 2500 LBS TQ

STATE REGULATIONS:

California Proposition 65: Not regulated.

CANADIAN REGULATIONS:

WHMIS CLASSIFICATION: Not determined.

NATIONAL INVENTORY STATUS:

U.S. INVENTORY (TSCA): Not listed on inventory.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

CANADA INVENTORY (DSL/NDSL): Not determined.

16. OTHER INFORMATION

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