

# 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: BROMOCHLORODIFLUOROMETHANE**

#### **TRADE NAMES/SYNONYMS:**

CHLORODIFLUOROMONOBROMOMETHANE; HALON 1211;  
CHLORODIFLUOROBROMOMETHANE; R 12B1; BCF; CHLOROBROMODIFLUOROMETHANE;  
DIFLUOROCHLOROBROMOMETHANE; FLUGEX 12B1; FLUOROCARBON 1211; FREON 12B1;  
BROMOCHLORODIFLUORMETHANE (HALON 1211); DAIFLON 12B1; F 12B1; UN 1974; CBrClF<sub>2</sub>;  
MAT03440; RTECS PA5270000

**CHEMICAL FAMILY:** halogenated, aliphatic

**CREATION DATE:** Jan 24 1989

**REVISION DATE:** Dec 11 2008

## 2. COMPOSITION, INFORMATION ON INGREDIENTS

**COMPONENT:** BROMOCHLORODIFLUOROMETHANE

**CAS NUMBER:** 353-59-3

**PERCENTAGE:** 100

## 3. HAZARDS IDENTIFICATION

**NFPA RATINGS (SCALE 0-4):** HEALTH=3 FIRE=1 REACTIVITY=0



#### **EMERGENCY OVERVIEW:**

**COLOR:** colorless

**PHYSICAL FORM:** liquefied gas

**ODOR:** odorless to slight odor

**MAJOR HEALTH HAZARDS:** difficulty breathing

**PHYSICAL HAZARDS:** Containers may rupture or explode if exposed to heat.

#### **POTENTIAL HEALTH EFFECTS:**

**INHALATION:**

**SHORT TERM EXPOSURE:** nausea, vomiting, difficulty breathing, irregular heartbeat, headache, dizziness, disorientation, tingling sensation, tremors, visual disturbances, suffocation, convulsions, coma

**LONG TERM EXPOSURE:** weakness

**SKIN CONTACT:**

**SHORT TERM EXPOSURE:** frostbite

**LONG TERM EXPOSURE:** no information is available

**EYE CONTACT:**

**SHORT TERM EXPOSURE:** frostbite

**LONG TERM EXPOSURE:** no information is available

**INGESTION:**

**SHORT TERM EXPOSURE:** ingestion of a gas is unlikely

**LONG TERM EXPOSURE:** ingestion of a gas is unlikely

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## 4. FIRST AID MEASURES

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**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:** If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.

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

**INGESTION:** If a large amount is swallowed, get medical attention.

**NOTE TO PHYSICIAN:** For inhalation, consider oxygen.

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## 5. FIRE FIGHTING MEASURES

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**FIRE AND EXPLOSION HAZARDS:** Slight fire hazard. Containers may rupture or explode if exposed to heat.

**EXTINGUISHING MEDIA:** carbon dioxide, regular dry chemical

Large fires: Use regular foam or flood with fine water spray.

**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. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For tank, rail car or tank truck, evacuation radius: 800 meters (1/2 mile). Use extinguishing agents appropriate for surrounding fire.

Cool containers with water spray until well after the fire is out. Apply water from a protected location or from a safe distance. Do not get water directly on material. Reduce vapors with water spray. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas. Consider downwind evacuation if material is leaking.

**HAZARDOUS COMBUSTION PRODUCTS:**

Thermal decomposition or combustion products: acid halides, oxides of carbon, phosgene, hydrogen fluoride, hydrogen chloride, chlorine, hydrogen bromide, hydrochloric acid, carbonyl fluoride

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## 6. ACCIDENTAL RELEASE MEASURES

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**OCCUPATIONAL RELEASE:**

Stop leak if possible without personal risk. Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas.

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## 7. HANDLING AND STORAGE

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**STORAGE:** Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. Keep separated from incompatible substances.

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## 8. EXPOSURE CONTROLS, PERSONAL PROTECTION

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**EXPOSURE LIMITS:**

**BROMOCHLORODIFLUOROMETHANE:**

No occupational exposure limits established.

**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.

**PROTECTIVE MATERIAL TYPES:** neoprene

**RESPIRATOR:** 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.

**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.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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**PHYSICAL STATE:** gas

**COLOR:** colorless

**PHYSICAL FORM:** liquefied gas

**ODOR:** odorless to slight odor

**MOLECULAR WEIGHT:** 165.38

**MOLECULAR FORMULA:** C-Br-Cl-F<sub>2</sub>

**BOILING POINT:** 25.3 F (-3.7 C)

**FREEZING POINT:** -255.1 F (-159.5 C)

**VAPOR PRESSURE:** 2070 mmHg @ 25 C

**VAPOR DENSITY (air=1):** 5.7

**SPECIFIC GRAVITY (water=1):** 1.850 (liquid)

**DENSITY:** 1.850 g/m<sup>3</sup>

**WATER SOLUBILITY:** slightly soluble

**PH:** Not applicable

**VOLATILITY:** Not applicable

**ODOR THRESHOLD:** Not available

**EVAPORATION RATE:** Not applicable

**VISCOSITY:** 0.0016823 Pa.s @ -113.150 C

**COEFFICIENT OF WATER/OIL DISTRIBUTION:** Not applicable

**SOLVENT SOLUBILITY:**

**Soluble:** chlorinated solvents, alcohols, ketones, esters

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## 10. STABILITY AND REACTIVITY

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**REACTIVITY:** Stable at normal temperatures and pressure.

**CONDITIONS TO AVOID:** Protect from physical damage and heat. Containers may rupture or explode if exposed to heat.

**INCOMPATIBILITIES:** oxidizing materials

**HAZARDOUS DECOMPOSITION:**

Thermal decomposition or combustion products: acid halides, oxides of carbon, phosgene, hydrogen fluoride, hydrogen chloride, chlorine, hydrogen bromide, hydrochloric acid, carbonyl fluoride

**POLYMERIZATION:** Will not polymerize.

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## 11. TOXICOLOGICAL INFORMATION

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**BROMOCHLORODIFLUOROMETHANE:**

**TOXICITY DATA:** 20 pph/15 minute(s) inhalation-rat LC50

**ACUTE TOXICITY LEVEL:**

Relatively Non-toxic: inhalation

**MUTAGENIC DATA:** Available.

**REPRODUCTIVE EFFECTS DATA:** Available.

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## 12. ECOLOGICAL INFORMATION

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**FATE AND TRANSPORT:**

**KOW:** 1.9 (log = 0.278) estimated

**KOC:** 49 (log = 1.69) estimated

**BIOCONCENTRATION:** 0.96 (estimated from Kow)

**ENVIRONMENTAL SUMMARY:** Leaches through the soil or the sediment at a very rapid rate. Accumulates very little in the bodies of living organisms.

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## 13. DISPOSAL CONSIDERATIONS

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Dispose in accordance with all applicable regulations.

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## 14. TRANSPORT INFORMATION

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**U.S. DOT 49 CFR 172.101:**

**PROPER SHIPPING NAME:** Chlorodifluorobromomethane

**ID NUMBER:** UN1974

**HAZARD CLASS OR DIVISION:** 2.2

**LABELING REQUIREMENTS:** 2.2



**CANADIAN TRANSPORTATION OF DANGEROUS GOODS:**

**SHIPPING NAME:** Chlorodifluorobromomethane

**UN NUMBER:** UN1974

**CLASS:** 2.2

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## 15. REGULATORY INFORMATION

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### **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: No

FIRE: No

REACTIVE: No

SUDDEN RELEASE: Yes

**SARA TITLE III SECTION 313 (40 CFR 372.65):**  
**BROMOCHLORODIFLUOROMETHANE**

**OSHA PROCESS SAFETY (29 CFR 1910.119):** Not regulated.

### **STATE REGULATIONS:**

**California Proposition 65:** Not regulated.

### **CANADIAN REGULATIONS:**

**WHMIS CLASSIFICATION:** A.

### **NATIONAL INVENTORY STATUS:**

**U.S. INVENTORY (TSCA):** Listed on inventory.

**TSCA 12(b) EXPORT NOTIFICATION:** Not listed.

**CANADA INVENTORY (DSL/NDSL):** Listed on DSL.

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## 16. OTHER INFORMATION

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