

# SAFETY DATA SHEET

FILE NO.: Incoming\_SDS\_Halon 2402\_00  
SDS DATE: January 2014

## SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** Halon 2402  
**SYNONYMS:** 1,2-Dibromotetrafluoroethane, R-114B2, BFC-114B2  
**Product Use:** Fire extinguishing agent, refrigerant

**SHIPPER NAME AND ADDRESS:**

**HEALTH EMERGENCY PHONE:** 1-800-222-1222 (Poison Control Center)  
**TRANSPORTATION EMERGENCY PHONE:** 1-800-424-8802 (National Response Center)  
**GENERAL INFORMATION:** 1-800-467-4922 (U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration Hazardous Materials Information Center – M-F, 9am-5pm)

**SDS PREPARED BY:** A-Gas RemTec

## SECTION 2: HAZARD IDENTIFICATION

**HAZARD CLASSIFICATION:** Liquid and Gas Under Pressure  
Skin irritation, Category 3  
Eye irritation, Category 1

**SIGNAL WORD:** **WARNING**

**HAZARD STATEMENT:** Causes skin irritation.  
Causes serious eye damage.  
Harmful if inhaled.



**PRECAUTIONARY STATEMENTS:** Avoid breathing mist or vapors.  
Wear protective gloves, protective clothing, eye protection, and face protection  
**IF IN EYES:** Rinse cautiously with water for several minutes, Remove contact lenses if present and easy to do. Continue rinsing.  
Keep container tightly closed in a cool/well-ventilated place.  
Keep away from heat/sparks/open flame. – No smoking.  
Do not allow liquid or vapors to come into contact with skin or eyes.  
Use only in a well-ventilated area.  
Avoid release to the environment.

**OTHER HAZARDS:** May decompose on contact with flames or extremely hot metal surfaces to produce toxic and corrosive products.  
Harmful if inhaled and may cause heart irregularities, unconsciousness, or death.  
Liquid contact with eyes or skin may cause severe irritation or eye damage.

**ASHRAE STANDARD 34 SAFETY RATING:** Not classified.

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

<u>INGREDIENT NAME</u>	<u>FORMULA</u>	<u>CAS NUMBER</u>	<u>WEIGHT %</u>
*1,2-Dibromotetrafluoroethane * Listed SARA Section 313	C <sub>2</sub> BR <sub>2</sub> F <sub>4</sub>	124-73-2	>99

Trace impurities and additional material names not listed above may also appear in Section 15 toward the end of this SDS. These materials may be listed for local "Right-To-Know" compliance and for other reasons.

## SECTION 4: FIRST AID MEASURES

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**SKIN:** Flush exposed skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Get medical attention if irritation persists.

**EYES:** Immediately flush with large amounts of water for at least 15 minutes; remove contact lenses (if applicable). Get medical attention if irritation persists.

**INHALATION:** Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**INGESTION:** Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt, or waistband. Seek medical attention of symptoms appear.

**ADVICE TO PHYSICIAN:** Because of the possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, should be used with special caution and only in situations of emergency life support. Treatment of overexposure should be directed at the control of symptoms and the clinical conditions.

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## SECTION 5: FIRE-FIGHTING MEASURES

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**EXTINGUISHING MEDIA:** This product is a fire extinguishing media. Use extinguishing media appropriate to surrounding fire conditions.

**UNUSUAL FIRE AND EXPOSION HAZARDS:** May decompose on contact with flames or extremely hot metal surfaces to produce toxic and corrosive products, such as carbon monoxide, hydrogen bromide, hydrogen fluoride, fluorine, and bromine gas.  
Container may explode if heated due to resulting pressure rise.

**SPECIAL FIRE-FIGHTING PRECAUTIONS/INSTRUCTIONS:** Firefighters should wear self-contained, NIOSH-approved breathing apparatus for protection against possible toxic decomposition products. Proper eye and skin protection should be provided. Use water spray to keep fire-exposed containers cool.

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## SECTION 6: ACCIDENTAL RELEASE MEASURES

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**ACCIDENTAL RELEASE MEASURES:** If the release is caused by an open valve and it is safe for operator to close, do so. If possible to transfer the remaining gas in the container in a safe manner to a separate tank, do so. If the release cannot be isolated or closed and it is a significant amount, allow the product to release in place or safely move container to a safe area. Evacuate area in the event of a significant release in an enclosed area. Keep upwind. Ventilate area, especially low places. Remove open flames and heating elements. Disperse vapors with floor level forced air. Absorb liquid with an inert material and dispose of spilled material according to applicable regulations.

**Spills and releases may have to be reported to Federal and/or local authorities. See Section 15 regarding reporting requirements.**

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## SECTION 7: HANDLING AND STORAGE

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**HANDLING AND STORAGE:** Avoid breathing vapors/fumes. Avoid contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Use properly rated containers only. Store in a cool, well-ventilated area of low fire risk and out of direct sunlight. Protect container and its fittings from physical damage. Storage in subsurface locations should be avoided. Close valve tightly after use and when empty.

**OTHER PRECAUTIONS:** Product boils at 47.3° C (117° F). If product reaches this temperature during storage, the resulting pressure rise could cause the container to rupture.

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## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

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### EXPOSURE LIMITS:

<u>INGREDIENT NAME</u>	<u>CAS NUMBER</u>	<u>ACGIH TLV</u>	<u>OSHA PEL</u>	<u>OTHER LIMIT(S)</u>
1,2-Dibromotetrafluoroethane	124-73-2	None established	None established	None established

### OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:

Hydrogen Bromide: OSHA PEL = 3 ppm (TWA)  
Hydrogen Fluoride: OSHA PEL = 3 ppm (TWA)  
Bromine: OSHA PEL = 0.1 ppm (TWA)  
Fluorine: OSHA PEL = 0.1 ppm (TWA)

**ENGINEERING CONTROLS:** Provide local ventilation at filling zones and areas where leakage is probable. Mechanical (general) ventilation may be adequate for other operating and storage areas.

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## PERSONAL PROTECTIVE EQUIPMENT:

- SKIN:** Wear appropriate chemical resistant protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine appropriate type of glove material for given application. Wash contaminated clothing and clean protective equipment before reuse. Wash skin thoroughly after handling.
- EYES:** Where there is reasonable probability of liquid contact, wear chemical safety goggles, and have eye flushing and quick-drench shower equipment available.
- RESPIRATORY:** None generally required for adequately ventilated work situations. For accidental release or non-ventilated situations, use a self-contained, NIOSH-approved breathing apparatus or supplied air respirator. For escape, use the former or a NIOSH-approved gas mask with organic vapor canister.
- ADDITIONAL RECOMMENDATIONS:** Wash hands after use and before eating or drinking. Ensure that appropriate eyewash stations and quick-drench shower facilities are available.

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## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

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APPEARANCE:	Colorless liquid
PHYSICAL STATE:	Liquid
MOLECULAR WEIGHT:	259.82 g/mol
CHEMICAL FORMULA:	C <sub>2</sub> Br <sub>2</sub> F <sub>4</sub>
ODOR:	Sweet odor
ODOR THRESHOLD:	Not available
DENSITY:	2.149 g/cm <sup>3</sup>
VISCOSITY:	0.72 cP @ 25° C
SPECIFIC GRAVITY (H <sub>2</sub> O = 1.0):	2.175
SOLUBILITY IN WATER:	3.00 mg/L @ 25° C
pH:	Not available
BOILING POINT:	47.35° C
MELTING POINT:	-110.32° C
VAPOR PRESSURE:	325 mmHg @ 25° C
VAPOR DENSITY:	10 g/dm <sup>3</sup> @ 47.3° C
EVAPORATION RATE (CC14 = 1.0):	Not available
% VOLATILES:	100
FLASH POINT:	Not applicable
FLASH POINT METHOD:	Not applicable
AUTOIGNITION TEMPERATURE:	Not available
DECOMPOSITION TEMPERATURE:	Not available
UPPER FLAMMABLE LIMIT (volume % in air):	None
LOWER FLAMMABLE LIMIT (volume % in air):	None
FLAME PROPAGATION RATE (solids):	Not applicable
OSHA FLAMMABILITY CLASS:	Not applicable
PARTITION COEFFICIENT (n-octanol/water):	2.96 log Kow

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## SECTION 10: STABILITY AND REACTIVITY

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- REACTIVITY:** When dry, this material is compatible with most metals (except zinc) at temperatures up to 121.1° C. When it is wet it can be corrosive to many metals.
- STABILITY:** This material is chemically stable under specified conditions for storage, shipment and/or use. See Section 7 Handling and Storage for specified conditions.
- CONDITIONS TO AVOID:** Avoid contact with strong strong oxidizers, since they may react or accelerate decomposition. Any source of high temperature, such as lighted cigarettes, flames, hot spots or welding may yield toxic and/or corrosive decomposition products. Avoid moist conditions.
- HAZARDOUS DECOMPOSITION OR BY-PRODUCTS:** Thermal decomposition products include hydrogen bromide, hydrogen fluoride, fluorine, and bromine.

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## SECTION 11: TOXICOLOGICAL INFORMATION

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- ROUTES OF EXPOSURE:** Inhalation, Skin contact, Eye contact, Ingestion
- ACUTE EFFECTS OF EXPOSURE:** Dry skin, redness, irritation from skin contact with liquid. High vapor concentrations are irritating to the eyes and respiratory tract and may result in severe eye irritation, central nervous system effects such as headache, dizziness, drowsiness and, in severe exposure, loss of consciousness and death. Symptoms of ingestion are similar to those of inhalation.

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Inhalation may cause an increase in the sensitivity of the heart to adrenaline, which could result in irregular or rapid heartbeats.

Medical conditions aggravated by exposure include heart disease or compromised heart function.

**CHRONIC EFFECTS OF EXPOSURE:** None known.

**ACUTE TOXICITY:** LC<sub>50</sub> (mouse – 4 hr. inhalation) = 300,000 mg/m<sup>3</sup>  
LD<sub>50</sub> (rat – 4 hr. inhalation) = 584,000 mg/kg

**CHRONIC TOXICITY:** None known.

**DESCRIPTION OF SYMPTOMS:** Inhalation of high concentration may lead to unconsciousness and possible death. Effects of overexposure by inhalation may include non specific discomfort, such as nausea, headache, or weakness, or temporary central nervous system depression with effects such as dizziness, headache, confusion, loss of coordination, and loss of consciousness. Higher exposures by inhalation may cause temporary alteration of the heart's electrical activity with irregular pulse, palpitations, or inadequate circulation. Individuals with pre-existing diseases of the central nervous or cardiovascular system may have increased susceptibility to the toxicity of excessive exposure.

**CARCINOGENICITY:** Not listed as a carcinogen by NTP, IARC, or OSHA

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## SECTION 12: ECOLOGICAL INFORMATION

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**AQUATIC TOXICITY:** No data available, but not expected to remain in aquatic environments for an extended period of time, as it is expected to rapidly volatilize to the atmosphere.

**DEGRADABILITY:** Atmospheric lifetime is approximately 20 years

**BIOACCUMULATION:** Bioaccumulation is considered unlikely for this material, due to its low water solubility and rapid volatilization to the atmosphere.

**ADSORPTION/LEACHING:** If released to soil, 1,2-Dibromotetrafluoroethane is expected to display moderate mobility and it has the potential to leach into groundwater. Volatilization from the soil surface to the atmosphere is expected to be a significant fate process.

**OTHER ADVERSE EFFECTS:** Ozone Depletion Potential (CFC 11 = 1.0): 11.5  
Global Warming Potential (CO<sub>2</sub> = 1.0): 1,640

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## SECTION 13: DISPOSAL CONSIDERATIONS

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**RCRA:** Unused product is not considered to be a RCRA hazardous waste.

**DISPOSAL CONSIDERATIONS:** Recover, reclaim or recycle when practical. Dispose of in accordance with federal, state and local regulations. Chemical additions to, processing of, or otherwise altering this material may make this waste management information incomplete, inaccurate, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations. Contact a certified reclaimer for recovery/reclamation of this product.

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## SECTION 14: TRANSPORT INFORMATION

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### U.S. DEPARTMENT OF TRANSPORTATION

**UN NUMBER:** UN3082  
**UN PROPER SHIPPING NAME:** Environmentally Hazardous Substance, liquid, n.o.s.  
**US DOT HAZARD CLASS:** 9  
**PACKING GROUP:** Not applicable

*OR – If charged with Nitrogen, Carbon Dioxide, or Air.....*

### U.S. DEPARTMENT OF TRANSPORTATION

**UN NUMBER:** UN1058  
**UN PROPER SHIPPING NAME:** Liquified gases, nonflammable charged with nitrogen, carbon dioxide, or air  
**US DOT HAZARD CLASS:** 2.2 Non-Flammable Gas  
**PACKING GROUP:** Not Applicable

**ENVIRONMENTAL CONCERNS:** This product is considered an Ozone Depleting Substance, and care must be taken to prevent releasing it to the environment.

**BULK TRANSPORTATION:** Avoid transportation in vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the containers and what action to take in the event of an accident or an emergency.



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Prior to transporting containers, ensure that they are firmly secured, valves are closed and not leaking, and the valve outlet cap nuts or plugs (if provided) are correctly connected.

**SPECIAL TRANSPORTATION:** Transport separately and away from food and foodstuffs.

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## SECTION 15: REGULATORY INFORMATION

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### U.S. FEDERAL REGULATIONS

**TSCA (TOXIC SUBSTANCE CONTROL ACT):** All components of this product are listed on the TSCA Inventory list.

**CERCLA (COMPREHENSIVE RESPONSE COMPENSATION, AND LIABILITY ACT) and SARA (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT):**

No "Reportable Quantities" (RQs) or "Threshold Planning Quantities" (TPQs) exist for any of the ingredients in this product.

**Any spill or release resulting in the loss of any ingredient at or above its RQ requires immediate notification to the National Response Center (800-424-8802) and to your local Emergency Planning Committee.**

**SECTION 311 HAZARD CLASS:** Immediate (Acute) Health  
Sudden Release of Pressure

**SECTION 313 TOXIC CHEMICALS:** This product contains a substance which is defined as a toxic chemical under, and subject to the reporting requirements of, Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 (SARA 313) and 40 CFR part 372. See Section 3 Composition/Information on Ingredients for listed chemical.

### ADDITIONAL REGULATORY INFORMATION:

**WARNING: Do not vent** to the atmosphere. To comply with provisions of the U.S. Clean Air Act, any residual must be recovered. **Contains 1,2-Dibromotetrafluoroethane**, an ozone depleting substance which can harm public health and the environment by destroying ozone in the upper atmosphere. Destruction of the ozone layer can lead to increased ultraviolet radiation which, with excess exposure to sunlight, can lead to an increase in skin cancer and eye cataracts.

### FOREIGN INVENTORY STATUS:

EU-EINECS: # 2047119

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## SECTION 16: OTHER INFORMATION

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**PREPARED BY:** A-GasRemTec  
**DATE PREPARED:** January 2014  
**CURRENT REVISION LEVEL:** 00  
**CURRENT REVISION DATE:** 1/29/2014

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