

# SAFETY DATA SHEET

FILE NO.: Incoming\_SDS\_R-22\_00  
SDS DATE: January 2014

## SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** R-22  
**SYNONYMS:** Chlorodifluoromethane  
Monochlorodifluoromethane  
Refrigerant 22  
HCFC-22  
Freon® 22  
**Product Use:** Refrigerant, aerosol propellant

**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:** Skin irritation, Category 3  
Eye irritation, Category 1

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

**HAZARD STATEMENT:** Liquid and gas under pressure.  
Overheating and overpressurizing may cause gas release or violent container bursting.  
Simple asphyxiant.



**PRECAUTIONARY STATEMENTS:** 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.  
Wear protective gloves and eye/face protection.  
Do not breathe mist/vapors.  
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.  
Vapor reduces oxygen available for breathing and is heavier than air.  
Harmful if inhaled and may cause heart irregularities, unconsciousness, or death.  
Liquid contact with eyes or skin may cause irritation.  
Harmful if swallowed.

**ASHRAE STANDARD 34 SAFETY RATING:** A1

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

<u>INGREDIENT NAME</u>	<u>FORMULA</u>	<u>CAS NUMBER</u>	<u>WEIGHT %</u>
*Chlorodifluoromethane *Listed SARA Section 313	CHClF <sub>2</sub>	75-45-6	100

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.

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## SECTION 4: FIRST AID MEASURES

- SKIN:** Flush exposed skin with lukewarm water (not hot). Get medical attention if irritation persists.
- EYES:** Immediately flush with large amounts of water for at least 15 minutes. 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. Do not give adrenaline, epinephrin or similar drugs following exposure to this product.
- INGESTION:** Ingestion is unlikely because of the physical properties of this product. Should it occur, DO NOT induce vomiting unless instructed to do so by a physician. DO NOT give stimulants. Get medical attention immediately.
- 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.

## SECTION 5: FIRE-FIGHTING MEASURES

- EXTINGUISHING MEDIA:** Use extinguishing media appropriate to surrounding fire conditions.
- UNUSUAL FIRE AND EXPLOSION HAZARDS:** May decompose on contact with flames or extremely hot metal surfaces to produce toxic and corrosive products.  
Container may explode if heated due to resulting pressure rise.  
Contact with certain reactive metals may result in formation of explosive or exothermic reactions under specific conditions (e.g. very high temperatures and/or appropriate pressures).  
Not flammable at ambient temperatures and atmospheric pressure. However, will become combustible when mixed with air under pressure and exposed to strong ignition sources.
- 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.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

**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 material in the cylinder in a safe manner to a separate cylinder, do so. Absorb liquid with commercial absorbent and shovel into a drum/waste container. 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 gas with floor level forced air. Liquid will evaporate.

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

## SECTION 7: HANDLING AND STORAGE

- HANDLING AND STORAGE:** Avoid breathing 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. Storage in subsurface locations should be avoided. Close container tightly after use and when empty.
- OTHER PRECAUTIONS:** Avoid areas where salt or other corrosive materials are present. Avoid excessive inventory and storage time.  
Product should not be mixed with air above atmospheric pressure for leak testing or any other purpose. See Section 5: Unusual Fire and Explosion Hazards.

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### EXPOSURE LIMITS:

<u>INGREDIENT NAME</u>	<u>CAS NUMBER</u>	<u>ACGIH TLV</u>	<u>OSHA PEL</u>	<u>OTHER LIMIT(S)</u>
Chlorodifluoromethane	75-45-6	1000 ppm TWA	None	*1000 ppm TWA **1000 ppm TWA

- \* = Recommended Exposure Limit (NIOSH)  
\*\* = Occupational Exposure Level (ASHRAE)

### OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:

Hydrogen Fluoride: ACGIH TLV – 3ppm Ceiling

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**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.

## 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 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. Provide eyewash stations and quick-drench shower facilities at convenient locations.

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## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

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**APPEARANCE:** Clear, colorless liquid and vapor  
**PHYSICAL STATE:** Gas at ambient temperatures  
**MOLECULAR WEIGHT:** 86.45  
**CHEMICAL FORMULA:** CHClF<sub>2</sub>  
**ODOR:** Faint sweet odor, nearly odorless  
**ODOR THRESHOLD:** Not available  
**RELATIVE DENSITY:** Not available  
**VISCOSITY (mPa\*s):** 0.23 mN/sec/m<sup>2</sup> at 25° C (liquid)  
0.013 mN/sec/m<sup>2</sup> at 25° C (gas)  
**SPECIFIC GRAVITY (water = 1.0):** 1.21 @ 21.1° C  
**SOLUBILITY IN WATER (weight %):** 0.3% @ 25° C and 1 atm.  
**pH:** Neutral  
**BOILING POINT:** -40.8° C  
**MELTING POINT:** -157.4° C  
**VAPOR PRESSURE:** 136.1 psia @ 70° F  
311.4 psia @ 130° F  
**VAPOR DENSITY (air = 1.0):** 3.0  
**EVAPORATION RATE (CC14 = 1.0):** > 1.0  
**% 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):** 1.08 log Kow

\* Based on ASHRAE Standard 34 with match ignition.

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## SECTION 10: STABILITY AND REACTIVITY

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**REACTIVITY:** Thermal decomposition due to exposure to high heat or fire. May cause strong exothermic reaction if exposed to reactive metals such as freshly abraded aluminum, potassium, calcium, magnesium, and zinc.

**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 sources of heat.  
Any source of high temperature, such as lighted cigarettes, flames, hot spots or welding may yield toxic and/or corrosive decomposition products.  
Do not mix with oxygen or air above atmospheric pressure.

**HAZARDOUS DECOMPOSITION OR BY-PRODUCTS:** Halogens, halogen acids, and possibly carbonyl halides.

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## SECTION 11: TOXICOLOGICAL INFORMATION

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**ROUTES OF EXPOSURE:** Inhalation, Skin contact, Eye contact.

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**ACUTE EFFECTS OF EXPOSURE:** Frostbite from skin contact with liquid.  
High vapor concentrations are irritating to the eyes and respiratory tract and may result in central nervous system effects such as headache, dizziness, drowsiness and, in severe exposure, loss of consciousness and death.  
The dense vapor of this material may reduce the available oxygen for breathing, and prolonged exposure to an oxygen-deficient atmosphere may be fatal.  
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:** Lifetime exposure of male rats was associated with a small increase in salivary gland fibrosarcomas.

**ACUTE TOXICITY:** LC<sub>50</sub> (rat – 4 hr.) ≥ 300,000 ppm  
Cardiac Sensitization Threshold (dog) = 50,000 ppm

**CHRONIC TOXICITY:** Subchronic Inhalation NOEL (rat) – 10,000 ppm

**DESCRIPTION OF SYMPTOMS:** Inhalation of high concentration may lead to unconsciousness and possible death. Effects of overexposure by inhalation or ingestion 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 or ingestion 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.

**DEGRADABILITY:** Expected atmospheric lifetime = 12 years.

**BIOACCUMULATION:** Bioaccumulation is considered unlikely for this material, due to its gaseous state at ambient temperatures and atmospheric pressure.

**ADSORPTION/LEACHING:** Adsorption/Leaching is considered unlikely for this material, due to its gaseous state at ambient temperatures and atmospheric pressure.

**OTHER ADVERSE EFFECTS:** **Ozone Depletion Potential (CFC 11 = 1.0):** 0.05  
**Global Warming Potential (CO<sub>2</sub> = 1.0):** 1,810

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## SECTION 13: DISPOSAL CONSIDERATIONS

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

**RCRA ID number is:** N/A

**DISPOSAL CONSIDERATIONS:** Recover, reclaim or recycle when practical. Dispose of in accordance with federal, state and local regulations. Product is subject to U.S. Environmental Protection Agency Clean Air Act Regulations Section 608 in 40 CFR Part 82 regarding refrigerant recycling.

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-Gas RemTec 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:** UN1018  
**UN PROPER SHIPPING NAME:** Chlorodifluoromethane **or** Refrigerant Gas R 22  
**US DOT HAZARD CLASS:** 2.2  
**PACKING GROUP:** Not applicable

**ENVIRONMENTAL CONCERNS:** Material is considered an Ozone Depleting Substance (ODS) and should not be released into the environment.



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**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.  
Prior to transporting cylinders, 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:** None determined.

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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):**

"Reportable Quantities" (RQs) and/or "Threshold Planning Quantities" (TPQs) exist for the following ingredients:

<u>INGREDIENT NAME</u>	<u>SARA/CERCLA RQ (LB)</u>	<u>SARA EHS TPQ (LB)</u>
None		

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:

R-22 is subject to U.S. Environmental Protection Agency Clean Air Act Regulations at 40 CFR Part 82. Section 611 of this regulation requires the following label text on all shipments of this product:

**WARNING: Do not vent** to the atmosphere. To comply with provisions of the U.S. Clean Air Act, any residual must be recovered. **Contains Chlorodifluoromethane**, an HCFC 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: # 200-871-9

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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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