SAFETY DATA SHEET

FILE NO.: Incoming_SDS_R-502_00
SDS DATE: January 2014

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: R-502
SYNONYMS: Refrigerant Gas Blend
Freon™ 502
Product Use: 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: Gas under pressure, Liquefied gas
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 cylinder 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 frostbite

ASHRAE STANDARD 34 SAFETY RATING: A1

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT NAME	FORMULA	CAS NUMBER	WEIGHT %
*R-502	$C_3HCl_2F_7$	39432-81-0	100
**Chlorodifluoromethane (HCFC-22)	$CHClF_2$	75-45-6	48.8
**Chloropentafluoroethane (CFC-115)	C_2ClF_5	76-15-3	51.2

***This blend has its own registered CAS #.
**Listed SARA Section 313

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

SKIN: Flush exposed skin with lukewarm water (not hot), or use other means to warm skin slowly. Get medical attention if frostbitten by liquid or 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: Not applicable - product is a gas at ambient temperatures.

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: R-502 is not flammable at ambient temperatures and atmospheric conditions. However, this material may become combustible when mixed with air under pressure and exposed to strong ignition sources.
May decompose on contact with flames or extremely hot metal surfaces to produce toxic and corrosive products.
Cylinders are equipped with pressure release devices to vent contents exposed to high temperatures.
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.

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 gas in the cylinder 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 gas to release in place or safely move cylinder 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 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 gas. Avoid contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Use properly rated DOT or ASME cylinders/tanks only. Follow standard safety precautions for handling and use of compressed gas cylinders. Store in a cool, well-ventilated area of low fire risk and out of direct sunlight. Protect cylinder and its fittings from physical damage. Storage in subsurface locations should be avoided. Close valve tightly after use and when empty.

OTHER PRECAUTIONS: R-502 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:

INGREDIENT NAME	CAS NUMBER	ACGIH TLV	OSHA PEL	OTHER LIMIT(S)
Chlorodifluoromethane (HCFC-22)	75-45-6	1000 ppm TWA	None	*1000 ppm TWA **1000 ppm TWA
Chloropentafluoroethane (CFC-115)	76-15-3	1000 ppm (8 hr TWA)	1000 ppm (8 hr TWA)	*1000 ppm TWA **1000 ppm TWA (10 hr.)

* = Occupational Exposure Limit (ASHRAE)
** = Recommended Exposure Limit (NIOSH)

OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:
Hydrogen Fluoride: ACGIH TLV = 3 ppm ceiling

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.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Clear, colorless liquid and vapor
PHYSICAL STATE:	Gas at ambient temperatures
MOLECULAR WEIGHT:	111.6 g/mol
CHEMICAL FORMULA:	48.8% $CHClF_2$ / 51.2% C_2ClF_5 (alternatively, $C_3HCl_2F_7$)
ODOR:	Faint ethereal odor
ODOR THRESHOLD:	Not available
RELATIVE DENSITY:	Not available
VISCOSITY:	Not available
SPECIFIC GRAVITY:	1.258 @ 21.1^{o} C
SOLUBILITY IN WATER:	490 ppm @ 21.1^{o} C and 1 atmosphere
pH:	Neutral
BOILING POINT:	-45.4^{o} C
MELTING POINT:	Not available
VAPOR PRESSURE:	152.7 psia @ 21.1^{o} C 335.7 psia @ 54.4^{o} C
VAPOR DENSITY (air = 1.0):	3.62
EVAPORATION RATE (CC14 = 1.0):	>1
% 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):	Not available

*Based on ASHRAE Standard 34 with match ignition.

SECTION 10: STABILITY AND REACTIVITY

REACTIVITY: May cause strong exothermic reaction when exposed to freshly abraded aluminum surfaces at very high temperatures or high pressure. Chemically active metals: potassium, calcium, powdered aluminum, 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: Do not mix with oxygen or air above atmospheric pressure.
Any source of high temperature, such as lighted cigarettes, flames, hot spots or welding may yield toxic and/or corrosive e decomposition products.

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: Thermal decomposition products include halogens, halogen acids and possibly carbonyl halides.

SECTION 11: TOXICOLOGICAL INFORMATION

ROUTES OF EXPOSURE: Inhalation, Skin contact, Eye contact

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_{50} (rat – 4 hr.): ≥ 300,000 ppm (HCFC-22)
LC_{50} (rats and guinea pigs – 4 hr.): > 800,000 ppm (CFC-115)
Cardiac Sensitization Threshold (dog): 50,000 ppm (HCFC-22); 150,000 ppm (CFC-115)
Cardiac Sensitization Threshold (mice): 200,000 ppm (CFC-115)

CHRONIC TOXICITY: Subchronic Inhalation NOEL (rat): 10,000 ppm (HCFC-22)
Subchronic inhalation NOEL (rat and mouse): 200,000 ppm (CFC-115)
Not teratogenic
Not mutagenic in *in-vitro* or *in-vivo* tests

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

SECTION 12: ECOLOGICAL INFORMATION

AQUATIC TOXICITY: No data available, but product is unlikely to remain in water due to its gaseous state at room temperature.

DEGRADABILITY: HCFC-22 has an atmospheric lifetime of approximately 12 years.
CFC-115 has an atmospheric lifetime of approximately 1,700 years.

BIOACCUMULATION: Bioaccumulation is considered unlikely for all ingredients of this material, due to their gaseous state at ambient temperatures and atmospheric pressure.

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

OTHER ADVERSE EFFECTS:

Ozone Depletion Potential (CFC 11 = 1.0):	0.23
Global Warming Potential (CO_2 = 1.0):	4,657

SECTION 13: DISPOSAL CONSIDERATIONS

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

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 certified reclaimer for recovery/reclamation of this product.

SECTION 14: TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION

UN NUMBER: UN1973

UN PROPER SHIPPING NAME: Chlorodifluoromethane and chloropentafluoroethane mixture ***or*** Refrigerant gas R 502 with fixed boiling point, with approximately 49 percent chlorodifluoromethane

US DOT HAZARD CLASS: 2.2, Non-Flammable Gas
PACKING GROUP: Not Applicable

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

SECTION 15: REGULATORY INFORMATION

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:

R-502 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. **Contains Chloropentafluoroethane**, a CFC substance which harms 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: # 2008719 (HCFC-22)
2009382 (CFC-115)

SECTION 16: OTHER INFORMATION

PREPARED BY: A-GasRemTec
DATE PREPARED: January 2014
CURRENT REVISION LEVEL: 00
CURRENT REVISION DATE: 1/31/2014

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