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R-22, Refrigrant Liquified Gas
CHF2Cl
Chlorodifluoromethane (HCFC-22)

Refrigerant Gas R22, Difluorochloromethane, Monochlorodifluoromethane, Halocarbon 22, Halon 22, Dymel® 22, Freon® 22

STOODY INDUSTRIAL AND WELDING SUPPLY, INC.
3316 National Ave., San Diego, Ca. 92113
Phone: 619-234-6750

WWW.STOODYIND.COM

PHONE NUMBERS
Product Information: 619-234-6750

24-hour Emergency Response
Professional Emergency Resource Services
800-633-8253

MILITARY EMERGENCY RESPONSE
800-851-8061

6830-00-527-2043 6830-00-782-3930

SUPPLIER INFORMATION:

Safety and handling equipment, gas cylinders and refills, personal protection equipment, fire extinguishers, cylinder services, respirators, etc. are available at Stoody Industrial and Welding Supply, Ind. Our main location is at 3316 National Avenue , (near the 32nd Street Naval Base) in San Diego California 92113. Call 1-619-234-6750 or visit our web site, stoodyind.com stoodyind.com for more information.

SAFETY DATA SHEET (SDS)

GHS and OSHA 29 CFR §1910.1200 (eCFR) compliant

R-22, Refrigrant Liquified Gas

1 IDENTIFICATION

1(a) Product identifier used on label: **Refrigerant R-22**

1(b) Other means of identification: Chlorodifluoromethane, Refrigerant Gas R22, Difluorochloromethane, Monochlorodifluoromethane, Halocarbon 22, Halon 22, HCFC-22, Dymel® 22, Freon® 22

1(c) Recommended use of the chemical and restrictions on use:

Refrigerant (medium & high temp.), refrigeration and air conditioning
Restriction on use; RESTRICTED FOR PROFESSIONAL USERS ONLY, known to cause depletion of ozone.

1(d) Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party

Responsible Party: STOODY INDUSTRIAL AND WELDING SUPPLY, INC
3316 National Avenue
San Diego, CA 92113
619-234-6750

1(e) Emergency phone number

Professional Emergency Resource Services: **800-633-8253**

Military Emergency Resource: **800-851-8061**

2 HAZARD(S) IDENTIFICATION

2(a) Classification of chemical in accordance with paragraph (d) of §1910.1200

Nonflammable

2(b) Signal word, hazard statement(s), symbol(s) and precautionary statement(s) in accordance with paragraph (f) of §1910.1200

Signal Word	Hazard Statement(s)	Symbol(s)	Precautionary Statements
Warning	(H281) **Contains refrigerated gas; may cause cryogenic burns or injury.** **Gases under Pressure; may explode if heated.**	 Refrigerated liquefied gas	(Prevention P282 +) **Wear cold insulating gloves/face shield/eye protection.** (Response P336 + P315) **Thaw frosted parts with lukewarm water. Do not rub affected area. Get immediate medical advice/attention.** (Storage P403) **Store in a well ventilated place.**

2(c) Describe any hazard not otherwise classified that have been identified during the classification process

Contains gas under pressure; may explode if heated. Large amount of potential energy resulting from compression of the gas makes the cylinder a potential rocket or fragmentation bomb.

2(d) Where an ingredient with unknown acute toxicity is used in a mixture at a concentration = 1% and the mixture is not classified based on testing of the mixture as a whole, a statement that X% of the mixture consist of ingredient(s) of unknown acute toxicity is required.

Chlorodifluoromethane, CAS No. 75-45-6, consists of 0% of unknown acute toxicity.

3 COMPOSITION / INFORMATION ON INGREDIENTS

3(a) Chemical name; **Chlorodifluoromethane (HCFC-22)**

3(b) Common name; **Refrigerant R-22**

3(c) CAS number and other unique identifiers;

CAS Number	Other unique identifiers
75-45-6	UN 1018

3(d) Impurities and stabilizing additives which are themselves classified and which contribute to the classification of the substance.

CAS number 75-45-6, Refrigerant R-22 contains no other classification influencing impurities or stabilizing additives.

4 FIRST-AID MEASURES

4(a) Description of necessary measures, subdivided according to the different routes of exposure, i.e., inhalation, skin and eye contact, and ingestion:

ROUTES OF EXPOSURE (UNDER NORMAL CONDITIONS) (yes or no)

INHALATION: Yes	**SKIN:** Yes	**EYE CONTACT:** Yes	**INGESTION:** No
Short Term Effects: Not classified as toxic. But, high vapor concentrations cause severe headache, dizziness and unconsciousness; can sensitize the heart to adrenaline and cause cardiac arrhythmias. **Long Term Effects:** None known.	**Short Term Effects:** No skin irritation. But, rapid evaporation of the liquid may cause frostbite. **Long Term Effects:** None known.	**Short Term Effects:** No eye irritation. But, rapid evaporation of the liquid may cause frostbite. **Long Term Effects (Frostbite):** Cornea damage.	**Short Term Effects:** Not classified as toxic by inhalation. **Long Term Effects:** None known

Continued on next page

4 FIRST-AID MEASURES (4(a) continued from page 1)

IF UNCONSCIOUS PLACE IN RECOVERY POSITION AND SEEK MEDICAL ADVICE. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

Inhalation: Immediately remove to fresh air. Keep person calm. If not breathing, give artificial respiration. If breathing is difficult, a qualified operator may give oxygen. If symptoms persist, call a physician. Do not give epinephrine*.

Skin contact: Take off all contaminated clothing, not stuck to skin, immediately. Flush area with lukewarm water. If frostbite has occurred , DO NOT remove clothes, all a physician.

Eye contact: Hold eyelids apart and flush eyes with cool water for15 minutes and obtain immediate medical attention.

Ingestion: Unlikely route of exposure.

* Because of possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine (adrenaline), should be used with special caution in situations of emergency life support.

5 FIRE-FIGHTING MEASURES

5(a) Suitable (and unsuitable) extinguishing media

All known extinguishants can be used. Use extinguishing media appropriate for surrounding fire. Combat fire from a sheltered position. Keep cylinder cool by spraying with water.

5(b) Specific hazards arising from the chemical (e.g., nature of any hazardous combustion products).

- Pressure in a container can build up due to heat and it may violently rupture if pressure relief devices should fail to function.
- See Other Information, Section 16 (Specific Hazards),
- Self-contained breathing apparatus (SCBA) with full face piece and protective clothing is required if cylinders rupture or contents are released under fire conditions.
- Contact with certain reactive metals may result in an explosive or exothermic reactions under specific conditions.

Damaged cylinders should be handled only specialists.

6 ACCIDENTAL RELEASE MEASURES

6(a) Personal precautions, protective equipment, emergency procedures.

Stop leak if possible without personal risk. Turn leaking cylinder with the leak up to prevent escape of gas in liquid state.

Ventilate enclosed area or move leaking container to a well-ventilated area.

Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas.

6(b) Method and materials for containment and cleaning up.

NEVER direct water jet on liquid. This chemical should be kept from entering the environment.

Wear chemical protection suit including self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.

7 HANDLING AND STORAGE

Do Not use in the vicinity of a fire or a hot surface, or during welding, (see Section 16) . Also, see 2.b

7(b) Conditions for safe storage, including any incompatibilities.

Conditions for safe storage	Incompatibilities
1. Store and use with adequate ventilation. 2. Cylinders should be stored upright with valve protection cap in place and firmly secured to prevent falling or being knocked over. 3. Protect cylinders from physical damage; do not drag, roll, slide or drop. 4. Full cylinders should be segregated from empty cylinders. 5. Do not allow storage area temperature to exceed 125°F (52°C). 6. Use a first-in, first-out inventory system to prevent full containers from being stored for long periods of time. 7. Use a suitable hand truck for cylinder movement. 8. Never attempt to lift a cylinder by its valve protection cap. 9. Keep cylinders and their valves free from oil and grease. 10. Never insert an object (e.g., wrench, screwdriver, pry bar, etc.) into valve cap openings. Doing so may damage valve, causing a leak to occur.	Alkali or powered alkaline earth metals such as sodium, potassium, calcium, barium, powered aluminum, magnesium and zinc

Specific requirements are listed in NFPA 50A. Cylinder storage locations should be well-protected, well-ventilated, dry, and separated from combustible and reducing materials. Cylinders should never knowingly be allowed to reach a temperature exceeding 125°F (52°C).

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

8(a) OSHA permissible exposure limit (PEL). American Conference of Governments Industrial Hygienists (ACGIH) Threshold Limits Value (TLV), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the safety data sheet, where available.

ACGIH TLV = 1000 ppm, 3540 mg/m^3 time-weighted average (TWA); National Institute of Occupational safety and Health (NIOSH) recommended exposure limit (REL) = 1000, ppm, 3500 mg/m^3 TWA, 1250 ppm, 4375 mg/m^3 short term exposure limit (STEL). OSHA does not have a PEL for chlorodifluoromethane.

8(b) Appropriate engineering controls.

Natural or mechanical air circulation is needed to maintain a safe working environment.

8(c) Individual protection measures, such as personal protective equipment.

Safety glasses/goggles, work gloves (gloves must be clean and free of oil or grease), and safety shoes are recommended when handling cylinders.

9 PHYSICAL and CHEMICAL PROPERTIES

a) Appearance (physical state, color, etc.)	Colorless, Liquefied Gas, Gas at ambient temperatures
b) Odor	Slight ethereal
c) Odor threshold	No data available
d) pH	Neutral
e) Melting point/freezing point	-256 °F (-160 °C) @1 atm
f) Initial boiling point	-41.44 °F (-40.8 °C) @1 atm
g) Flash point	No applicable – does not flash
h) Evaporation rate	>1 (Carbon tetrachloride, CCL4 =1)
i) Flammability (solid, gas)	Nonflammable (gas)
j) Upper/lower flammability or explosive limits	Nonflammable (gas)
k) Vapor pressure	151.4 psi (1,043.9 kPa) @ 77°F (25° C)
l) Vapor density	3.0 @ 77° F (25° C) and 101.3 kPa, Air = 1.0; 1.191 g/cm3 @ 77° F (25° C) as liquid
m) Relative density	1.19 @ 77°F (25° C),
n) Solubility(ies)	2.6 g/l @ 77°F (25° C), water solubility
o) Partition coefficient: n-octanol/water	No data available
p) Auto-ignition temperature	No data available
q) Decomposition temperature	1169.6 °F (632 °C)
r) Viscosity	No data available

10 STABILITY and REACTIVITY

10(a) Reactivity

Decomposes on heating. May react violently with combustible materials. See 10(c).

10(b) Chemical stability

Product is chemically stable under normal conditions.

10(c) Possibility of hazardous reactions

The product is not flammable in air under ambient conditions of temperature and pressure. When pressurized with air or oxygen, the mixture may become flammable. Certain mixtures of HCFCs or HFCs with chlorine may become flammable or reactive

10(d) Conditions to avoid (e.g., static discharge, shock, or vibration)

Open flames and high temperatures.

10(f) Incompatible materials

See 7(b) and 10(c).

10(g) Hazardous decomposition products

Hazardous thermal decomposition toxic and irritating products may include: Hydrochloric and Hydrofluoric acids and possibly Carbonyl Halides. Avoid contact with decomposition products.

11 TOXICOLOGICAL INFORMATION

Description of the various toxicological (health) effects and available data used to identify those effects, including:

11(a) Information on likely routes of exposure (inhalation, ingestion, skin and eye contact);

No known toxicological effects from this product.

11(b) Symptoms related to the physical, chemical and toxicological characteristics;

None known. Not classified as a human carcinogen.

Continued on next page

11 TOXICOLOGICAL INFORMATION (continued from page 3)

11(c) Delayed and immediate effects and also chronic effects from short- and long-term exposure;

See 4(a).

11(d) Numerical measures of toxicity (such as acute toxicity estimates)

No identifiable acute toxicity.

11(e) Whether the hazardous chemical is listed in the International Toxicology Program (NTP) Report on Carcinogenic (latest edition) or has been found to be a potential carcinogenic in the International Agency for Research on Cancer (IARC) Monographs (latest edition), or by OSHA.

Chemical is not classified as a human carcinogenic.

12 ECOLOGICAL INFORMATION

12(a) Ecotoxicity (aquatic and terrestrial, where available)

Acute toxicity to aquatic organisms is low, aquatic or terrestrial.

12(b) Persistence and degradability

R-22 is poorly degraded in water. It is not persistent in the aquatic environment or in soil. It can be considered as not persistent in the environment.

12(c) Bioaccumulative potential

Product has a low potential to bioaccumulate

12(d) Mobility in soil

Exposure to sediments and soil is unlikely.

12(e) Other adverse effects (such as hazardous to the ozone layer)

Chlorodifluoromethane is listed as a Class II ozone depleting chemicals (40 CFR Part 82). Chlorodifluoromethane is not listed as a marine pollutant by DOT (49 CFR Part 171.

13 DISPOSAL CONSIDERATIONS

13(a) Description of waste residue and information on their safe handling and method of disposal, including the disposal of any contaminated packaging.

Recover, reclaim or recycle Chlorodifluoromethane is subject to U.S. Environmental Protection Agency Clean Air Act Regulations Section 608 in 40 CFR Part 82 regarding refrigerant recycling.

Do not attempt to dispose of cylinder or its contents. Cylinder(s) and unused contents should be returned to supplier for disposal in accordance with appropriate Federal, State, local regulation.

14 TRANSPORTATION INFORMATION

14(a) UN number: UN1018

14(b) UN proper shipping name: Chlorodifluoromethane

14(c) Transportation hazard class(es): 2.2

14(d) Packing group, if applicable: Not applicable

14(e) Environmental hazards (e.g.,) Marine pollutant (yes/No): No

14(f) Transport in bulk (according to Annex II of MARPOL 73/78 and IBC Code): Does not apply

14(g) Special precautions which a user needs to be aware of, or needs to comply with, in connection with transport or conveyance either within or outside of their premises:

Cylinders should be properly separated from non-compatible gas cylinders and transported in a upright, secure position, in a well ventilated vehicle. The transportation of compressed gas cylinders in automobiles or in closed-body vehicles can present serious safety hazards and should be discouraged.

Environmental Concerns: Chlorodifluoromethane is an HFC greenhouse gas which may contribute to global warming.

15 REGULATORY INFORMATION

15(a) Safety, health and environmental regulations specific for the product in question.

User(s) of this product are solely responsible for regulatory compliance on a federal, state, and local level.

U.S. FEDERAL REGULATIONS:

EPA - ENVIRONMENTAL PROTECTION AGENCY

40 CFR PART 68, Risk Management for Chemical Accidental Release, does not list Chlorodifluoromethane as a regulated substance.

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15 REGULATORY INFORMATION (continued from page 4)

CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (40 CFR Parts 117 and 302):
Reportable Quantity (RQ): 5000 pounds

SARA: Superfund Amendment and Reauthorization Act

SECTION 302/304: Requires emergency planning on threshold planning quantities (TPQ) and release reporting based on reportable quantities (RQ) of EPA's extremely hazardous substances (40 CFR Part 355).
Extremely Hazardous Substances: None
Threshold Planning Quantity (TPQ): None

SECTIONS 311/312: Require submission of (material) safety data sheets (SDSs) and chemical inventory reporting with identification of EPA defined hazard classes (40 CFR Part 370). The hazard classes for this product are:

IMMEDIATE:	YES	PRESSURE:	Yes
DELAYED:	No	REACTIVITY:	No
		FIRE:	No

TSCA: Toxic Substance Control Act: On the inventory, or in compliance with the inventory.

OSHA - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION:
29 CFR 1910.119, Appendix A , does not list R-22 as a highly hazardous chemical.

Chlorodifluoromethane is listed as a Class II ozone depleting chemical (40 CFR Part 82).

Shipment of compressed gas cylinders which have not been filled with the owner's consent is a violation of Federal law (49 CFR Part 173.301 (b)).

FDA – FOOD AND DRUG ADMINISTRATION: None

CALIFORNIA PROPOSITION 65 (Safe Drinking Water and Toxic Enforcement Act of 1986): Chlorodifluoromethane, not listed.

CANADIAN REGULATIONS:

WHIMS Classification; A - Compressed Gas

Note: "The Canadian supplier / Canadian importer has the legal responsibility to assess their products against the criteria set out in the Controlled Products Regulations."

16 OTHER INFORMATION, Including date of preparation or last revision

16(a) OTHER INFORMATION:

Never rely on the color of the cylinder for identification. (Colors may vary with suppliers.)

Additional Precautions in Using Chlorodifluoromethane:

1. Use piping and equipment adequately designed to withstand pressures to be encountered.
2. Use a check valve or other protective apparatus in any line or piping from the cylinder to prevent reverse flow.
3. Install valve protective cap firmly in place by hand when the cylinder is not in use.
4. A cylinder should never be emptied to a pressure lower than 172 kPa (25 psi/in2) (the residual contents may become contaminated if the valve is left open.
5. Close cylinder valve after each use even when empty.
6. Under no circumstances should any attempt be made to repair a cylinder or valve.

SPECIAL PRECAUTIONS:

Shipment of compressed gas cylinders which have not been filled with the owner's consent is a violation of Federal law (49 CFR Part 173.301 (b)).

MIXTURES: When two or more gases or liquefied gases are mixed, their hazardous properties may combine to create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an Industrial Hygienist or other trained person when you make your safety evaluation of the end product. Remember, gases and liquids have properties which can cause serious injury or death.

Special Hazards: Mixtures of Chlorodifluoromethane with high concentrations of air at elevated pressure and/or temperature can become combustible in the presence of an ignition source. Chlorodifluoromethane can also become combustible in an oxygen enriched environment. Experimental testing of Chlorodifluoromethane in the presence of concentrations of chlorine, has been reported to indicate combustibility.

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16 OTHER INFORMATION, Including date of preparation or last revision (continued from page 5)

NFPA RATINGS:

HEALTH-Blue: = 1 FLAMMABILITY-Red: = 0 INSTABILITY-Yellow: = 0 SPECIAL HAZARDS*-White: =

LEGEND: 0-4 – 0-least hazardous; 4-most hazardous

**OX (Oxidizers), W (Water reactives), SA (Simple Asphyxiants), (blank if no special hazard)*

STANDARD VALVE CONNECTIONS FOR U.S. (AND CANADA):

THREADED: CGA 660

PIN-INDEXED YOKE: Not applicable

ULTRA HIGH INTEGRITY: Not applicable le

Use the proper CGA connections, DO NOT USE ADAPTERS

Further information pertaining to Chlorodifluoromethane and its uses can be found in pamphlets published by: Compressed Gas Association Inc. (CGA), 1725 Jefferson Davis Highway, Suite 1004, Arlington, VA 22202-4102. Telephone: (703) 412-0900.

SUPPLIER INFORMATION:

Safety and handling equipment, gas cylinders and refills, personal protection equipment, fire extinguishers, cylinder services, respirators, etc. are available at Stoody Industrial and Welding Supply, Ind. Our main location is at 3316 National Avenue , (near the 32nd Street Naval Base) in San Diego California 92113. Call 1-619-234-6750 or visit our web site, stoodyind.com stoodyind.com for more information.

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Information Sources: Data is compiled from a variety of sources, including publicly available documents, internal data and other sources.