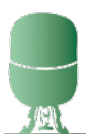


SECTION I – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name in English:	Refrigerants Gas R22
Chemical Name:	R22, HFA-22, HCFC-22
Synonyms:	Chlorodifluoromethane; Difuoromochloromethane
Formula:	CHClF ₂
Supplier:	Global Refrigerants (S) Pte Ltd
Address:	No.9 TUAS LINK 1, SINGAPORE 638587
Representative in Georgia:	Nemera Ltd
Status:	Exclusive Distributor in Caucasus Region, Trademark Owner
Address:	0159, 115A Tsereteli Ave., Tbilisi, Georgia
Phone:	+995322350385, +995577452960
E-mail:	anri@nemera.ge
Web:	www.nemera.ge



FOR LIQUID CHARGING



FOR VAPOUR CHARGING



SECTION II - COMPOSITION/ INFORMATION ON INGREDIENTS

INGREDIENT NAME	CAS NUMBER	CONCENTRATION %
Chlorodifluoromethane	75-45-6	>=99.95%

SECTION III – HAZARDS IDENTIFICATION

Hazardous Classification: Class 2.2 Compressed Gas and Nonflammable Gas

Primary Routes of Entry: Inhalation

Adverse Human Effects:

Skin: Skin contact may cause frostbite from exposure to the liquid.

Eyes: Irritant. Liquid contact will irritate and may cause conjunctivitis.

Inhalation: HCFC-22 is low in acute toxicity in animals. When oxygen levels in air are reduced to 12-14% by displacement, symptoms of asphyxiation, loss of coordination. Increased pulse rate and deeper respiration will occur.

Ingestion: Ingestion is unlikely because of the low boiling point of the material. Should it occur, discomfort in the gastrointestinal tract from rapid evaporation of the material and consequent evolution of gas would result. Some effects of inhalation and skin exposure would be expected.

Environmental Hazards: Hazardous product for the environment. No action shall be taken involving any personal risk or without suitable training. If fumes are still suspected to be present, the rescuer should wear an appropriate mask or a self-contained breathing apparatus, It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

SECTION IV – FIRST AID MEASURES

Eyes: Immediately flush eyes with large amounts of water for at least 15 minutes (in case of frostbite, water should not be hot) lifting eyelids occasionally to facilitate irrigation. Get medical attention if symptoms persist.

Skin: Promptly flush skin with water until all chemical is removed. If there is evidence of frostbite, bathe (do not rub) with lukewarm (not hot) water. If water is not available, cover with a clean, soft cloth or similar covering. Get medical attention if symptoms persist.

Inhalation: Immediately remove patient to fresh air. If breathing has stopped, give artificial respiration. Use oxygen as required, provided a qualified operator is available. Get medical attention immediately. DO NOT give epinephrine (adrenaline).

Ingestion: Ingestion is unlikely because of the physical properties and is not expected to be hazardous. DO NOT induce vomiting unless instructed to do so by a physician.

Advice to Physician: A patient adversely affected by exposure to this product should not be given adrenalin (epinephrine) or similar heart stimulant since these would increase the risk of cardiac arrhythmias.

SECTION V – FIRE FIGHTING MEASURES

Fire and Explosion Hazards: HCFC 22 is not flammable under ambient conditions of temperature and pressure. Certain mixtures of HCFC 22 and air when under pressure may be flammable. Mixtures of HCFC and Chlorine may be flammable or reactive under certain conditions. Thermal decomposition will evolve very toxic and corrosive vapours.

Hazardous Products of Combustion: Decomposition products include hydrochloric acid, and carbonyl halides, such as phosgene.

Fire Fighting Instructions: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Cool containers / tanks with water spray. In the event of fire, wear self-contained breathing apparatus.

SECTION VI – ACCIDENTAL RELEASE MEASURES

Personal Precautions: Immediately contact emergency personnel. Use suitable protective equipment. Shut off gas supply if this can be done safely. Isolate area until gas has dispersed.

Environmental Precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods for Cleaning-up: Let the product evaporate.

In Case of Spill or Other Release: (Always wear recommended personal protective equipment.) Evacuate unprotected personnel. Protected personnel should remove ignition sources and shut off leak, if without risk, and provide ventilation. Unprotected personnel should not return until air has been tested and determined safe, including low lying areas.

SECTION VII – HANDLING AND STORAGE

Handling: Always wear recommended personal protective equipment. Avoid breathing vapours and liquid contact with eyes, skin or clothing. Do not puncture or drop cylinders, expose them to open flame or excessive heat. Use authorized cylinders. Follow standard safety precautions for handling and use of compressed gas cylinders. R22 should not mixed with air above atmospheric pressure for leak testing or any other purpose.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52°C (125°F).

SECTION VIII – EXPOSURE CONTROLS / PERSONAL PROTECTION

Authorized Limit Values: Chlorodifluoromethane

TLV (ACGIH-USA) 2001: TWA = 1.000 ppm TWA = 3.540 mg/m³

Engineering Controls: Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits.

Respiratory Protection: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hand Protection: Chemical-resistant, impervious gloves or gauntlets complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Eye Protection: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Skin Protection: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling.

Personal Protection in case of a large spill: A self-contained breathing apparatus should be used to avoid inhalation of the product.

SECTION IX – PHYSICAL & CHEMICAL PROPERTIES

Appearance: Gas at ambient temperatures

Colour: Colourless

Odour: Slight, ether-like

Molecular Weight: 86.45

Boiling Point (1,013 hPa): -40,8°C

pH: Neutral

Vapour Pressure: 9.08 bar (20°C)

Vapour Density (air=1): 3.43 (25°C)

Partition Coefficient (noctanol/water): log Po/w: 1.08

Solubility: 0.3 wt% (25°C)

Specific Use (s): Refrigerant, foaming agent, and new type pesticide.

SECTION X – Stability AND REACTIVITY

Stability: Stable under normal conditions of handling and use.

Incompatibility With other Materials: Under specific conditions: e.g. very high temperatures and/or appropriate pressures. Freshly abraded aluminium surfaces (may cause strong exothermic reaction). Chemically active metals for example sodium, potassium, calcium, magnesium, zinc, alkaline metals and their alloys.

Hazardous Decomposition Products: Decomposes at fire temperatures to halogenated compounds, hydrogen chloride, hydrogen fluoride.

Hazardous Polymerization: Will not occur.

SECTION XI - TOXICOLOGICAL INFORMATION

Acute Toxicity: LC50:4hr. rat- $\geq 300,000$, ppm 21.9%

Cardiac Sensitization threshold (dog) - 50,000 ppm

Irritation: Rabbit, slightly irritant (skin) / Rabbit, slightly irritant (eyes)

Sensitization: Guinea Pig, Non sensitizing (skin)

Chronic toxicity: Inhalation, after a single exposure, dog, ≥ 5 % v/v air, cardiac sensitization following adrenergic stimulation; Inhalation, after prolonged exposure, rat, Target organ: eyes, 5% v/v air, teratogenic effect, Remark: High dose

Other Data: Lifetime exposure of male rats was associated with a small increase in salivary gland fibrosarcomas.

SECTION XII – ECOLOGICAL INFORMATION

Acute ecotoxicity: Result: no data

Abiotic degradation:

Degradation's products: carbon dioxide / hydrochloric acid / fluorhydric acid

Air, photolysis, ODP = 0.055 (CFC 11: ODP = 1).

Result: Limited effect on stratospheric ozone.

Reference value for Air, greenhouse effect, GWP =0.36 (CFC 11: GWP = 1).

Potential for bioaccumulation

Bioconcentration: $\log P_o/w = 1.08$ Result: non-bioaccumulable

Comments: Product is persistent air (atmospheric lifetime: 14 years).

SECTION XIII – DISPOSAL CONSIDERATIONS

Nature of the Waste: Not a RCRA hazardous waste.

Waste Treatment: Waste from residues / unused products: Can be used after re-conditioning. Product removed from the cylinder must be disposed of in accordance with appropriate National and local regulation. Return cylinders with residual product to the supplier.

Disposal Considerations: Product removed from the cylinder must be disposed of in accordance with appropriate Federal, State, local regulation. Return cylinders with residual product to supplier. Do not dispose of locally.

SECTION XIV – TRANSPORT INFORMATION

Classification code: 22039

UN-NO: 1018

Marking: 5

Primary label: Non-combustable gas

Packing group: III

Packing Method: Steel Cylinders

SECTION XV – REGULATORY INFORMATION

*Common dangerous chemical classification and labeling (GB13690-92).

*Regulations on the Control over Safety of Dangerous Chemicals (State Council Decree 344 [2002])

*Regulations on the Safety Use of Chemicals in workplaces (Department of Labour, Reg 423 [1996], are enacted to control the safe use, production, storage, transport, operation, trade and disposal of dangerous chemicals.

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