



MATERIAL SAFETY DATA SHEET

In compliance with EC Directive 2001/58/EC

1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY

Product Name: Refrigerant R 22

Product Code #: 330222

Date last modified: 19 July 2006

Company:

Marichem Marigases Worldwide Services
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2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Nature:

Ingredients	CAS Number	Symbol	Classification
Chlorodifluoromethane	75 – 45 – 6	-	R59

3. HAZARDS IDENTIFICATION

High exposures may cause an abnormal heart rhythm and prove suddenly fatal. Very high atmospheric concentrations may cause anesthetic effects and asphyxiation. Liquid splashes or spray may cause freeze burns to skin and eyes. Dangerous for ozone layer.

4. FIRST AID MEASURES

Inhalation

Remove patient from exposure, keep warm and at rest. Administer oxygen if necessary. Apply artificial respiration if breathing has ceased or shows signs of failing. In the event of cardiac arrest apply external cardiac massage. Obtain immediate medical attention.

Skin Contact

Thaw affected areas with water. Remove contaminated clothing. Caution: clothing may adhere to the skin in the case of freeze burns. After contact with skin, wash immediately with plenty of warm water. If irritation or blistering occurs obtain medical attention.

Eye Contact

Immediately irrigate with eyewash solution or clean water, holding the eyelids apart, for at least 10 minutes. Obtain immediate medical attention.

Ingestion

Unlikely route of exposure. Do not induce vomiting. Provided the patient is conscious, wash out mouth with water and give 200-300 ml (half a pint) of water to drink. Obtain immediate medical attention.

Further Medical Treatment

Symptomatic treatment and supportive therapy as indicated. Adrenaline and similar sympathomimetic drugs should be avoided following exposure as cardiac arrhythmia may result with possible subsequent cardiac arrest.

5. FIRE-FIGHTING MEASURES

HCFC 22 is not flammable in air under ambient conditions of temperature and pressure. Certain mixtures of HCFC 22 and air when under pressure may be flammable. Mixtures of HCFC 22 and air under pressure should be avoided. Certain mixtures of HCFC's and chlorine may be flammable or reactive under certain conditions. Thermal decomposition will evolve very toxic and corrosive vapours. (Hydrogen chloride, hydrogen fluoride). Containers may burst if overheated.

Extinguishing Media

As appropriate for surrounding fire water spray should be used to cool containers. Fire Fighting Protective Equipment: A self-contained breathing apparatus and full protective clothing must be worn in fire conditions. See Also Section 8.

6. ACCIDENTAL RELEASE MEASURES

Ensure suitable personal protection (including respiratory protection) during removal of spillages. See Also Section 8. Provided it is safe to do so, isolate the source of the leak. Allow small spillages to evaporate provided there is adequate ventilation.

Large spillages: Ventilate area. Contain spillages with sand, earth or any suitable adsorbent material. Prevent liquid from entering drains, sewers, basements and work pits since the vapour may create a suffocating atmosphere.

7. HANDLING AND STORAGE

HANDLING

Avoid inhalation of high concentrations of vapours. Atmospheric levels should be controlled in compliance with the occupational exposure limit. Atmospheric concentrations well below the occupational exposure limit can be achieved by good occupational hygiene practice. The vapour is heavier than air, high concentrations may be produced at low levels where general ventilation is poor, in such cases provide adequate ventilation or wear suitable respiratory protective equipment with positive air supply. Avoid contact with naked flames and hot surfaces as corrosive and very toxic decomposition products can be formed. Avoid contact between the liquid and skin and eyes.

STORAGE

Keep in a well ventilated place. Keep in a cool place away from fire risk, direct sunlight and all sources of heat such as electric and steam radiators. Avoid storing near to the intake of air conditioning units, boiler units and open drains. Cylinders and Drums: Keep container dry. Storage temperature (Deg C): < 45

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Wear suitable protective clothing, gloves and eye/face protection. Wear thermal insulating gloves when handling liquefied gases. In cases of insufficient ventilation, where exposure to high concentrations of vapour is possible, suitable respiratory protective equipment with positive air supply should be used.

HAZARDOUS INGREDIENTS	LTEL 8hr TWA ppm	LTEL 8hr TWA mg/m ³	STEL ppm	STEL mg/m ³
Chlorodifluoromethane	1000	3590	-	-

9. PHYSICAL AND CHEMICAL PROPERTIES

Form:	Liquified gas
Color:	Colorless
Odor:	Slight, Characteristic odor
Boiling Point Range:	-40,8
Melting Point Range:	-160°C
Vapour Pressure:	6805 at 20 °C
Solubility in Water:	slightly soluble
Solubility (Other):	soluble in chlorinated solvents, hydrocarbons
Specific Gravity:	1,21
Vapour Density:	3,03

10. STABILITY AND REACTIVITY

Hazardous Reactions

Certain mixtures of HCFC's and chlorine may be flammable or reactive under certain conditions.

Incompatible materials

Finely divided metals, magnesium and alloys containing more than 2% magnesium. Can react violently if in contact with alkali metals and alkaline earth metals -sodium, potassium, and barium.

Hazardous Decomposition Product(s)

Hydrogen chloride, hydrogen fluoride by thermal decomposition and hydrolysis.

11. TOXICOLOGICAL INFORMATION**Inhalation**

High exposures may cause an abnormal heart rhythm and prove suddenly fatal. Very high atmospheric concentrations may cause anesthetic effects and asphyxiation.

Skin Contact

Liquid splashes or spray may cause freeze burns. Unlikely to be hazardous by skin absorption.

Eye Contact

Liquid splashes or spray may cause freeze burns.

Ingestion

Highly unlikely - but should this occur freeze burns will result.

Long Term Exposure

A lifetime inhalation study in animals has shown that high exposures of HCFC 22 (50,000ppm) produce a small excess of salivary gland tumours in male rats. Female rats and both sexes of mice showed no such response. The no effect level was 10,000ppm. This information does not suggest that HCFC 22 represents a carcinogenic hazard to humans under normal conditions of handling and use. Studies in animals have shown that high exposures of HCFC 22 produce a low incidence of teratogenic effects in rats, but not in rabbits at the same exposure level (49,000ppm). The low incidence of this effect in rats, the high exposure level associated with its occurrence and the absence of an effect in rabbits, leads to the conclusion that these results are not of significance when considering the health of humans occupationally exposed to levels of HCFC 22 at or below the occupational exposure limit.

12. ECOLOGICAL INFORMATION**Environmental Fate and Distribution**

High tonnage material produced in wholly contained systems. High tonnage material used in open systems. Vapour.

Persistence and Degradation

Decomposed comparatively rapidly in the lower atmosphere (troposphere). Atmospheric lifetime is 11.8 year(s). Products of decomposition will be highly dispersed and hence will have a very low concentration. Does not influence photochemical smog (i.e. is not a VOC under the terms of the UNECE agreement). Ozone depleting potential (ODP) is 0.055 measured against a standard ODP of 1 for CFC11 (as defined by UNEP). Has a Global Warming Potential (GWP) of 1500 (relative to a value of 1 for carbon dioxide at 100 years). Substance is controlled under the Montreal Protocol (1992 revision).

Effect on Effluent Treatment

Discharges of the product will enter the atmosphere and will not result in long term aqueous contamination.

