



## MATERIAL SAFETY DATA SHEET

### 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

**PRODUCT NAME:** Refrigerant R-22  
**OTHER/GENERIC NAMES:** HCFC-R22; Genetron® 22  
**PRODUCT USE:** Refrigerant  
**EXIM TRADING LLC** 12601 NW 115<sup>TH</sup> Ave, Unit 111A, Medley, FL, 33178  
☎ (305) 884 7882 📠 (305) 884 7883

#### FOR EMERGENCY

Medical: 1-800-498-5701  
Transportation: Chemtrec 1-800-424-9300  
OUTSIDE UNITED STATES, CALL COLLECT 1-352-323-3500

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

Formula:  $\text{CHClF}_2$

<u>INGREDIENT NAME</u>	<u>CAS NUMBER</u>	<u>WEIGHT %</u>
Chlorodifluoromethane	75-45-6	100

### 3. HAZARDS IDENTIFICATION

**EMERGENCY OVERVIEW:** Warning! Container under pressure. This product is not flammable at ambient temperatures and atmospheric pressure. Gas reduces oxygen available for breathing. Causes asphyxiation in high concentrations. The victim will not realize that he/she is suffocating. Inhalation may cause central nervous system effects. May cause cardiac arrhythmia. May cause drowsiness and dizziness. Do not breathe vapors. Irritating to eyes and skin. Avoid contact with skin, eyes and clothing. At higher temperatures, (>250°C), decomposition products may include hydrochloric acid (HCl), hydrofluoric acid (HF) and carbonyl halides. The ACGIH Threshold Limit Values (2007) for Hydrogen Fluoride are TLV-TWA 0.5 ppm and Ceiling Exposure Limit 2 ppm.



**FORM:** Liquefied gas  
**COLOR:** Colorless  
**ODOR:** Slight

**POTENTIAL HEALTH HAZARDS**

**SKIN:** Irritation would result from a defatting action on tissue. Liquid contact could cause frostbite.

**EYES:** Liquid contact can cause severe irritation and frostbite. Mist may irritate.

**INHALATION:** Gas reduces oxygen available for breathing. 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. The victim will not realize that he/she is suffocating. At high levels, cardiac arrhythmia may occur. Vapors may cause drowsiness and dizziness.

**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.

**DELAYED EFFECTS:** None known

**Carcinogenicity**

No components of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP, IARC, or OSHA.

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**4. FIRST AID MEASURES**

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**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.

**EYES:**

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

**INHALATION:**

Immediately remove to fresh air. If breathing has stopped, give artificial respiration. Use oxygen as required, provided a qualified operator is available. Get medical attention. Do not give drugs from adrenaline-ephedrine group.

**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. Call a physician 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. Treat frostbitten areas as needed.

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## 5. FIRE FIGHTING MEASURES

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### **FLAMMABLE PROPERTIES**

**FLASH POINT:** Gas, not applicable per DOT regulations  
**FLASH POINT METHOD:** Not applicable  
**UPPER FLAME LIMIT** (volume % in air): None\*  
**LOWER FLAME LIMIT** (volume % in air): None\*  
\*Based on ASHRAE Standard 34 with match ignition  
**FLAME PROPAGATION RATE** (solids): Not applicable  
**OSHA FLAMMABILITY CLASS:** Not applicable

### **EXTINGUISHING MEDIA:**

The product is not flammable. ASHRAE 34. Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Use any standard agent – choose the one most appropriate for type of surrounding fire.

### **SPECIFIC HAZARDS DURING FIRE FIGHTING**

Contents under pressure. R-22 is not flammable at ambient temperatures and atmospheric pressure. However, this material will become combustible when mixed with air under pressure and exposed to strong ignition sources.

Container may rupture on heating. Cool closed containers exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water courses. Vapors are heavier than air and can cause suffocation by reducing oxygen available for breathing.

In case of fire hazardous decomposition products may be produced such as:

Gaseous hydrogen chloride (HCl)	Hydrogen fluoride
Carbon monoxide (CO)	Carbon dioxide (CO <sub>2</sub> )
Carbonyl halides	

### **SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS:**

In the event of fire and/or explosion do not breathe fumes. 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.

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## 6. ACCIDENTAL RELEASE MEASURES

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**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. Avoid skin contact with leaking liquid (danger of frostbite). Ventilate the area. After release, disperses into the air. Vapors are heavier than air



and can cause suffocation by reducing oxygen available for breathing. Avoid accumulation of vapors in low areas. Unprotected personnel should not return until air has been tested and determined safe. Ensure that the oxygen content is  $\geq 19.5\%$ .

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

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## 7. HANDLING AND STORAGE

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### **NORMAL HANDLING:**

(Always wear recommended personal protective equipment)

Avoid breathing vapors and liquid contact with eyes, skin or clothing. Do not puncture or drop cylinders, expose them to open flame or excessive heat. Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50°C. Use authorized cylinders only. Follow standard safety precautions for handling and use of compressed gas cylinders.

R-22 should not be mixed with air above atmospheric pressure for leak testing or any other purpose. Can form a combustible mixture with air at pressures above atmospheric pressure

### **STORAGE RECOMMENDATIONS:**

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.

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## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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### **PROTECTIVE MEASURES:**

Do not breathe vapors. Avoid contact with skin, eyes and clothing. Ensure that eyewash stations and safety showers are close to the workstation location.

### **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 PROTECTION:**

Skin contact with refrigerant may cause frostbite. General work clothing and gloves (leather) should provide adequate protection. If prolonged contact with the liquid or gas is anticipated, insulated gloves constructed of PVA, neoprene or butyl rubber should be used. Any contaminated clothing should be promptly removed and washed before reuse.

#### **EYE PROTECTION:**

For normal conditions, wear safety glasses. Where there is reasonable probability of liquid contact, wear chemical safety goggles.

**RESPIRATORY PROTECTION:**

In case of insufficient ventilation wear suitable respiratory equipment. Wear a positive-pressure supplied-air respirator. Vapors are heavier than air and can cause suffocation by reducing oxygen available for breathing. For rescue and maintenance work in storage tanks use self-contained, NIOSH -approved breathing apparatus or supplied air respirator.

**HYGIENE MEASURES**

Handle in accordance with good industrial hygiene and safety practice. Ensure adequate ventilation, especially in confined areas. Avoid contact with skin, eyes and clothing. Remove and wash contaminated clothing before re-use. Keep working clothes separately.

**EXPOSURE GUIDELINES**

<b><u>INGREDIENT NAME</u></b>	<b><u>ACGIH TWA</u></b>	<b><u>NIOSH STEL</u></b>	<b><u>NIOHS REL</u></b>	<b><u>OSHA Z1A TWA</u></b>
Chlorodifluoromethane	1,000 ppm	1,250 ppm 4,375 mg/m <sup>3</sup>	1,000 ppm 3,500 mg/m <sup>3</sup>	1,000 ppm 3,500 mg/m <sup>3</sup>

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**9. PHYSICAL AND CHEMICAL PROPERTIES**

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<b>FORM</b>	: Liquefied gas
<b>APPEARANCE</b>	: Clear, colorless vapor
<b>PHYSICAL STATE</b>	: Gas at ambient temperatures
<b>MOLECULAR WEIGHT</b>	: 86.46 g/mol
<b>CHEMICAL FORMULA</b>	: CHClF <sub>2</sub>
<b>ODOR</b>	: Slight
<b>Ph</b>	: Neutral
<b>MELTING POINT</b>	: -160°C (-256°F)
<b>BOILING POINT</b>	: -40.8°C (-41.4°F)
<b>VAPOR PRESSURE</b>	: 9,384 hPa, at 21.1°C (70.0°F)
<b>VAPOR PRESSURE</b>	: 21,470 hPa at 54.4°C (129.9°F)
<b>VAPOR DENSITY (air = 1.0)</b>	: 3
<b>DENSITY</b>	: 1.21 g/cm <sup>3</sup> at 21.1°C (70.0°F)
<b>WATER SOLUBILITY</b>	: 3.0 g/l
<b>PARTITION COEFFICIENT n-octanol/water</b>	: log Pow: 1.08 - 1.13

The product is more soluble in octanol

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**10. STABILITY AND REACTIVITY**

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**CONDITIONS TO AVOID:**

Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50°C. Decomposes under high temperature. Some risk may be expected of corrosive and toxic decomposition products. Can form a combustible mixture with air at pressures above atmospheric pressure. Do not mix with oxygen or air above atmospheric pressure.

**MATERIALS TO AVOID:**

- Finely divided aluminum
- Powdered metals
- Zinc
- Potassium
- Aluminum
- Calcium
- Magnesium

**HAZARDOUS DECOMPOSITION PRODUCTS:**

In case of fire hazardous decomposition products may be produced such as:

- Gaseous hydrogen chloride (HCl)
- Carbonyl halides
- Carbon dioxide (CO<sub>2</sub>)
- Gaseous hydrogen fluoride (HF)
- Carbon monoxide (CO)

**THERMAL DECOMPOSITION:** >250°C

**HAZARDOUS POLYMERIZATION:**

Will not occur. Stable under normal conditions

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**11. TOXICOLOGICAL INFORMATION**

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**IMMEDIATE (ACUTE) EFFECTS:**

LC<sub>50</sub>: 4 hr. (rat) - > 300,000 ppm

**REPEATED DOSE TOXICITY:**

Species: Rat  
Application Route: Inhalation  
Exposure time: Lifetime Exposure  
NOEL: 10,000 ppm  
Note: Lifetime exposure of male rats was associated with a small increase in salivary gland fibrosarcomas.

**OTHER DATA:**

Acute toxicity Chlorodifluoromethane (HCFC-22): Cardiac sensitization threshold (dog): 50,000 ppm. Rapid evaporation of the liquid may cause frostbite. Vapors are heavier than air and can cause suffocation by reducing oxygen available for breathing. May cause cardiac arrhythmia.

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**12. ECOLOGICAL INFORMATION**

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**ECOTOXICITY EFFECTS**

Toxicity to fish: Static test



LC<sub>50</sub>: 777 mg/l  
Exposure time: 96 h  
Species: Danio rerio (zebra fish)

Toxicity to daphnia and other aquatic invertebrates:

Static test  
EC<sub>50</sub>: 433 mg/l  
Exposure time: 48 h  
Species: Daphnia magna (Water flea)

**FURTHER INFORMATION ON ECOLOGY**

Additional ecological information: Accumulation in aquatic organisms is unlikely.

This product contains greenhouse gases which may contribute to global warming. Do NOT vent to the atmosphere. To comply with provisions of the U.S. Clean Air Act, any residual must be recovered.

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

Warning: Contains Chlorodifluoromethane (HCFC-22), a substance which harms public health and environment by destroying ozone in the upper atmosphere. Refer to sections 610 and 612 for list of acceptable and unacceptable uses for this product.

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**13. DISPOSAL CONSIDERATIONS**

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**IS THE UNUSED PRODUCT A HAZARDOUS WASTE IF DISCARDED?**

This product is subject to U.S. Environmental Protection Agency Clean Air Act Regulations Section 608 in 40 CFR Part 82 regarding refrigerant recycling.

**OTHER DISPOSAL CONSIDERATIONS:**

Disposal must comply with federal, state, and local disposal or discharge laws. R-22 is subject to U.S. Environmental Protection Agency Clean Air Act Regulations Section 608 in 40 CFR Part 82 regarding refrigerant recycling.

The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

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**14. TRANSPORT INFORMATION**

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**DOT** Proper shipping name : CHLORODIFLUOROMETHANE



	UN/ID No.	: UN 1018
	Class	: 2.2
	Packing group Hazard	: 2.2
	Labels	
<b>IATA</b>	UN/ID No.	: UN 1018
	Description of the goods	: CHLORODIFLUOROMETHANE
	Class	: 2.2
	Hazard Labels	: 2.2
	Packing instruction (cargo aircraft)	: 200
	Packing instruction (passenger aircraft)	: 200
<b>IMDG</b>	UN/ID No.	: UN 1018
	Description of the goods	: CHLORODIFLUOROMETHANE
	Class	: 2.2
	Hazard Labels	: 2.2
	EmS Number	: F-C
	Marine pollutant	: No

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## 15. REGULATORY INFORMATION

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### INVENTORIES

1907/2006 (EU)	:	This mixture contains only ingredients which have been subject to a pre-registration according to Regulation (EC) No. 1907/2006 (REACH).
US. Toxic Substances Control Act	:	On TSCA Inventory
<b>Australia.</b> Industrial Chemical (Notification and Assessment) Act	:	On the inventory, or in compliance with the inventory
<b>Canada.</b> Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL). (Can. Gaz. Part II, Vol. 133)	:	All components of this product are on the Canadian DSL list.
<b>Japan.</b> Kashin-Hou Law List	:	On the inventory, or in compliance with the inventory
<b>Korea.</b> Toxic Chemical Control Law (TCCL) List	:	On the inventory, or in compliance with the inventory
<b>Philippines.</b> The Toxic	:	On the inventory, or in compliance with the inventory





Substances and Hazardous and Nuclear Waste Control Act

**China.** Inventory of Existing : On the inventory, or in compliance with the inventory Chemical Substances

**New Zealand - NZIOC** : On the inventory, or in compliance with the inventory

**NATIONAL REGULATORY INFORMATION**

SARA 313 Components : Chlorodifluoromethane 75-45-6

SARA 311/312 Hazards : Acute Health Hazard  
Sudden Release of Pressure Hazard

California Prop. 65 : This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

Massachusetts RTK : Chlorodifluoromethane 75-45-6

New Jersey RTK : Chlorodifluoromethane 75-45-6

Pennsylvania RTK : Chlorodifluoromethane 75-45-6

WHMIS Classification : A  
This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

Global warming potential : 1,500

Ozone depletion potential (ODP) : 0.06

**16. OTHER INFORMATION**

	<b>Health Hazard</b>	<b>Flammability</b>	<b>Physical Hazard</b>	<b>Instability</b>
<b>HMIS Classification</b>	1	1	0	
<b>NFPA Classification</b>	1	1		0

**Regulatory Standards:**

1. OSHA regulations for compressed gases: 29 CFR 1910.101



2. DOT classification per 49 CFR 172.101

Toxicity information per PAFT Testing

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