

安全資料表

危害物料資料

1. 產品與用途													
1.1 物料名稱	R22												
1.2 用途	低溫溶	低溫溶劑(雪種)											
2. 危害成份													
2.1 危害分類及標籤	HARMFUL 有書		で TOXIC 有満 の の の の の の の の の の の の の		CORROSIVE	RAMMARE		IRRITANT 利豪性		EXPLOSIV ####	EXPLOSIVE ##9th		ZING
	有害	2	有毒	ĥ	窝蝕性	ŧ	易燃	刺	激性	爆炸	性	助	燃
	()	()		()		()	()	()	()
2.2 酸鹼值(pH)	:中性				2.3	曝露	圂限制(OE	L) :	無資料			
2.4 致癌物質	無資料				2.5	其他	也危害		:	無資料			
2.5 潛在危害	皮膚接線	觸:弓	致凍(傷									
	吸入:	脈博加	速・漢	<u>架</u> 呼9	吸、失	去協調	調						
	眼睛接	觸:刺	激眼睛	情造	 成凍傷	,引到	致視力模	え おおうし こうしん こうしん こうしん しんしん しんしん しんしん しんしん しん	下清				
3. 火警和爆炸資料													
3.1 燃燒物成份比例	無資料	-	3.2 沸點(℃) [:] -		-40.8	3	3.3 溶		點(℃)	°C):-160			
3.4 閃點(°F)	不適用]	3.5 比重 :3		3.0		3.6 氣雪		壓力	136.1psia@70°F 311.4psia@130°F			
3.7 爆炸極限(濃度)	無資料	無資料				於水	3	3.9 氣味		:無資料			
3.10 滅火設備	因應現場引致火警物料選用合適之滅火筒												
4. 急救處理													
4.1 眼睛接觸	用大量流動清水沖洗眼睛,如有凍傷徵狀以微溫水浸洗,並以清潔紗 布覆蓋眼睛,儘快尋求醫療護理。												
4.2 皮膚接觸	: 使用清 被沾污	使用清水或肥皂水沖洗接觸身體部位至少15分鐘,再次使用前脫下 被沾污的衣服及鞋,如感持續紅腫及刺痛,尋求醫療護理。											
4.3 吸入	迅速離開現場到新鮮空氣處。保持氣道暢通。如吸入者停止呼吸,由												
口怕忌狄貝旭了八工呼吸,立即辱水窗燎渡理 5. 個人防護裝備													
☑ 檢膠手套							 □ □ 閏						
			***						- 7-				
6. 處埋及使用應知事項													
6.1 儲存注意事項:	 儲存於陰涼、通風位置遠離熱源、火種 必需垂直擺放 												
6.2 意外洩漏處理的	3.2 意外洩漏處理的方法: 不適用												
7. 其他資料													
不適用													



R-22

Safety Data Sheet

R-22

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME:	R-22
OTHER NAME :	Chlorodifluoromethane
USE:	Refrigerant Gas
DISTRIBUTOR:	National Refrigerants, Inc.
	661 Kenyon Avenue
	Bridgeton, New Jersey 08302

FOR MORE INFORMATION CALL:

(Monday-Friday, 8:00am-5:00pm) 1-800-262-0012

2. HAZARDS IDENTIFICATION

CLASSIFICATION:Gases under pressure, Liquefied GasSIGNAL WORD:WARNINGHAZARD STATEMENT:Contains gas under pressure, may explode if heatedSYMBOL:Gas CylinderPRECAUTIONARY STATEMENT:STORAGE: Protect from sunlight, store in a well ventilated place

EMERGENCY OVERVIEW: Colorless, volatile liquid with ethereal and faint sweetish odor. Non-flammable material. Overexposure may cause dizziness and loss of concentration. At higher levels, CNS depression and cardiac arrhythmia may result from exposure. Vapors displace air and can cause asphyxiation in confined spaces. At higher temperatures, (>250°C), decomposition products may include Hydrochloric Acid (HCI), Hydrofluoric Acid (HF) and carbonyl halides.

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: R-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. At high levels, cardiac arrhythmia may 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.

DELAYED EFFECTS: None Known

CHEMTREC: 1-800-424-9300

IN CASE OF EMERGENCY CALL:



R-22

Ingredients found on one of the OSHA designated carcinogen lists are listed below.			
INGREDIENT NAME No ingredients listed in this section	NTP STATUS	IARC STATUS	<u>OSHA LIST</u>
3. COMPOSITION / INFORMATION	ON ON INGREDIENTS		
INGREDIENT NAME Chlorodifluoromethane	<u>CAS NUMBER</u> 75-45-6	<u>WEIGHT %</u> 100	
COMMON NAME and SYNONYMS R-22; HCFC-22			
There are no impurities or stabilizers that contribute to the classification of the material identified in Section 2			
4. FIRST AID MEASURES			

- **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 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: 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.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT:Gas, not aFLASH POINT METHOD:Not applicAUTOIGNITION TEMPERATURE:UnknownUPPER FLAME LIMIT (volume % in air):NLOWER FLAME LIMIT (volume % in air):N

Gas, not applicable per DOT regulations Not applicable Unknown T: None* ir): None* *Based on ASHRAE Standard 34 with match ignition Not applicable Not applicable

FLAME PROPAGATION RATE (solids): OSHA FLAMMABILITY CLASS:



EXTINGUISHING MEDIA:

Use any standard agent – choose the one most appropriate for type of surrounding fire (material itself is not flammable)

UNUSUAL FIRE AND EXPLOSION HAZARDS:

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. Contact with certain reactive metals may result in formation of explosive or exothermic reactions under specific conditions (e.g. very high temperatures and/or appropriate pressures).

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.

ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILL OR OTHER RELEASE: (Always wear recommended personal protective equipment.) Evacuate unprotected personnel. Product dissipates upon release. Protected personnel should remove ignition sources and shut off leak, if without risk, and provide ventilation. Unprotected personnel should not return to the affected area until air has been tested and determined safe, including low-lying areas.

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

HANDLING AND STORAGE 7

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. 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. See Section 5: Unusual Fire and Explosion Hazards

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.

INCOMPATIBILITIES:

Freshly abraded aluminum surfaces at specific temperatures and pressures may cause a strong exothermic reaction. Chemically reactive metals: potassium, calcium, powdered aluminum, magnesium, and zinc.

EXPOSURE CONTROLS / PERSONAL PROTECTION

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 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:

None generally required for adequately ventilated work situations. For accidental release or non-ventilated situations, or release into confined space, where the concentration may be above the PEL of 1,000 ppm, 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:

Where contact with liquid is likely, such as in a spill or leak, impervious boots and clothing should be worn. High dose-level warning signs are recommended for areas of principle exposure. Provide eyewash stations and quick-drench shower facilities at convenient locations. For tank cleaning operations, see OSHA regulations, 29 CFR 1910.132 and 29 CFR 1910.133.

EXPOSURE GUIDELINES

INGREDIENT NAME	ACGIH TLV	OSHA PEL	OTHER LIMIT
Chlorodifluoromethane	1000 ppm TWA (8hr)	1000 ppm TWA (8hr)	None

OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:

Hydrogen Fluoride: ACGIH TLV = 2ppm ceiling, 0.5ppm TLV-TWA

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Clear, colorless liquid and vapor
PHYSICAL STATE:	Gas at ambient temperatures
MOLECULAR WEIGHT:	86.45
CHEMICAL FORMULA:	CHC1F ₂
ODOR:	Faint ethereal odor
SPECIFIC GRAVITY (water = 1.0):	1.21 @ 21.1°C (70°F)
SOLUBILITY IN WATER (weight %):	0.3 wt% @ 25°C and 1 atmosphere
pH:	Neutral
BOILING POINT:	-40.8°C (-41.40°F)
FREEZING POINT:	-160°C (-256°F)
VAPOR PRESSURE:	136.1 psia @ 70°F
	311.4 psia @ 130°F
VAPOR DENSITY (air = 1.0):	3.0
EVAPORATION RATE:	>1 COMPARED TO: $CC1_4 = 1$
% VOLATILES:	100
ODOR THRESHHOLD:	Not established



FLAMMABILITY:	Not applicable
LEL/UEL:	None/None
RELATIVE DENSITY :	1.21 g/cm3 at 21.1 C
PARTITION COEFF (n-octanol/water)	Log Pow: 1.08-1.13. Note: This product is more soluble than octanol
AUTO IGNITION TEMP:	Not Determined
DECOMPOSITION TEMPERATURE:	>250 °C
VISCOSITY:	Not applicable
FLASH POINT:	Not applicable
(Flash point method and additional flammal	bility data are found in Section 5.)

10. STABILITY AND REACTIVITY

NORMALLY STABLE: (CONDITIONS TO AVOID):

The product is stable.

Do not mix with oxygen or air above atmospheric pressure. Any source of high temperatures, such as lighted cigarettes, flames, hot spots or welding may yield toxic and/or corrosive decomposition products.

INCOMPATIBILITIES:

(Under specific conditions: e.g. very high temperatures and/or appropriate pressures) – Freshly abraded aluminum surfaces (may cause strong exothermic reaction). Chemically reactive metals: potassium, calcium, powdered aluminum, magnesium, and zinc.

HAZARDOUS DECOMPOSITION PRODUCTS:

Halogens, halogen acids and possibly carbonyl halides.

HAZARDOUS POLYMERIZATION:

Will not occur.

11. TOXICOLOGICAL INFORMATION

IMMEDIATE (ACUTE) EFFECTS:

 LC_{50} : Inhalation 4 hr. (rat) - \geq 300,000 ppm / Cardiac Sensitization threshold (dog) - 50,000 ppm

DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:

Subchronic inhalation (rat) NOEL – 10,000 ppm Not mutagenic in *in-vitro* or *in-vivo* tests Not teratogenic

REPEATED DOSE TOXICITY:

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

FURTHER INFORMATION:

Acute effects of rapid evaporation of the liquid may cause frostbite. Vapors are heavier than air and can displace oxygen causing difficulty breathing or suffocation. May cause cardiac arrhythmia.

12. ECOLOGICAL INFORMATION

Degradability (BOD):

R-22 is a gas at room temperature; therefore, it is unlikely to remain in water.



Octanol Water Partition Coefficient: See Section 9

13. DISPOSAL CONSIDERATIONS

<u>RCRA</u>

Is the unused product a RCRA hazardous waste if discarded? If yes, the RCRA ID number is: Not a hazardous waste Not applicable

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.

14. TRANSPORT INFORMATION

US DOT ID NUMBER:	UN1018
US DOT PROPER SHIPPING NAME:	Chlorodifluoromethane or Refrigerant gas R 22
US DOT HAZARD CLASS:	2.2
US DOT PACKING GROUP:	Not applicable

For additional information on shipping regulations affecting this material, contact the information number found in Section 1.

15. REGULATORY INFORMATION

TOXIC SUBSTANCES CONTROL ACT (TSCA)

TSCA INVENTORY STATUS:Listed on the TSCA inventory**OTHER TSCA ISSUES:**None

SARA TITLE III / CERCLA

"Reportable Quantities" (RQs) and/or "Threshold Planning Quantities" (TPQs) exist for the following ingredients.

INGREDIENT NAME	SARA / CERCLA RQ (lb.)	<u>SARA EHS TPQ (lb.)</u>
No in one diants lists d in this section		

No ingredients listed in this section

Spills or releases 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 PRESSURE

SARA 313 TOXIC CHEMICALS:

The following ingredients are SARA 313 "Toxic Chemicals". CAS numbers and weight percents are found in Section 2.

INGREDIENT NAME

Chlorodifluoromethane (HCFC-22)

COMMENT

None

STATE RIGHT-TO-KNOW



In addition to the ingredients found in Section 2, the following are listed for state right-to-know purposes.

INGREDIENT NAME

WEIGHT % COMMENT

No ingredients listed in this section

ADDITIONAL REGULATORY INFORMATION:

R-22 is subject to U.S. Environmental Protection Agency Clean Air Act Regulations at 40 CFR Part 82.

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 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.

WHMIS CLASSIFICATION (CANADA):

This product has been evaluated in accordance with the hazard criteria of the CPR and the SDS contains all the information required by the CPR.

FOREIGN INVENTORY STATUS:

Canada – Listed on DSL EU - EINECS # 2008719

16. OTHER INFORMATION

CURRENT ISSUE DATE: PREVIOUS ISSUE DATE:	January, 2021 April, 2018
OTHER INFORMATION:	HMIS Classification: Health – 1, Flammability – 1, Reactivity – 0 NFPA Classification: Health – 2, Flammability – 1, Reactivity – 0 ANSI/ASHRAE 34 Safety Group – A1 UL Classified
	Regulatory Standards: 1. OSHA regulations for compressed gases: 29 CFR 1910.101 2. DOT the Statement of CFP 172 101

- 2. DOT classification per 49 CFR 172.101
- 3. Clean Air Act Class II Substance

DISCLAIMER:

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