

Safety Data Sheet

R – 22

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: HCFC-22
DISTRIBUTOR: Acson Malaysia Sales & Service Sdn. Bhd.
Lot 4, Lorong 19/1A, Section 19,
46300 Petaling Jaya, Selangor D.E.
Tel: 1300-22-3344
Email: acson@acson.com.my

Country of Origin: China

2. COMPOSITION / INFORMATION ON INGREDIENTS

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

Trace impurities and additional material names not listed above also appear in section 15 toward the end of the MSDS.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Colorless, volatile liquid with ethereal and faint sweetish odor. Non-flammable material. Overexposure may cause dizziness and loss of concentration. At higher level, 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 (HCl), Hydrofluoric Acid (HF) and carbonyl halides.

POTENTIAL HEALTH HAZARDS

Skin: Irritation would result from defatting action tissue. Liquid contact could cause frostbite.

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

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. 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

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Ingredients found on one of the OSHA designated carcinogen lists are listed below.

<u>INGREDIENT NAME</u>	<u>NTP STATUS</u>	<u>IARC STATUS</u>	<u>OSHA LIST</u>
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No ingredients listed in this section

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 clean, soft cloth or similar covering. Get medical attention if symptoms persist.

Eyes: Immediately flush eyes with large amounts of water for at least 15minutes, (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 to the control of symptoms and the clinical conditions.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

Flash Point:	Gas, not applicable per DOT regulations
Flash Point Method:	Not applicable
Auto ignition Temperature:	Unknown
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: Use any standard agent-choose the one most appropriate for type of surrounding fire (material itself is not flammable)

UNUSUAL FIRE AND EXPLOSION HAZARDS:

HCFC-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 ignitions 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).

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SPECIAL FIRE FIGHTING PRECAUTIONS / INSTRUCTIONS:

Firefighters should wear self-contained, NIOSH-approved breathing apparatus for protection against suffocation and possible toxic decomposition products. Proper eye and skin protection should be provided. Use water spray to keep fire exposed containers cool.

6. ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILL OR OTHER RELEASE: (Always wear recommended personal protective equipment)
Evacuate unprotected personnel and provide maximum ventilation. 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.

Spills and releases may have to be reported to Federal and/or Local authorities. See section 15 regarding reporting.

7. HANDLING AND STORAGE

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.

HCFC-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 when empty

8. 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.

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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 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 operations, see OSHA regulations, 29 CFR 1910.132 and 29 CFR 1910.133.

EXPOSURE GUIDELINES

<u>NAME</u>	<u>ACGIH TLV</u>	<u>OSHA PEL</u>	<u>OTHER LIMIT</u>
Chlorodifluoromethane	1000ppm TWA (8hr)	1000ppm TWA (8hr)	None

* = Workplace Environmental Exposure Level (AIHA)

** = Biological Exposure Index (ACGIH)

OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:

Hydrogen Fluoride: ACGIH TLV-3ppm ceiling

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Clear, colorless liquid and vapor	
PHYSICAL STATE:	Gas at ambient temperatures	
MOLECULAR WEIGHT:	86.45	
CHEMICAL FORMULA:	CHClF ₂	
ODOR:	Faint ethereal odor	
SPECIFIC GRAVITY (water = 1.0):	1.21 @ 70°F (21.1°C)	
SOLUBILITY IN WATER (weight %)	0.3wt% @ 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	
FLASH POINT	Not applicable	

- Flash point method and addition flammability data are found in section 5.

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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:

LC₅₀ : 4 hr (rat) ≥ 300,000 ppm / cardiac sensitization threshold (dog) - 50,000 ppm.

DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:

Subchronic inhalation (rat) NOEL – 10,000ppm

Not mutagenic in *in-vitro* or *in- vivo* tests

Not teratogenic

OTHER DATA:

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

12. ECOLOGICAL INFORMATION

Degradability (BOD): HCFC-22 is a gas at room temperature: therefore, it is unlikely to remain in water.

Octanol Water Partition Coefficient: Unknown

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13. DISPOSAL CONSIDERATIONS

RCRA

Is the unused product a RCRA hazardous waste if discarded?

Not a hazardous waste

If yes, the RCRA ID number is:

Not applicable

OTHER DISPOSAL CONSIDERATIONS:

Disposal must comply with federal, state, and local disposal or discharge laws. HCFC22 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

DOT HAZARD CLASS: DOT PROPER SHIPPING NAME: Chlorodifluoromethane
DOT HAZARD CLASS: 2.2
DOT PACKING GROUP: Not applicable

DOT ID NUMBER: UN1018

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 / CERLA

“Reportable Quantities” (RQs) and or: Threshold Planning Quantities” (TPQs) exist for the following ingredient.

<u>INGREDIENT NAME</u>	<u>SARA / CERCLA RQ (lb.)</u>	<u>SARA EHS TPQ (lb.)</u>
No ingredients listed in this section		

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SECTION 311 HAZARDS CLASS: IMMEDIATE
PRESSURE

Spills or release resulting in the loss of any ingredient at or above its RQ requires immediate notification to your Local Emergency Planning Committee.

SARA 313 TOXIC CHEMICALS:

The following ingredients are SARA 313 "Toxic Chemicals", CAS number and weight percents are found in section 2.

<u>INGREDIENT NAME</u>	<u>COMMENT</u>
Chlorodifluoromethane (HCFC-22)	None

STATE RIGHT-TO-KNOW

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

<u>INGREDIENT NAME</u>	<u>WEIGHT%</u>	<u>COMMENT</u>
No ingredients listed in this section		

WARNING: DO NOT VENT to the atmosphere. To comply with provisions of the CLEAN AIR ACT, any residual must be recovered. **Contains Chlorodifluoromethane, an HCFC** substance which harms public health and environment by destroying ozone in 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.

16. OTHER INFORMATION

CURRENT ISSUE DATE: July 2017

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 regulation for compressed gases: 29 CFR 1910.101
2. DOT classification per 49 CFR 172.101
3. Clean Air Act Class II Substance

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17. DISCLAIMER

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