R422D

Version 3 Revision Date 01/01/2024 Print Date 01/01/2024

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : R422D

Company : FRIOFLOR Group Co.,Limited.
New Youth Mansion,Wucheng Area,Jinhua City,Zhejiang,China

For more information call : 0086-10-84340783 0086-10-84340782
(Monday-Friday, 9:00am-5:00pm)

In case of emergency call : **Medical: 0086-10-84340783 or 0086-10-84340782**
: **Transportation: 0086-10-84340783**
: (24 hours/day, 7 days/week)

SECTION 2. COMPOSITION / INFORMATION ON INGREDIENTS

INGREDIENT NAME	CAS NUMBER	WEIGHT %
Pentafluoroethane (HFC-125)	354-33-6	65.1
1,1,1,2-Tetrafluoroethane (HFC-134 a)	811-97-2	31.5
Isobutane (R-600a)	75-28-5	3.4

SECTION 3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Colorless,volatile liquid with ethereal and faint sweetish odor.No n-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,(>2 50 deg.C) decom -position products may include Hydrofluoric Acid (HF) and carbonyl halides.

POTENTIAL HEALTH HAZARDS

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

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

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.

INHALATION: R-422D 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.

DELAYED EFFECTS: None Known

Ingredients found on one of OSHA's designated lists are listed below.

INGREDIENT	NTP STATUS	IARC STATUS	OSHA LIST
No ingredients listed in this section			

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 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 symp toms 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 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.

SECTION 5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT:	Gas,not applicable per DOT regulations
FLASH POINT:	NA
UPPER FLAME LIMIT (volume % in air):	NONE (per ASHRAE) Standard 34 with match ignition
LOWER FLAME LIMIT (volume % in air):	NONE (per ASHRAE)Standard 34 with match ignition
AUTOIGNITION TEMPERATURE:	Unknown for mixture
FLAME PROGAGATION RATE (solids):	NA
OSHA FLAMMABILITY CLASS:	NA

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-422D is not flammable at ambient temperatures and atmospheric pressure.However, this material will beco me 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.

SECTION 6. ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILL OR OTHER RELEASE: (Always wear recommended personal protective equip ment) 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 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.

R-422D should not be mixed with air above atmospheric pressure for leak testing or any other purpose.

STORAGE RECOMMENDATIONS:

Store in a cool,well-ventilated area of low fire risk and out of direct sunlight.Protect cylinder and its fittings fro m physical damage.Storage in subsurface locations sho uld be avoided. Close valve tightly after use and when empty.

SECTION 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 operation and storage areas.

PERSONAL PROTECTIVE EQUIPMENT

SKIN PROTECTION:

Skin contact with refrigerant may cause frostbite.General work clothing and gloves (leather) should pro vide 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 contam -inated 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 do selevel warning signs are recommended fo r areas of principle exposure.Provi -de eyewash stations and quick -drench shower facilities at convenient locations.For tank cleaning operations,see OSHA regulations,29 CFR 1910.132 and 29CFR 1910.133.

EXPOSURE GUIDELINES

INGREDIENT NAME	ACGIH TLV	OSHA PEL	OTHER LIMITS
Pentafluoroethane	None	None	*1000 ppm TWA (8hr)
1,1,1,2-Tetrafluoroethane	None	None	*1000 ppm TWA (8hr)
Isobutane	1000 ppm TWA (8hr)	None	None

* = Workplace Environmental Exposure Level (AIHA).

OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:

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

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE:	Gas at ambient temperatures
APPEARANCE:	Clear,colorless liquid and vapor
MOLECULAR WEIGHT:	Mixture
CHEMICAL FORMULA:	CF3CHF2, CH2FCF3C4H10
ODOR:	Slight ethereal odor
SOLUBILITY IN WATER (weight %):	Not determined
pH:	Neutral
BOILING POINT:	-43deg.C (-46F)
FREEZING POINT:	Not determined
VAPOR PRESSURE:	147.24 psia @ 70 deg F 334.9 psia @ 130 deg. F
VAPOR DENSITY (air = 1.0):	3.0

LIQUID DENSITY @ 1 atm:	86.95 lb/ft^3
EVAPORATION RATE:	>1 COMPARED TO: CCl4=1
SPECIFIC GRAVITY (water = 1.0)	1.15 @ 25 deg. C
% VOLATILES:	100
FLASH POINT:	NA

SECTION 10. STABILITY AND REACTIVITY

NORMALLY STABLE? (CONDITIONS TO AVOID):

Product is stable.Do not mix with oxygen or air above atmospheric pressure.Any source of high temperature,such as lighted cigarettes,flames,hot spots or welding may yield toxic and/or corro -sive decomposition products.

INCOMPATIBILITIES:

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

HAZARDOUS DECOMPOSITION PRODUCS:

Halogens, halogen acids and possibly carbonyl halides.

HAZARDOUS POLYMERIZATION:

Will not occur.

SECTION 11. TOXICOLOGICAL INFORMATION

IMMEDIATE (ACUTE) EFFECTS:

HFC-125:	LC50 : 4 hr. (rat) - > 800,000 ppm Cardiac Sensitization threshold (dog) 75,000 ppm.
HFC-134a:	LC50 : 4 hr. (rat) - > 500,000 ppm Cardiac Sensitization threshold (dog) 80,000 ppm.
R-600a:	LC50 : 15 min. (rat) - 570,000 ppm

DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:

HFC-125:	Teratogenic NOEL (rat and rabbit) – 50,000 ppm Subchronic inhalation (rat) NOEL - >50,000 ppm Chronic NOEL – 10,000 ppm
HFC-134a:	Teratogenic NOEL (rat and rabbit) – 40,000 ppm Subchronic inhalation (rat) NOEL - 50,000 Chronic NOEL – 10,000 ppm
R-600a:	Subchronic inhalation (rat) NOAEL - 4,489 ppm

OTHER DATA:

HFC–125, HFC–134a:	Not active in four genetic studies
R-600a:	Negative Ames test with and without activation

SECTION 12. ECOLOGICAL INFORMATION

DEGRADABILITY (BOD):	R-422D is a gas at room temperature;therefore,it is unlikely to remain in water.
Octanol Water Partition Coefficient:	Unknown for mixture

SECTION 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:	NA

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.

SECTION 14. TRANSPORT INFORMATION

DOT	**UN/ID Number**	:	UN 3163
	Proper shipping name	:	LIQUEFIED GAS, N.O.S. (1,1,1,2 -tetrafluoroethane, Pentafluoroethane, Isobutane)
	Class		2.2

SECTION 15. REGULATORY INFORMATION

TOXIC SUBSTANCES CONTROL ACT (TSCA)

TSCA INVENTORY STATUS:	Components listed on the TSCA inventory
OTHER TSCA ISSUES:	Subject to Section 12(b) export notification.May co ntain 0-10 ppm Ethane, 2-chloro- 1,1,1-trifluoro, CAS# 75-88 -7

SECTION 16. OTHER INFORMATION

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. Final determination of suitability of any material is the sole responsibility of the user. This information should not constitute a guarantee for any specific product properties.

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