



Safety Data Sheet

R-13

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: R-13
OTHER NAME: Chlorotrifluoromethane
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

IN CASE OF EMERGENCY CALL:
CHEMTREC: 1-800-424-9300

2. HAZARDS IDENTIFICATION

CLASSIFICATION:	Gases under pressure, Liquefied Gas
SIGNAL WORD:	WARNING
HAZARD STATEMENT:	Contains gas under pressure, may explode if heated
SYMBOL:	Gas Cylinder
PRECAUTIONARY 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 (HCl), Hydrofluoric Acid (HF) and carbonylhalides.

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

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



3. COMPOSITION / INFORMATION ON INGREDIENTS

<u>INGREDIENT NAME</u>	<u>CAS NUMBER</u>	<u>WEIGHT %</u>
Chlorotrifluoromethane (R-13) *Listed SARA Section 313 NFPA = 2-0-0	75-72-9	100

COMMON NAME and SYNONYMS

R-13; CFC13

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: N/A - Product is a gas at ambient conditions.

ADVICE FOR TREATMENT: Never give anything by mouth to an unconscious person.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT:	Nonflammable
FLASH POINT METHOD:	Not applicable
AUTOIGNITION TEMPERATURE:	NE
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.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

May decompose during contact with flames, heating elements, or in combustion engines releasing irritating, toxic, and corrosive gases. Container may explode if heated due to resulting pressure rise.



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.

6. ACCIDENTAL RELEASE MEASURES

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

Remove or extinguish ignition or combustion sources. Evacuate enclosed spaces until gas is dispersed. Keep upwind. Stop leak if possible without risk. Disperse gas with floor-level forced-air ventilation. Exhaust vapors outdoors. Remove all flames, heating elements and gas engines. Wash contaminated clothes before use. Destroy contaminated shoes.

Spills and releases may have to be reported to Federal and/or local authorities.

7. HANDLING AND STORAGE

NORMAL HANDLING:

DO NOT get in eyes, on skin or clothing. Do not breathe vapor, mist or gas. Keep container closed. Keep away from heat, sparks and flames. Store in tightly closed containers. Empty container may contain hazardous residue. Do not drop, reuse or refill container. Do not smoke. Read label before use. Do not cut, grind or weld on or near container due to possible toxic fume generation.

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.

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.

VENTILATION REQUIREMENTS:

Investigate engineering techniques to reduce exposures below airborne exposure limits. Provide ventilation if necessary to control exposure levels below airborne exposure limits. Dilution ventilation acceptable, but local mechanical exhaust ventilation preferred, if practical, at sources of air contamination such as open process equipment.

SKIN PROTECTION: Use synthetic rubber gloves such as neoprene. Lined gloves are recommended for protection from cold.

EYE PROTECTION: Where there is potential for eye contact, wear chemical goggles and have eye flushing equipment immediately available.

RESPIRATORY PROTECTION:

Avoid breathing vapor, mist, or fume. Use NIOSH/MSHA approved full face (TC-19C) supplied air respirator or self-contained breathing apparatus where airborne exposure is likely. If used, full face-piece replaces need for chemical goggles and/or face shield. If exposures cannot be kept at a minimum with engineering controls, use NIOSH/MSHA approved respiratory equipment as noted above. Observe respirator use limitations specified by NIOSH/MSHA or the manufacturer. For emergency and other conditions



where there may be a potential for significant exposure, use an approved full-face positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR section 1910.134.

ADDITIONAL RECOMMENDATIONS:

Wear appropriate chemical resistant protective clothing to prevent skin contact.

EXPOSURE GUIDELINES

<u>INGREDIENT NAME</u>	<u>ACGIH TLV</u>	<u>OSHA PEL</u>	<u>OTHER LIMIT</u>
------------------------	------------------	-----------------	--------------------

OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Clear,	colorless liquefied gas
PHYSICAL STATE:	Gas at ambient temperature
MOLECULAR WEIGHT:	104.46
CHEMICAL FORMULA:	CClF ₃
ODOR:	Faint ethereal (ether-like) odor
SPECIFIC GRAVITY (water = 1.0):	1.12 @ 0°C
SOLUBILITY IN WATER:	Slight
pH:	Not applicable
BOILING POINT:	-114°F (-81.4°C)
FREEZING POINT:	-293.8°F (-181°C)
VAPOR PRESSURE (MM HG):	286 psia @ 0°C
VAPOR DENSITY (air = 1.0):	3.6
EVAPORATION RATE:	>1 Compared to: CCl ₄ = 1
% VOLATILES:	100
ODOR THRESHHOLD:	Not established
FLAMMABILITY:	Not applicable
LEL/ UEL:	None/None
RELATIVE DENSITY:	1.12 g/cm ³ @ 0°C
PARTITION COEFF (n-octanol/water)	Log Pow: 1.65
AUTO IGNITION TEMP:	Not determined
DECOMPOSITION TEMPERATURE:	>250°C
VISCOSITY:	Not applicable
FLASH POINT :	Not applicable

(Flash point method and additional flammability data are found in Section 5.)

10. STABILITY AND REACTIVITY

NORMALLY STABLE (CONDITIONS TO AVOID):

The product is stable.
Thermal decomposition due to exposure to heat (>800°F) or fire.

INCOMPATIBILITIES:

Avoid contact with strong alkali or alkaline earth metals, finely powdered metals such as aluminum, magnesium or zinc and strong oxidizers since they may react with or accelerate decomposition of this material.

HAZARDOUS DECOMPOSITION PRODUCTS:



Hydrogen Fluoride, Hydrogen Chloride, Carbon Monoxide, Carbon Dioxide and Chlorine

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID:

Flames, extremely hot metal surfaces, heating elements, combustion engines, etc.

11. TOXICOLOGICAL INFORMATION

ROUTE	ANIMAL	DATA
ORAL	SEE BELOW	
DERMAL	SEE BELOW	
INHALATION	SEE BELOW	

TOXIC EFFECTS/ROUTES OF ENTRY

OTHER TOXIC EFFECTS:

Skin contact and inhalation are expected to be the primary routes of occupational exposure. As with most liquefied gases, contact with the rapidly volatilizing liquid or cold vapors can cause frostbite to any tissue due to the cryogenic (extreme low temperature) effects of this material. Vapors may be mildly irritating to the eyes. Acute studies with laboratory animals indicate that the components of this halocarbon mixture are practically non-toxic by the inhalation route. However, exposure to halocarbon gases at high concentrations may affect the nervous system and produce a rapid anesthetic effect. The dense vapor of this product displaces air in confined spaces and reduces oxygen available for breathing. Upon exposure to such an atmosphere, a person may experience symptoms of oxygen deficiency including headache, dizziness, drowsiness, cyanosis and lack of muscle control followed by collapse. Prolonged exposure to an oxygen-deficient atmosphere may be fatal. As with many other halocarbons, inhalation of this compound may cause an increase in the sensitivity of the heart to adrenaline, which could result in irregular or rapid heartbeats and reduced heart function. Due to the potential to produce such effects on the heart, workers with heart disease or compromised heart function should have limited exposure to this material.

TARGET ORGAN TOXIN:

Target organs affected by exposure to this material are: Eyes, skin, central nervous system, respiratory system, heart.

TOXICITY COMMENTS:

Data from the scientific literature on CFC 13 are summarized below.

Single exposure (acute) studies indicate:

Inhalation – Practically non-toxic to rats (4-hr LC50 > 800,000 ppm).

Inhalation of a high concentration (790,000 ppm) of this material for 1-hour had no effect on the righting reflex of rats. The EC50 for central nervous system depression in rats for a 10-minute inhalation exposure was greater than 800,000 ppm. As with other Chlorofluorocarbons, inhalation of CFC 13, followed by injection of an agent to simulate human stress reactions, resulted in heart sensitization at levels of 800,000 ppm in dogs. A decrease in survival and an increase in DNA synthesis were reported in E. Cole bacterial cells following 24-hour exposure to CFC 13. It produced no genetic changes in standard tests with bacterial cells.

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

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

12. ECOLOGICAL INFORMATION

Degradability (BOD): R13 is a gas at room temperature; therefore it is unlikely to remain in water

Octanol Water partition Coefficient: (See section 9)

13.DISPOSAL CONSIDERATIONS

Recycle or reclaim if possible. Reclaimed material may be incinerated but toxic and corrosive combustion products (HF and HCL) must be handled appropriately.

Consult federal, state, or local authorities for proper disposal procedures.

14.TRANSPORT INFORMATION

US DOT ID NUMBER: UN1022

US DOT PROPER SHIPPING NAME: Chlorotrifluoromethane or Refrigerant gas R-13

US DOT HAZARD CLASS: 2.2

US DOT PACKING GROUP: Not applicable

15.REGULATORY INFORMATION

SARA HAZARD NOTIFICATION: This product contains a substance which is defined as toxic chemical under, and subject to the reporting requirements of, section 313 of Title III of the Superfund Amendments and reauthorization act of 1986 and 40 CFR part 372. See Ingredients-Hazard Classification section for listed chemical.

DISCLAIMER:

National Refrigerants, Inc. believes that the information and recommendations contained herein (including data and statements are accurate as of the date hereof. NO WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WARRANTY OF MERCHANTABILITY, OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, IS MADE CONCERNING THE INFORMATION PROVIDED HEREIN. The information provided herein relates only to the specific product designated and may not be valid where such product is used in combination with any other methods of use of the product and of the information referred to herein are beyond the control of National Refrigerants. National Refrigerants expressly disclaims any and all liability as to any results obtained or arising from any use of the product or reliance on such information.

CURRENT ISSUE DATE: January, 2021

PREVIOUS ISSUE DATE: May 2018