



### Safety Data Sheet P-4667

This SDS conforms to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication. Issue date: 01/01/1979 Revision date: 01/27/2021 Supersedes: 10/24/2016 Version: 1.0

### **SECTION: 1. Product and company identification**

### **Product identifier**

Product form : Substance Trade name : Halocarbon 22 CAS-No. : 75-45-6 Formula CHCIF2

Other means of identification : Chlorodifluoromethane (Refrigerant Gas R22)

### Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Industrial use; Use as directed.

#### Details of the supplier of the safety data sheet 1.3.

Praxair. Inc. 10 Riverview Drive

Danbury, CT 06810-6268 - USA

T 1-800-772-9247 (1-800-PRAXAIR) - F 1-716-879-2146

www.praxair.com

### **Emergency telephone number**

**Emergency number** : Onsite Emergency: 1-800-645-4633

CHEMTREC, 24hr/day 7days/week

Within USA: 1-800-424-9300, Outside USA: 001-703-527-3887

(collect calls accepted, Contract 17729)

### **SECTION 2: Hazard identification**

### Classification of the substance or mixture

## **GHS US classification**

Simple asphyxiant SIAS Press. Gas (Liq.) H280 H420 Ozone 1

### Label elements

### **GHS US labeling**

Hazard pictograms (GHS US)





GHS04

GHS07

Signal word (GHS US) : Warning

Hazard statements (GHS US) : H280 - CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED

H420 - HARMS PUBLIC HEALTH AND THE ENVIRONMENT BY DESTROYING OZONE IN

THE UPPER ATMOSPHERE

OSHA-H01 - MAY DISPLACE OXYGEN AND CAUSE RAPID SUFFOCATION.

CGA-HG01 - MAY CAUSE FROSTBITE.

Precautionary statements (GHS US) : P202 - Do not handle until all safety precautions have been read and understood.

P262 - Do not get in eyes, on skin, or on clothing.

P271+P403 - Use and store only outdoors or in a well-ventilated place. P280 - Wear protective gloves/protective clothing/eye protection/face protection. P502 - Refer to manufacturer/supplier for information on recovery/recycling

CGA-PG05 - Use a back flow preventive device in the piping. CGA-PG06 - Close valve after each use and when empty.

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CGA-PG10 - Use only with equipment rated for cylinder pressure.

CGA-PG12 - Do not open valve until connected to equipment prepared for use. CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C (125°F) P304, P340, P313 - IF INHALED: Remove person to fresh air and keep comfortable for

breathing. Get medical advice/attention.

P302, P336, P315 - IF ON SKIN: Thaw frosted parts with lukewarm water. Do not rub affected

area.. Get immediate medical advice/attention.

#### 2.3. Other hazards

Other hazards which do not result in classification

: Asphyxiant in high concentrations.

24 **Unknown acute toxicity (GHS US)** 

No data available

## **SECTION 3: Composition/Information on ingredients**

### **Substances**

Name	Product identifier	%
Chlorodifluoromethane (Refrigerant Gas R22) (Main constituent)	(CAS-No.) 75-45-6	100

### **Mixtures**

Not applicable

### **SECTION 4: First aid measures**

### **Description of first aid measures**

First-aid measures after inhalation

: Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped. Remove to fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration. If breathing is difficult, trained personnel should give oxygen. Call a physician.

First-aid measures after skin contact

: The liquid may cause frostbite. For exposure to liquid, immediately warm frostbite area with warm water not to exceed 105°F (41°C). Water temperature should be tolerable to normal skin. Maintain skin warming for at least 15 minutes or until normal coloring and sensation have returned to the affected area. In case of massive exposure, remove clothing while showering with warm water. Seek medical evaluation and treatment as soon as possible.

First-aid measures after eye contact

Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly. Contact an ophthalmologist immediately. Consult an eye specialist immediately. Immediately flush eyes thoroughly with water for at least 15 minutes. Get immediate medical attention

First-aid measures after ingestion

: Ingestion is not considered a potential route of exposure.

### 4.2. Most important symptoms and effects, both acute and delayed

No additional information available

### 43 Indication of any immediate medical attention and special treatment needed

None.

### **SECTION 5: Firefighting measures**

## **Extinguishing media**

No additional information available

### Special hazards arising from the substance or mixture

Reactivity

: No reactivity hazard other than the effects described in sub-sections below.





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### Advice for firefighters

Firefighting instructions

: Evacuate all personnel from the danger area. Use self-contained breathing apparatus (SCBA) and protective clothing. Immediately cool containers with water from maximum distance. Stop flow of gas if safe to do so, while continuing cooling water spray. Remove ignition sources if safe to do so. Remove containers from area of fire if safe to do so. On-site fire brigades must comply with OSHA 29 CFR 1910.156 and applicable standards under 29 CFR 1910 Subpart L-Fire Protection.

Protection during firefighting

Compressed gas: asphyxiant. Suffocation hazard by lack of oxygen.

Special protective equipment for fire fighters

Use self-contained breathing apparatus. Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.

Specific methods

Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas containers to rupture. Cool endangered containers with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.

Stop flow of product if safe to do so.

Use water spray or fog to knock down fire fumes if possible.

Other information

Containers are equipped with a pressure relief device. (Exceptions may exist where authorized by DOT.).

### **SECTION 6: Accidental release measures**

## Personal precautions, protective equipment and emergency procedures

General measures

: Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Try to stop release. Evacuate area. Ensure adequate air ventilation. Wear self-contained breathing apparatus when entering area unless atmosphere is proven to be safe. Stop leak if safe to do so.

### 6.1.1. For non-emergency personnel

No additional information available

### 6.1.2. For emergency responders

No additional information available

### 6.2. **Environmental precautions**

Try to stop release. Prevent waste from contaminating the surrounding environment. Prevent soil and water pollution. Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements

### Methods and material for containment and cleaning up

No additional information available

### 6.4. Reference to other sections

See also sections 8 and 13.

### **SECTION 7: Handling and storage**

### Precautions for safe handling

Precautions for safe handling

: Wear leather safety gloves and safety shoes when handling cylinders. Protect cylinders from physical damage; do not drag, roll, slide or drop. While moving cylinder, always keep in place removable valve cover. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Never insert an object (e.g, wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Slowly open the valve. If the valve is hard to open, discontinue use and contact your supplier. Close the container valve after each use; keep closed even when empty. Never apply flame or localized heat directly to any part of the container. High temperatures may damage the container and could cause the pressure relief device to fail prematurely, venting the container contents. For other precautions in using this product, see section 16.

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### Conditions for safe storage, including any incompatibilities

Storage conditions

: Store in a cool, well-ventilated place. Store and use with adequate ventilation. Store only where temperature will not exceed 125°F (52°C). Firmly secure containers upright to keep them from falling or being knocked over. Install valve protection cap, if provided, firmly in place by hand. Store full and empty containers separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods.

OTHER PRECAUTIONS FOR HANDLING, STORAGE, AND USE: When handling product under pressure, use piping and equipment adequately designed to withstand the pressures to be encountered. Never work on a pressurized system. Use a back flow preventive device in the piping. Gases can cause rapid suffocation because of oxygen deficiency; store and use with adequate ventilation. If a leak occurs, close the container valve and blow down the system in a safe and environmentally correct manner in compliance with all international, federal/national, state/provincial, and local laws; then repair the leak. Never place a container where it may become part of an electrical circuit.

### 7.3. Specific end use(s)

None.

## **SECTION 8: Exposure controls/personal protection**

### **Control parameters**

Chlorodifluoromethane (Refrigerant Gas R22) (75-45-6)		
ACGIH	ACGIH OEL TWA [ppm]	1000 ppm
USA OSHA Not established		

### **Exposure controls**

Appropriate engineering controls

: Ensure exposure is below occupational exposure limits (where available). Product to be handled in a closed system. Oxygen detectors should be used when asphyxiating gases may be released. Systems under pressure should be regularly checked for leakages. Provide adequate general and local exhaust ventilation. Consider work permit system e.g. for maintenance activities.

Hand protection

Wear working gloves when handling gas containers.

Eye protection

Wear safety glasses with side shields or goggles when transfilling or breaking transfer connections. Wear safety glasses with side shields. Wear goggles and a face shield when transfilling or breaking transfer connections.

Skin and body protection

: Wear metatarsal shoes and work gloves for cylinder handling, and protective clothing where needed. Wear appropriate chemical gloves during cylinder changeout or wherever contact with product is possible. Select per OSHA 29 CFR 1910.132, 1910.136, and 1910.138.

Respiratory protection

: An air-supplied respirator must be used while working with this product in confined spaces. The respiratory protection used must conform with OSHA rules as specified in 29 CFR 1910.134. Select per OSHA 29 CFR 1910.134 and ANSI Z88.2. When workplace conditions warrant respirator use, follow a respiratory protection program that meets OSHA 29 CFR 1910.134, ANSI Z88.2, or MSHA 30 CFR 72.710 (where applicable). Use an air-supplied or air-purifying cartridge if the action level is exceeded. Ensure that the respirator has the appropriate protection factor for the exposure level. If cartridge type respirators are used, the cartridge must be appropriate for the chemical exposure. For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus (SCBA).

Thermal hazard protection

: Wear cold insulating gloves when transfilling or breaking transfer connections. None necessary.

Environmental exposure controls

Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

Other information : Wear safety shoes while handling containers.

### **SECTION 9: Physical and chemical properties**

### Information on basic physical and chemical properties

Physical state

Appearance : Clear, colorless gas. Liquefied compressed gas.

Molecular mass : 86.5 g/mol

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Boiling point

## Chlorodifluoromethane (Refrigerant Gas R22) PRAXAIR



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Color : Colorless.

Odor : Slightly ethereal Odor >20% concentration

Odor threshold : No data available Not applicable. Relative evaporation rate (butyl acetate=1) : No data available Relative evaporation rate (ether=1) : Not applicable. Melting point -157 °C Freezing point : -160 °C

: No data available Flash point

Critical temperature : 96.1 °C Auto-ignition temperature : 632 - 635 °C : > 260 °C Decomposition temperature

Flammability (solid, gas) : No data available Vapor pressure : 910 kPa

Critical pressure : 4990 kPa

: 3.581 kg/m3 absolute vapor density @at 21.1°C, 1 atm Relative vapor density at 20 °C

: -40.7 °C

: 3.87 at 0°C, Air = 1 Relative density Density : 1.21 g/cm3 (at 20 °C)

Relative gas density : 3

Solubility : Water: 3628 mg/l

Partition coefficient n-octanol/water (Log Pow)

Partition coefficient n-octanol/water (Log Kow) : Not applicable. Viscosity, kinematic : Not applicable. Viscosity, dynamic : Not applicable. Explosive properties : Not applicable.

Oxidizing properties : None.

: Non flammable. **Explosion limits** 

Other information

Gas group : Press. Gas (Liq.)

Additional information Gas/vapor heavier than air. May accumulate in confined spaces, particularly at or below ground

## **SECTION 10: Stability and reactivity**

10.1.	Reactivity	
		No reactivity hazard other than the effects described in sub-sections below.
10.2.	Chemical stability	
		Stable under normal conditions.
10.3.	Possibility of hazardous reactions	
		None.
10.4.	Conditions to avoid	
		Heat.
10 E	Incompatible materials	

Zinc. Polystyrene. Magnesium. Alloys with >2% magnesium in the presence of water. Natural

rubber.





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### 10.6. **Hazardous decomposition products**

If involved in a fire the following toxic and/or corrosive fumes may be produced by thermal decomposition: Chlorides. Fluorides.

## **SECTION 11: Toxicological information**

### Information on toxicological effects

: Not classified Acute toxicity

Chlorodifluoromethane (Refrigerant Gas R22) ( \f )75-45-6	
LC50 Inhalation - Rat [ppm]	220000 ppm/4h
ATE US (gases)	220000 ppmV/4h

Skin corrosion/irritation Not classified

pH: Not applicable.

Serious eye damage/irritation Not classified

pH: Not applicable.

Respiratory or skin sensitization Not classified Germ cell mutagenicity Not classified Not classified Carcinogenicity

### Chlorodifluoromethane (Refrigerant Gas R22) (75-45-6)

IARC group 3 - Not classifiable

Reproductive toxicity Not classified STOT-single exposure Not classified STOT-repeated exposure Not classified Not classified Aspiration hazard

## **SECTION 12: Ecological information**

### 12.1. **Toxicity**

Ecology - general : No ecological damage caused by this product.

### Persistence and degradability

Chlorodifluoromethane (Refrigerant Gas R22) (75-45-6)	
Persistence and degradability	Not readily biodegradable.

### 12.3. **Bioaccumulative potential**

Chlorodifluoromethane (Refrigerant Gas R22)	hlorodifluoromethane (Refrigerant Gas R22) (75-45-6)	
BCF - Fish [1]	(no significant bioaccumulation)	
Partition coefficient n-octanol/water (Log Pow)	1.08	
Partition coefficient n-octanol/water (Log Kow)	Not applicable.	
Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.	

### 12.4. **Mobility in soil**

Chlorodifluoromethane (Refrigerant Gas R22) (75-45-6)		(75-45-6)
	Mobility in soil	No data available.
	Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.

### Other adverse effects 12.5.

: HARMS PUBLIC HEALTH AND THE ENVIRONMENT BY DESTROYING OZONE IN THE Effect on ozone layer

**UPPER ATMOSPHERE** 

CFC group : VIII Ozone depletion potential [R11=1] : 0.055

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Global warming potential [CO2=1] : 1700

Effect on the global warming : Contains Fluorinated greenhouse gases covered by the Kyoto protocol.

### **SECTION 13: Disposal considerations**

### Waste treatment methods

Product/Packaging disposal recommendations

: Do not attempt to dispose of residual or unused quantities. Return container to supplier. Dispose of contents/container in accordance with local/regional/national/international

regulations. Contact supplier for any special requirements.

## **SECTION 14: Transport information**

In accordance with DOT

Transport document description (DOT) : UN1018 Chlorodifluoromethane, 2.2

UN-No.(DOT) : UN1018

Proper Shipping Name (DOT) : Chlorodifluoromethane

Class (DOT) : 2.2 - Class 2.2 - Non-flammable compressed gas 49 CFR 173.115

Hazard labels (DOT) : 2.2 - Non-flammable gas



: G - Identifies proper shipping name (PSN) requiring the addition of technical name(s) in DOT Symbols

parentheses following the PSN.

DOT Special Provisions (49 CFR 172.102) T50 - When portable tank instruction T50 is referenced in Column (7) of the 172.101 Table, the

applicable liquefied compressed gases are authorized to be transported in portable tanks in

accordance with the requirements of 173.313 of this subchapter.

### **Additional information**

Emergency Response Guide (ERG) Number : 126

Other information : No supplementary information available.

: Avoid transport on vehicles where the load space is not separated from the driver's Special transport precautions

compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers: - Ensure there is adequate ventilation. - Ensure that containers are firmly secured. - Ensure cylinder valve is closed and not leaking. - Ensure valve outlet cap nut or plug (where provided)

is correctly fitted. - Ensure valve protection device (where provided) is correctly fitted.

## Transport by sea

UN-No. (IMDG)

Proper Shipping Name (IMDG) : CHLORODIFLUOROMETHANE (REFRIGERANT GAS R 22)

Class (IMDG) : 2 - Gases

Division (IMDG) : 2.2 - Non-flammable, non-toxic gases

MFAG-No : 126

Air transport

UN-No. (IATA) : 1018

Proper Shipping Name (IATA) : Chlorodifluoromethane

Class (IATA)

Civil Aeronautics Law : Gases under pressure/Gases nonflammable nontoxic under pressure





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## **SECTION 15: Regulatory information**

### 15.1. US Federal regulations

### Chlorodifluoromethane (Refrigerant Gas R22) (75-45-6)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Subject to reporting requirements of United States SARA Section 313

SARA Section 313 - Emission Reporting

All components of this product are listed on the Toxic Substances Control Act (TSCA) inventory.

WARNING: Contains Chlorodifluoromethane (Refrigerant Gas R22), a substance(s) that harms public health and the environment by destroying ozone in the upper atmosphere.

### 15.2. International regulations

### **CANADA**

### Chlorodifluoromethane (Refrigerant Gas R22) (75-45-6)

Listed on the Canadian DSL (Domestic Substances List)

### **EU-Regulations**

## Chlorodifluoromethane (Refrigerant Gas R22) (75-45-6)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

### **National regulations**

### Chlorodifluoromethane (Refrigerant Gas R22) (75-45-6)

Listed on the AICS (Australian Inventory of Chemical Substances)

Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)

Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory

Listed on the Japanese ISHL (Industrial Safety and Health Law)

Listed on KECL/KECI (Korean Existing Chemicals Inventory)

Listed on NZIoC (New Zealand Inventory of Chemicals)

Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

Japanese Pollutant Release and Transfer Register Law (PRTR Law)

Listed on the Canadian IDL (Ingredient Disclosure List)

Listed on INSQ (Mexican National Inventory of Chemical Substances)

Listed on the TCSI (Taiwan Chemical Substance Inventory)

### 15.3. US State regulations

Chlorodifluoromethane (Refrigerant Gas R22)(75-45-6)	
U.S California - Proposition 65 - Carcinogens List	No
U.S California - Proposition 65 - Developmental Toxicity	No
U.S California - Proposition 65 - Reproductive Toxicity - Female	No
U.S California - Proposition 65 - Reproductive Toxicity - Male	No
State or local regulations	U.S Massachusetts - Right To Know List U.S New Jersey - Right to Know Hazardous Substance List U.S Pennsylvania - RTK (Right to Know) List





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### **SECTION 16: Other information**

Other information

: When you mix two or more chemicals, you can create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an industrial hygienist or other trained person when you evaluate the end product. Before using any plastics, confirm their compatibility with this product.

Linde asks users of this product to study this SDS and become aware of the product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this SDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information.

The opinions expressed herein are those of qualified experts within Linde Inc. We believe that the information contained herein is current as of the date of this Safety Data Sheet. Since the use of this information and the conditions of use are not within the control of Linde Inc, it is the user's obligation to determine the conditions of safe use of the product.

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NFPA health hazard : 2 - Materials that, under emergency conditions, can cause temporary incapacitation or residual injury.

> : 0 - Materials that will not burn under typical fire conditions. including intrinsically noncombustible materials such as

concrete, stone, and sand.

: 1 - Materials that in themselves are normally stable but can become unstable at elevated temperatures and pressures.



### SDS US GHS DUAL BRANDED LINDE->PRAXAIR

NFPA fire hazard

NFPA instability

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.