

Material Safety Data Sheet



Chlorodifluoromethane (Halocarbon 22)

Section 1. Chemical product and company identification

Product Name : Chlorodifluoromethane (Halocarbon 22)
Supplier : AIRGAS INC., on behalf of its subsidiaries
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253
Product use : Synthetic/Analytical chemistry.Refrigeration.
MSDS# : 001016
Date of Preparation/Revision : **5/19/2005.**
In case of emergency : 1-800-949-7937

Section 2. Composition, Information on Ingredients

<u>Name</u>	<u>CAS number</u>	<u>% Volume</u>	<u>Exposure limits</u>
Chlorodifluoromethane (Halocarbon 22)	75-45-6	100	ACGIH TLV (United States, 5/2004). Notes: 1996 Adoption Refers to Appendix A -- Carcinogens. TWA: 3540 mg/m ³ 8 hour(s). Form: All forms TWA: 1000 ppm 8 hour(s). Form: All forms NIOSH REL (United States, 6/2001). STEL: 4375 mg/m ³ 15 minute(s). Form: All forms STEL: 1250 ppm 15 minute(s). Form: All forms TWA: 3500 mg/m ³ 10 hour(s). Form: All forms TWA: 1000 ppm 10 hour(s). Form: All forms

Section 3. Hazards identification

Physical state : Gas. (COLORLESS LIQUEFIED COMPRESSED GAS WITH A FAINT ODOR)

Emergency overview : Warning!
CONTENTS UNDER PRESSURE.
CAUSES DAMAGE TO THE FOLLOWING ORGANS: KIDNEYS, LIVER, SPLEEN, CARDIOVASCULAR SYSTEM, RESPIRATORY TRACT, CENTRAL NERVOUS SYSTEM.
POSSIBLE CANCER HAZARD.
MAY CAUSE CANCER BASED ON ANIMAL DATA.

Do not puncture or incinerate container. Risk of cancer depends on duration and level of exposure.
Contact with rapidly expanding gases can cause frostbite.

Routes of entry : Inhalation

Potential acute health effects

Eyes : No known significant effects or critical hazards.

Skin : No known significant effects or critical hazards.

Inhalation : Acts as a simple asphyxiant.

Ingestion : Ingestion is not a normal route of exposure for gases

Potential chronic health effects : **CARCINOGENIC EFFECTS** A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC.
MUTAGENIC EFFECTS Not available.
TERATOGENIC EFFECT: Not available.

Medical conditions aggravated by overexposure : Acute or chronic respiratory conditions may be aggravated by overexposure to this gas.

See toxicological information (section 11)

Section 4. First aid measures

No action shall be taken involving any personal risk or without suitable training. If fumes are still suspected to be present, the rescuer should wear an appropriate mask or a self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

- Eye contact** : In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.
- Skin contact** : In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
- Frostbite** : Try to warm up the frozen tissues and seek medical attention.
- Inhalation** : If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.
- Ingestion** : Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms appear.

Section 5. Fire fighting measures

- Flammability of the product** : Non-flammable.
- Fire fighting media and instructions** : Use an extinguishing agent suitable for surrounding fires.

If involved in fire, shut off flow immediately if it can be done without risk. Apply water from a safe distance to cool container and protect surrounding area.

No specific hazard.
- Special protective equipment for fire-fighters** : Fire fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full facepiece operated in positive pressure mode.

Section 6. Accidental release measures

- Personal precautions** : Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment (Section 8). Shut off gas supply if this can be done safely. Isolate area until gas has dispersed.
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 7. Handling and storage

- Handling** : Do not puncture or incinerate container. High pressure gas. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.
- Storage** : Keep container tightly closed. Keep container in a cool, well-ventilated area. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).

Section 8. Exposure Controls, Personal Protection

- Engineering controls** : Use only with adequate ventilation. If user operations generate dust, fumes, vapor or mist, use process enclosures, local exhaust ventilation, or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
- Personal protection**
 - Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.
 - Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

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- Respiratory** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
The applicable standards are (US) 29 CFR 1910.134 and (Canada) Z94.4-93
- Hands** : Chemical-resistant, impervious gloves or gauntlets complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Personal protection in case of a large spill** : A self-contained breathing apparatus should be used to avoid inhalation of the product.
- Consult local authorities for acceptable exposure limits.**

Section 9. Physical and chemical properties

- Molecular weight** : 86.47 g/mole
- Molecular formula** : C-H-Cl-F₂
- Boiling/condensation point** : -40.85°C (-41.5°F)
- Melting/freezing point** : -146.15°C (-231.1°F)
- Critical temperature** : Not available.
- Vapor pressure** : 123 psig
- Vapor density** : 3.07 (Air = 1)
- Specific Volume (ft³/lb)** : 4.40529
- Gas Density (lb/ft³)** : 0.227
- Physical chemical comments** : Not available.

Section 10. Stability and reactivity

- Stability and reactivity** : The product is stable.
- Hazardous decomposition products** : These products are halogenated compounds, hydrogen chloride, hydrogen fluoride.

Section 11. Toxicological information

- Chronic effects on humans** : **CARCINOGENIC EFFECTS** A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC.
Causes damage to the following organs: kidneys, liver, spleen, cardiovascular system, upper respiratory tract, central nervous system (CNS).
- Other toxic effects on humans** : No specific information is available in our database regarding the other toxic effects of this material for humans.
- Specific effects**
- Carcinogenic effects** : May cause cancer based on animal data. Risk of cancer depends on duration and level of exposure.
- Mutagenic effects** : No known significant effects or critical hazards.
- Reproduction toxicity** : No known significant effects or critical hazards.

Section 12. Ecological information

- Products of degradation** : These products are carbon oxides (CO, CO₂) and water, halogenated compounds.
- Toxicity of the products of biodegradation** : The products of degradation are more toxic than the product itself.
- Environmental fate** : Not available.
- Environmental hazards** : No known significant effects or critical hazards.
- Toxicity to the environment** : Not available.

Section 13. Disposal considerations

Product removed from the cylinder must be disposed of in accordance with appropriate Federal, State, local regulation. Return cylinders with residual product to Airgas, Inc. Do not dispose of locally.

Section 14. Transport information

Regulatory information	UN number	Proper shipping name	Class	Packing group	Label	Additional information
DOT Classification	UN1018	CHLORODIFLUOROMETHANE OR REFRIGERANT GAS R 22	2.2	Not applicable (gas).		<p>Limited quantity Yes.</p> <p>Packaging instruction Passenger Aircraft Quantity limitation: 75 kg</p> <p>Cargo Aircraft Quantity limitation: 150 kg</p> <p>Special provisions T50</p>
TDG Classification	UN1018	CHLORODIFLUOROMETHANE OR REFRIGERANT GAS R 22	2.2	Not applicable (gas).		<p>Explosive Limit and Limited Quantity Index 0.125</p> <p>Passenger Carrying Road or Rail Index 75</p>
Mexico Classification	UN1018	CHLORODIFLUOROMETHANE OR REFRIGERANT GAS R 22	2.2	Not applicable (gas).		-

Section 15. Regulatory information

United States

U.S. Federal regulations : TSCA 6 final risk management: chlorodifluoromethane
 TSCA 8(b) inventory: chlorodifluoromethane
 SARA 302/304/311/312 extremely hazardous substances: No products were found.
 SARA 302/304 emergency planning and notification: No products were found.
 SARA 302/304/311/312 hazardous chemicals: chlorodifluoromethane
 SARA 311/312 MSDS distribution - chemical inventory - hazard identification:
 chlorodifluoromethane: Sudden Release of Pressure, Delayed (Chronic) Health Hazard
 Clean Water Act (CWA) 307: No products were found.
 Clean Water Act (CWA) 311: No products were found.
 Clean air act (CAA) 112 accidental release prevention: No products were found.

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Clean air act (CAA) 112 regulated flammable substances: No products were found.

Clean air act (CAA) 112 regulated toxic substances: No products were found.

SARA 313

	<u>Product name</u>	<u>CAS number</u>	<u>Concentration</u>
Form R - Reporting requirements	: Chlorodifluoromethane (Halocarbon 22)	75-45-6	100
Supplier notification	: Chlorodifluoromethane (Halocarbon 22)	75-45-6	100

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

State regulations : Pennsylvania RTK: chlorodifluoromethane: (generic environmental hazard)
Massachusetts RTK: chlorodifluoromethane
New Jersey: chlorodifluoromethane

Canada

WHMIS (Canada) : Class A: Compressed gas.
CEPA DSL: chlorodifluoromethane

Section 16. Other information

United States

Label Requirements : CONTENTS UNDER PRESSURE.
CAUSES DAMAGE TO THE FOLLOWING ORGANS: KIDNEYS, LIVER, SPLEEN, CARDIOVASCULAR SYSTEM, RESPIRATORY TRACT, CENTRAL NERVOUS SYSTEM.
POSSIBLE CANCER HAZARD.
MAY CAUSE CANCER BASED ON ANIMAL DATA.

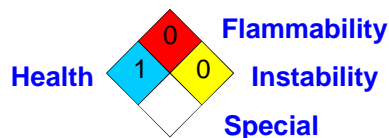
Canada

Label Requirements : Class A: Compressed gas.

Hazardous Material Information System (U.S.A.)

Health	*	1
Fire hazard		0
Reactivity		0
Personal protection		C

National Fire Protection Association (U.S.A.)



Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.