MATERIAL SAFETY DATA SHEET

SECTION – 1 : CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name : Chlorodifluoromethane (Halocarbon 22) – CHCLF2

Synonyms : Chlorodifluoromethane-Methane, HCFC-22, Fluorocarbon 22 (Freon 22)

Manufacturer/Supplier Name : **M/s GUJARAT FLUOROCHEMICALS LIMITED**

Address : Survey No 16/3, 26, 27, Ranjitnagar Pin-389 380,
Tal. Ghoghamba, Dist. Panchmahal, Gujarat,

Business Phone : +91 – 2678 – 248107, 248152

Business Fax : +91 – 2678 – 248153

Web Site : www.gfl.co.in

SECTION – 2 : COMPOSITION, INFORMATION ON INGREDIENTS SECTION

Name	CAS No.	% Volume	Exposure Limits
CHLORODIFLUOROMETHANE (HALOCARBON 22)	75-45-6	100	**ACGIH TLV (United States, 2/2010).** TWA: 3540 mg/m³ 8 hour(s). TWA: 1000 ppm 8 hour(s).
			NIOSH REL (United States, 6/2009). STEL: 4375 mg/m³ 15 minute(s).STEL: 1250 ppm 15 minute(s). TWA: 3500 mg/m³ 10 hour(s). TWA: 1000 ppm 10 hour(s).
			OSHA PEL 1989 (United States, 3/1989). TWA: 3500 mg/m³ 8 hour(s). TWA: 1000 ppm 8 hour(s).

SECTION – 3 : HAZARDS IDENTIFICATION

Physical state Gas. [Liquefied compressed gas.]

Emergency overview : WARNING!

MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA CONTENTS UNDER PRESSURE

Do not puncture or incinerate container. May cause target organ damage, based on animal data.

Contact with rapidly expanding gases can cause frostbite

Target organs : May cause damage to the following organs: kidneys, lungs, liver, heart, spleen, cardiovascular system, upper respiratory tract, central nervous system (CNS).

Routes of entry: Inhalation

Potential acute health effects

Eyes : Contact with rapidly expanding gas may cause burns or frostbite

Skin: Contact with rapidly expanding gas may cause burns or frostbite

Inhalation: Acts as a simple asphyxiant

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

Potential chronic health effects

Chronic effects : May cause target organ damage, based on animal data

Target organs: May cause damage to the following organs: kidneys, lungs, liver, heart, spleen, cardiovascular system, upper respiratory tract, central nervous system (CNS).

Medical conditions aggravated by overexposure : Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

Pictogram:

NFPA Code – **Health** – 1, **Fire** – 0, **Reactivity** - 0

SECTION – 4 : FIRST AID MEASURES

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

EYE CONTACT: Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.

SKIN CONTACT: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.

FROSTBITE: Try to warm up the frozen tissues and seek medical attention.

INHALATION: Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

I**NGESTION**: As this product is a gas, refer to the inhalation section

. SECTION – 5 : FIRE FIGHTING MEASURES

Flammability of the product : Non-flammable

Products of combustion : Decomposition products may include the following materials: carbon dioxide, carbon monoxide, halogenated compounds, carbonyl halides

Fire-fighting media and instructions : Use an extinguishing agent suitable for the surrounding fire, Apply water from a safe distance to cool container and protect surrounding area. If involved in fire, shut off flow immediately if it can be done without risk, Contains gas under pressure. In a fire or if heated, a pressure increase will occur and the container may burst or explode

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece 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

Methods for cleaning up: Immediately contact emergency personnel. Stop leak if without risk. Note: see section 1 for emergency contact information and section 13 for waste disposal

SECTION – 7 : HANDLING AND STORAGE SECTION

Handling	: High pressure gas. Do not puncture or incinerate container. 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	: 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. 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.
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 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	: Self-contained breathing apparatus (SCBA) should be used to avoid inhalation of the product.

Product name

Chlorodifluoromethane

ACGIH TLV (United States, 2/2010).

TWA: 3540 mg/m³ 8 hour(s).

TWA: 1000 ppm 8 hour(s).

NIOSH REL (United States, 6/2009).

STEL: 4375 mg/m³ 15 minute(s).

STEL: 1250 ppm 15 minute(s).

TWA: 3500 mg/m³ 10 hour(s).

TWA: 1000 ppm 10 hour(s).

OSHA PEL 1989 (United States, 3/1989).

TWA: 3500 mg/m³ 8 hour(s).

TWA: 1000 ppm 8 hour(s).

Consult local authorities for acceptable exposure limits.

SECTION – 9 : PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Molecular weight : 86.47 g/mole

Molecular formula : C-H-Cl-F2

Boiling/condensation point : -41°C (-41.8°F)

Melting/freezing point : -146°C (-230.8°F)

Critical temperature : 96.2°C (205.2°F)

Vapor pressure : 123 (psig)

Vapor density : 3 (Air = 1)

Specific Volume (ft 3/lb) : 4.4053

Gas Density (lb/ft 3) : 0.227

ODP (Ozone Depleting Potential: 0.05

GWP (Global Warming potential) : 1700

SECTION – 10 : STABILITY AND REACTIVITY

Stability and reactivity : The product is stable

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur

SECTION – 11 : TOXICOLOGICAL INFORMATION

Toxicity data

Product/ingredient name	Result	Species	Dose	Exposure
Chlorodifluoromethane	LD Oral	Rat	>43200 ug/kg	--
	LC50 Inhalation	Rat	35 pph	15 minutes

Chronic effects on humans : CARCINOGENIC EFFECTS: A4 (Not classifiable for humans or animals.) by ACGIH, 3 (Not classifiable for humans.) by IARC.May cause damage to the following organs: kidneys, lungs, liver, heart, 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 to humans

Specific effects

Carcinogenic effects : No known significant effects or critical hazards
Mutagenic effects: No known significant effects or critical hazards
Reproduction toxicity: No known significant effects or critical hazards

SECTION – 12 : ECOLOGICAL INFORMATION

Aquatic ecotoxicity: Not available

Environmental fate: Not available

Environmental hazards: This product shows a low bioaccumulation potential

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).		**Limited quantity** Yes. **Packaging instruction** **Passenger aircraft** Quantity limitation: 75 kg **Cargo aircraft** Quantity limitation: 150 kg **Special provisions** T50

TDG Classification	UN1018	Chlorodifluoromethane Or Refrigerant Gas – R 22	2.2	Not applicable (gas).		**Explosive Limit and Limited Quantity Index** 0.125 **Passenger Carrying Road or Rail Index** 75
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 8(a) IUR: Partial exemption
United States inventory (TSCA 8b): This material is listed or exempted.
TSCA 12(b) one-time export: 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

SARA 313

	Product Name	CAS No.	Concentration
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

Connecticut Carcinogen Reporting: This material is not listed.
Connecticut Hazardous Material Survey: This material is not listed.
Florida substances: This material is not listed.
Illinois Chemical Safety Act: This material is not listed.
Illinois Toxic Substances Disclosure to Employee Act: This material is not listed.
Louisiana Reporting: This material is not listed.

Louisiana Spill: This material is not listed.
Massachusetts Spill: This material is not listed.
Massachusetts Substances: This material is listed.
Michigan Critical Material: This material is not listed.
Minnesota Hazardous Substances: This material is not listed.
New Jersey Hazardous Substances: This material is listed.
New Jersey Spill: This material is not listed.
New Jersey Toxic Catastrophe Prevention Act: This material is not listed.
New York Acutely Hazardous Substances: This material is listed.
New York Toxic Chemical Release Reporting: This material is not listed.
Pennsylvania RTK Hazardous Substances: This material is listed
Rhode Island Hazardous Substances: This material is not listed

Canada

WHMIS (Canada) Class A: Compressed gas.

CEPA Toxic substances: This material is listed.
Canadian ARET: This material is not listed.
Canadian NPRI: This material is listed.
Alberta Designated Substances: This material is not listed.
Ontario Designated Substances: This material is not listed.
Quebec Designated Substances: This material is not listed

SECTION – 16 : ADDITIONAL INFORMATION

References: Not available.

Other Special Considerations: Not available.

Created **:** 27/12/2018 @ 15.00 hrs

Last Updated **:** 20/03/2019 @ 17.00 hrs

The above information pertains to this product as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to this product may substantially alter the Composition and hazards of the product. Since conditions of use are outside our control, we make no Warranties, express or implied, and assume no liability in connection with any use of this information.