



AIR LIQUIDE

# MATERIAL SAFETY DATA SHEET

*Prepared to U.S. OSHA, CMA, ANSI and Canadian WHMIS Standards*

## 1. PRODUCT AND COMPANY INFORMATION

### CHEMICAL NAME; CLASS: CHLORODIFLUOROETHANE

**SYNONYMS:** Difluorochloroethane; Chloroethylidene Fluoride; 1,1-Difluoro-1-Chloroethane;  
 $\alpha$ -Chloroethylidene Fluoride; Fluorocarbon FC142b; Freon 142; Freon 142b;  
CFC 142b; Genetron 101; Genetron 142b; R-142b

**CHEMICAL FAMILY NAME:** Halogenated Hydrocarbon

**FORMULA:**  $C_2H_3ClF_2$ ;  $CH_3CClF_2$

#### PRODUCT USE:

Document Number: 20027

Refrigerant; chemical intermediate in  
formulation of aerosol dispersants agent;  
low temperature solvent.

#### MANUFACTURED/SUPPLIED FOR: ADDRESS:



AIR LIQUIDE

2700 Post Oak Drive  
Houston, TX 77056-8229

#### EMERGENCY PHONE:

CHEMTREC: 1-800-424-9300

#### BUSINESS PHONE:

General MSDS Information 1-713/896-2896  
Fax on Demand: 1-800/231-1366

## 2. HAZARD IDENTIFICATION

**EMERGENCY OVERVIEW:** Chlorodifluoroethane is a colorless, odorless, flammable, liquefied gas. Chlorodifluoroethane can cause central nervous system depression after inhalation exposures. Symptoms of such over-exposure can include drowsiness, nausea, headache, fatigue, and weakness. At high concentrations, the gas can act as an asphyxiant, by displacing oxygen. Therefore, exposure to high concentrations of this gas can be fatal. Frostbite can be caused by contact with rapidly expanding gases or the liquefied gas. Vapors of Chlorodifluoroethane may spread long distances; distant ignition and flash-back are possible. When involved in a fire, toxic decomposition fumes include carbon dioxide, carbon monoxide, hydrogen fluoride, hydrogen chloride and possibly phosgene. Emergency responders must wear the proper personal protective equipment (and have appropriate fire-suppression equipment) suitable for the situation to which they are responding.

**SYMPTOMS OF OVER-EXPOSURE BY ROUTE OF EXPOSURE:** The most significant route of over-exposure for this gas is by inhalation.

At high concentrations, Chlorodifluoroethane act as a narcotic. Over-exposure by inhalation may cause nausea, headache, weakness or temporary nervous system depression. The effects of central nervous system depression can include headache, confusion, incoordination and loss of consciousness. Over-exposure to high concentrations can cause sensitization of the heart to adrenaline.

High concentrations of this gas can also cause an oxygen-deficient environment. Individuals breathing such an atmosphere may experience symptoms which include headaches, ringing in ears, dizziness, drowsiness, unconsciousness, nausea, vomiting, and depression of all the senses. Under some circumstances of over-exposure, death may occur. The following effects associated with various levels of oxygen are as follows:

<u>CONCENTRATION</u>	<u>SYMPTOM OF EXPOSURE</u>
12-16% Oxygen:	Breathing and pulse rate increased, muscular coordination slightly disturbed.
10-14% Oxygen:	Emotional upset, abnormal fatigue, disturbed respiration.
6-10% Oxygen:	Nausea and vomiting, collapse or loss of consciousness.
Below 6%:	Convulsive movements, possible respiratory collapse, and death.

**OTHER POTENTIAL HEALTH EFFECTS:** Contact with liquid or rapidly expanding gases (which are released under high pressure) may cause frostbite. Symptoms of frostbite include change in skin color to white or grayish-yellow. The pain after contact can quickly subside.

**HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in Lay Terms.** Over-exposure to may cause the following health effects:

**ACUTE:** The most significant hazard associated with this product is inhalation of high concentrations of Chlorodifluoroethane. Such over-exposure can cause central nervous system depression and can cause oxygen deficiency. Symptoms of central nervous system depression can include drowsiness, nausea, headache, fatigue, and weakness. Symptoms of oxygen deficiency include respiratory difficulty, ringing in ears, headaches, shortness of breath, wheezing, headache, dizziness, indigestion, nausea, and, at high concentrations, unconsciousness or death may occur. The skin of a victim of over-exposure may have a blue color.

**CHRONIC:** There are currently no confirmed adverse health effects on humans associated with chronic exposure to this compressed gas.

**TARGET ORGANS:** Respiratory system, central nervous system and heart.

### 3. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	mole %	EXPOSURE LIMITS IN AIR					
			ACGIH		OSHA			OTHER
			TLV ppm	STEL ppm	PEL ppm	STEL ppm	IDLH Ppm	
Chlorodifluoroethane	75-68-3	100%	There are no specific exposure limits for Chloro- difluoroethane. Chlorodifluoroethane is a simple asphyxiant (SA). Oxygen levels should be maintained above 19.5%.					DFG MAK: 1000 ppm

**This material is classified as hazardous under OSHA regulations in the United States and the WHMIS in Canada.**

NE = Not Established

C = Ceiling Limit

See Section 16 for Definitions of Terms Used.

NOTE: all WHMIS required information is included. It is located in appropriate sections based on the ANSI Z400.1-2004 format.

### 4 FIRST-AID MEASURES

**RESCUERS SHOULD NOT ATTEMPT TO RETRIEVE VICTIMS OF EXPOSURE TO THIS PRODUCT WITHOUT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. At a minimum, Self-Contained Breathing Apparatus should be worn.**

Remove victim(s) to fresh air, as quickly as possible. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Only trained personnel should administer supplemental oxygen.

**SKIN EXPOSURE:** Contact with the liquid or rapidly expanding gases can cause frostbite. In the event of frostbite, medical attention must be sought. Frozen tissue is painless and appears waxy, with a possible yellow color. Frozen tissue will become swollen, painful and prone to infection when thawed. If the frozen part of the body has been thawed by the time medical attention has been obtained, cover the area with a dry sterile dressing and a large bulky protective covering.

**EYE EXPOSURE:** If liquid is splashed into eyes, or if irritation of the eye develops after exposure to liquid or gas, open victim's eyes while under gentle running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes. Seek medical assistance immediately, preferably an ophthalmologist.

Victim(s) must be taken for medical attention. Rescuers should be taken for medical attention, if necessary. Take copy of label and MSDS to physician or other health professional with victim(s).

### 5. FIRE-FIGHTING MEASURES

**FLASH POINT:** Not applicable; flammable gas.

**AUTOIGNITION TEMPERATURE:** Not determined.

**FLAMMABLE LIMITS (in air by volume, %):**

Lower (LEL): 9.0%

Upper (UEL): 14.8%

**FIRE EXTINGUISHING MATERIALS:** Extinguish fires of this gas by shutting-off the source of the gas. Use water spray to cool fire-exposed containers, structures, and equipment. For smaller fires, dry chemical, carbon dioxide and water spray can be used.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** Chlorodifluoroethane is extremely flammable and can form explosive mixtures in air. Vapors of the gas can travel a considerable distance to a source of ignition and flashback. When involved in a fire, this material may decompose and produce toxic gases (i.e. carbon dioxide, carbon monoxide, hydrogen fluoride and possibly phosgene). Because of the decomposition product of hydrogen fluoride, when involved in a fire, the fumes can be irritating and pose a hazard to firefighters.

**DANGER!** Fires impinging (direct flame) on the outside surface of unprotected cylinders of Chlorodifluoroethane can be very dangerous. Exposure to fire could cause a catastrophic failure of the cylinder releasing the contents into a fireball and explosion of released gas. The resulting fire and explosion can result in severe equipment damage and personnel injury or death over a large area around the cylinder. For massive fires in large areas, use unmanned hose holder or monitor nozzles; if this is not possible, withdraw from area and allow fire to burn.

Explosion Sensitivity to Mechanical Impact: Chlorodifluoroethane is not sensitive to mechanical impact.

Explosion Sensitivity to Static Discharge: Chlorodifluoroethane is sensitive to static discharge and can ignite.

## 5. FIRE-FIGHTING MEASURES (Continued)

**SPECIAL FIRE-FIGHTING PROCEDURES:** Structural fire-fighters must wear Self-Contained Breathing Apparatus and full protective equipment. Because of the potential for a catastrophic failure of cylinders exposed to fire, evacuation of non-emergency personnel is essential. If water is not available for cooling or protection of cylinder exposures, evacuate the area. Refer to the North American Emergency Response Guidebook (Guide #115).

## 6. ACCIDENTAL RELEASE MEASURES

**LEAK RESPONSE:** Evacuate immediate area. Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. In case of a release, clear the affected area, protect people, and respond with trained personnel. Adequate fire protection must be provided.

Eliminate any possible sources of ignition, and provide maximum explosion-proof ventilation. If the gas is leaking from cylinder or valve, contact the supplier. Adequate fire protection must be provided. Use only non-sparking tools and equipment during the response.

Minimum Personal Protective Equipment should be **Level B: fire-retardant protective clothing, gloves and Self-Contained Breathing Apparatus**. Use only non-sparking tools and equipment. Locate and seal the source of the leaking gas. Protect personnel attempting the shut-off with water-spray. Allow the gas to dissipate. Combustible gas concentration must be below 10% of the LEL (LEL = 9.0%) prior to entry. Monitor the surrounding area for combustible gas levels and oxygen level. The atmosphere must have at least 19.5 percent oxygen before personnel can be allowed in the area without Self-Contained Breathing Apparatus.

Attempt to close the main source valve prior to entering the area. If this does not stop the release (or if it is not possible to reach the valve), allow the gas to release in-place or remove it to a safe area and allow the gas to be released there.

**THIS IS AN EXTREMELY FLAMMABLE GAS.** Protection of all personnel and the area must be maintained.

## 7. HANDLING AND STORAGE

**WORK PRACTICES AND HYGIENE PRACTICES:** Be aware of any signs of dizziness or fatigue; exposures to fatal concentrations of Chlorodifluoroethane could occur without any significant warning symptoms. Non-sparking tools should be used.

**STORAGE AND HANDLING PRACTICES:** Cylinders should be stored upright (with valve-protection cap in place) and firmly secured to prevent falling or being knocked over. Cylinders can be stored in the open, but in such cases, should be protected against extremes of weather and from the dampness of the ground to prevent rusting. Cylinders should be stored in dry, well-ventilated areas away from sources of heat, ignition and direct sunlight. Keep storage area clear of materials which can burn. Do not allow area where cylinders are stored to exceed 52 °C (125 °F). Store containers away from heavily trafficked areas and emergency exits. Store away from process and production areas, away from elevators, building and room exits or main aisles leading to exits. Protect cylinders against physical damage.

Cylinders should be separated from oxygen cylinders, or other oxidizers, by a minimum distance of 20 ft., or by a barrier of non-combustible material at least 5 ft. high, having a fire-resistance rating of at least 0.5 hours. Isolate from other incompatible chemicals (refer to Section 10, Stability and Reactivity).

Storage areas must meet national electrical codes for Class 1 Hazardous Areas. Post "No Smoking or Open Flames" signs in storage or use areas. Consider installation of leak detection and alarm for storage and use areas. Have appropriate extinguishing equipment in the storage area (i.e. sprinkler system, portable fire extinguishers).

Keep the smallest amount on-site as is necessary. Full and empty cylinders should be segregated. Use a first-in, first-out inventory system to prevent full containers from being stored for long periods of time.

Use non-sparking ventilation systems, approved explosion-proof equipment, and appropriate electrical systems. Electrical equipment used in gas-handling operations, or located in storage areas, should be non-sparking or explosion proof. Use a check valve in the discharge line to prevent hazardous backflow. Never tamper with pressure relief devices in valves and cylinders.

**SPECIAL PRECAUTIONS FOR HANDLING GAS CYLINDERS:** Compressed gases can present significant safety hazards. The following rules are applicable to work situations in which cylinders are being used.

**Before Use:** Move cylinders with a suitable hand-truck. Do not drag, slide or roll cylinders. Do not drop cylinders or permit them to strike each other. Secure cylinders firmly. Leave the valve protection cap (where provided) in-place until cylinder is ready for use.

## 7. HANDLING AND STORAGE (Continued)

**During Use:** Use designated CGA fittings and other support equipment. Do not use adapters. Do not heat cylinder by any means to increase the discharge rate of the product from the cylinder. Do not use oils or grease on gas-handling fittings or equipment. Immediately contact the supplier if there are any difficulties associated with operating cylinder valve. Never insert an object (e.g wrench, screwdriver, pry bar, etc.) into valve cap openings. Doing so may damage valve, causing a leak to occur. Use an adjustable strap wrench to remove over-tight or rusted caps. Never strike an arc, on a compressed gas cylinder or make a cylinder part of an electric circuit.

**After Use:** Close main cylinder valve. Valves should be closed tightly. Replace valve protection cap. Mark empty cylinders "EMPTY".

**NOTE:** Use only DOT or ASME code containers designed for gas storage. Close valve after each use and when empty.

**STANDARD VALVE CONNECTIONS FOR U.S. AND CANADA:** Use the proper CGA connections, DO NOT USE ADAPTERS:

THREADED:	CGA 510
PIN-INDEXED YOKE:	Not applicable.
ULTRA HIGH INTEGRITY:	Not applicable.

**PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT:** Follow practices indicated in Section 6 (Accidental Release Measures). Make certain application equipment is locked and tagged-out safely. Always use product in areas where adequate ventilation is provided.

## 8. EXPOSURE CONTROLS - PERSONAL PROTECTION

**VENTILATION AND ENGINEERING CONTROLS:** Use with adequate ventilation. Provide natural or explosion-proof ventilation adequate to ensure Chlorodifluoroethane does not reach its lower flammability limit of 9.0%. Local exhaust ventilation is preferred, because it prevents chemical dispersion into the work place by eliminating it at its source. If appropriate, install automatic monitoring equipment to detect the level of flammable gas.

**RESPIRATORY PROTECTION:** Maintain oxygen levels above 19.5% in the workplace. Use supplied air respiratory protection if oxygen levels are below 19.5% or during emergency response to a release of this product. If respiratory protection is required, follow the requirements of the Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), or equivalent State standards.

**EYE PROTECTION:** Splash goggles or safety glasses. Face-shields should be worn if contact with the liquefied gas is anticipated.

**HAND PROTECTION:** Wear leather gloves or glove protection appropriate to the specific operation for which this product is used.

**BODY PROTECTION:** Wear leather gloves when handling cylinders of Chlorodifluoroethane. Otherwise, wear glove protection appropriate to the specific operation for which Chlorodifluoroethane is used. Use low-temperature protective gloves when working with containers of Liquefied Chlorodifluoroethane.

## 9. PHYSICAL and CHEMICAL PROPERTIES

**GAS DENSITY @ 21.1°C (70°F) and 1 atm:** 0.268 lb/ft<sup>3</sup> (4.29 kg/m<sup>3</sup>)

**BOILING POINT @ 1 atm:** -25.0°C (-12.99°F)

**FREEZING/MELTING POINT @ 1 atm:** -9.72°C (14.5°F)

**SPECIFIC GRAVITY (air = 1) @ 21.1°C (70°F) and 1 atm:** 3.625

**pH:** Not applicable.

**SOLUBILITY IN WATER weight % @ 25°C (77°F):** Slight.

**MOLECULAR WEIGHT:** 100.5

**EVAPORATION RATE (nBuAc = 1):** Not applicable.

**EXPANSION RATIO:** Not applicable.

**ODOR THRESHOLD:** Not established.

**SPECIFIC VOLUME (ft<sup>3</sup>/lb):** 5.74

**VAPOR PRESSURE @ 21.1°C (70°F):** 43.52 psia

**COEFFICIENT WATER/OIL DISTRIBUTION:** Not applicable.

**APPEARANCE AND COLOR:** Colorless, odorless, flammable gas.

**HOW TO DETECT THIS SUBSTANCE (warning properties):** There are no distinct warning properties. In terms of leak detection, fittings and joints can be painted with a soap solution to detect leaks, which will be indicated by a bubble formation.

## 10. STABILITY and REACTIVITY

**STABILITY:** Normally stable.

**DECOMPOSITION PRODUCTS:** If product is ignite, it may decompose yielding toxic products (i.e. hydrogen fluoride, hydrogen chloride, carbon dioxide, carbon monoxide and possibly phosgene).

**MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE:** The following materials are not compatible with Chlorodifluoroethane: alkaline, alkaline earth metals, powdered aluminum, zinc, beryllium, magnesium, and their alloys, brass, and steel.

**HAZARDOUS POLYMERIZATION:** Will not occur.

**CONDITIONS TO AVOID:** Avoid contact with incompatible materials and avoid exposing cylinders to extremely high temperatures, which could cause the cylinders to rupture or burst.

## 11. TOXICOLOGICAL INFORMATION

**TOXICITY DATA:** The following information is available for Chlorodifluoroethane.

Microsomal Mutagenicity Assay-Salmonella typhimurium 50 pph/24 hours

Inhalation-Rat LC50 2050 g/m<sup>3</sup>/4 hours

Inhalation-Mouse LC50: 1758 g/m<sup>3</sup>/2 hours

**SUSPECTED CANCER AGENT:** Chlorodifluoroethane is not found on the following lists: FEDERAL OSHA Z LIST, NTP, IARC, CAL/OSHA; therefore is not considered to be, nor suspected to be a cancer-causing agent by these agencies.

**IRRITANCY OF PRODUCT:** Chlorodifluoroethane is not irritating; however, contact with rapidly expanding gases can cause frostbite to exposed tissue.

**SENSITIZATION OF PRODUCT:** Chlorodifluoroethane is not known to cause skin or respiratory sensitization in humans. Over-exposure to high concentrations can cause sensitization of the heart to adrenaline.

**REPRODUCTIVE TOXICITY INFORMATION:** Listed below is information concerning the effects of Chlorodifluoroethane on the human reproductive system.

Mutagenicity: No human mutagenicity effects have been described for Chlorodifluoroethane. Mutagenicity data are available for Chlorodifluoroethane, obtained during studies of certain bacterial strains exposed to relatively high doses of this gas.

Embryotoxicity: No embryotoxic effects have been described for Chlorodifluoroethane.

Teratogenicity: No teratogenicity effects have been described for Chlorodifluoroethane.

Reproductive Toxicity: No reproductive toxicity effects have been described for Chlorodifluoroethane.

*A mutagen is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generation lines. An embryotoxin is a chemical which causes damage to a developing embryo (i.e. within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A teratogen is a chemical which causes damage to a developing fetus, but the damage does not propagate across generational lines. A reproductive toxin is any substance which interferes in any way with the reproductive process.*

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** Pre-existing respiratory conditions, central nervous system and cardio-vascular conditions may be aggravated by over-exposure to this product.

**RECOMMENDATIONS TO PHYSICIANS:** Severe over-exposures requiring medical attention should not be treated with stimulants or adrenaline, since high concentrations of fluorocarbons may result in a sensitization of the heart to adrenaline.

**BIOLOGICAL EXPOSURE INDICES (BEIs):** Currently, Biological Exposure Indices (BEIs) are not applicable for Chlorodifluoroethane.

## 12. ECOLOGICAL INFORMATION

**ENVIRONMENTAL STABILITY:** The gas will be dissipated rapidly in well-ventilated areas. All work practice must be directed at eliminating environmental contamination. Chlorodifluoroethane is a chlorofluorocarbon (CFC) compound. Chlorofluorocarbon compounds have been implicated in the possible depletion of the stratospheric ozone, via a series of complex chemical reactions which occur in the upper atmosphere. Atmospheric ozone is essential in protecting plants and animals from potentially harmful ultraviolet-light exposures.

## 12. ECOLOGICAL INFORMATION (Continued)

**EFFECT OF MATERIAL ON PLANTS or ANIMALS:** Any adverse effect on animals would be related to adverse effects on the cardiovascular system and to exposure to oxygen deficient environments. The symptoms experienced by over-exposed animals would be similar to those described for exposed humans. No adverse effect is anticipated to occur to plant-life, except for frost produced in the presence of rapidly expanding gases.

**EFFECT OF CHEMICAL ON AQUATIC LIFE:** No evidence is currently available on this product's effects on aquatic life.

## 13. DISPOSAL CONSIDERATIONS

**PREPARING WASTES FOR DISPOSAL:** Waste disposal must be in accordance with appropriate Federal, State, and local regulations. Return cylinders with any residual product to Air Liquide. Do not dispose of locally.

## 14. TRANSPORTATION INFORMATION

**THIS MATERIAL IS HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.**

**PROPER SHIPPING NAME:** Chlorodifluoroethanes  
**HAZARD CLASS NUMBER and DESCRIPTION:** 2.1 (Flammable Gas)  
**UN IDENTIFICATION NUMBER:** UN 2517  
**PACKING GROUP:** Not applicable.  
**DOT LABEL(S) REQUIRED:** Flammable Gas  
**NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (1996):** 115

**MARINE POLLUTANT:** Chlorodifluoroethane is not classified by the DOT as a Marine Pollutant (as defined by 49 CFR 172.101, Appendix B).

**SPECIAL SHIPPING INFORMATION:** Cylinders should be transported in a secure position, in a well-ventilated vehicle. The transportation of compressed gas cylinders in automobiles or in closed-body vehicles present serious safety hazards and should be discouraged.

**NOTE:** Shipment of compressed gas cylinders which have not been filled with the owners consent is a violation of Federal law (49 CFR, Part 173.301 (b)).

**TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS:** THIS MATERIAL IS CONSIDERED AS DANGEROUS GOODS. Use the above information for the preparation of Canadian Shipments.

## 15. REGULATORY INFORMATION

**U.S. SARA REPORTING REQUIREMENTS:** Chlorodifluoroethane is subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act, as follows:

COMPONENT	SARA 302	SARA 304	SARA 313
Chlorodifluoroethane	NO	NO	YES

**U.S. SARA THRESHOLD PLANNING QUANTITY:** Not applicable.

**U.S. CERCLA REPORTABLE QUANTITIES (RQ):** Not applicable.

**CANADIAN DSL INVENTORY STATUS:** Chlorodifluoroethane is listed on the Canadian DSL Inventory.

**U.S. TSCA INVENTORY STATUS:** Chlorodifluoroethane is listed on the TSCA Inventory.

**CALIFORNIA PROPOSITION 65:** Chlorodifluoroethane is not on the California Proposition 65 lists.

**U.S. STATE REGULATORY INFORMATION:** Chlorodifluoroethane is covered under the following specific State regulations:

**Alaska - Designated Toxic and Hazardous Substances:** No.

**California - Permissible Exposure Limits for Chemical Contaminants:** No.

**Florida - Substance List:** Chlorodifluoroethane.

**Illinois - Toxic Substance List:** No.

**Kansas - Section 302/313 List:** No.

**Massachusetts - Substance:** Chlorodifluoroethane.

**Michigan - Critical Materials Register:** No.

**Minnesota - List of Hazardous Substances:** No.

**Missouri - Employer Information/Toxic Substance List:** No.

**New Jersey - Right to Know Hazardous Substance List:** Chlorodifluoroethane.

**North Dakota - List of Hazardous Chemicals, Reportable Quantities:** No.

**Pennsylvania - Hazardous Substance List:** Chlorodifluoroethane.

**Rhode Island - Hazardous Substance List:** No.

**Texas - Hazardous Substance List:** No.

**West Virginia - Hazardous Substance List:** No.

**Wisconsin - Toxic and Hazardous Substances:** No.

## 15. REGULATORY INFORMATION (Continued)

**OTHER U.S. FEDERAL REGULATIONS:**

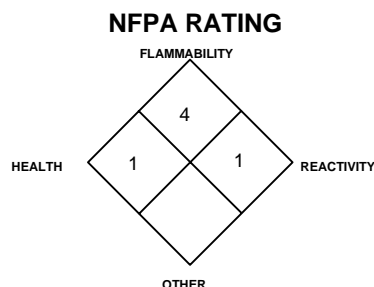
- Chlorodifluoroethane is listed as a Class II ozone-depleting chemical. This product may be required to bear the following label:

**Warning:** Contains Chlorodifluoromethane, a substance which harms public health and environment by destroying ozone in the upper atmosphere.

- Chlorodifluoroethane is subject to the reporting requirements under Title VI of the Clean Air Act Amendments of 1990: "Stratospheric Ozone Protection".
- Depending on specific operations involving the use of this product, the regulations of the Process Safety Management of Highly Hazardous Chemicals may be applicable (29 CFR 1910.119). Under this regulation Chlorodifluoromethane is not listed in Appendix A, however, any process that involves a flammable gas on-site, in one location, in quantities of 10,000 lbs (4,553 kg) or greater is covered under this regulation unless it is used as a fuel.
- Chlorodifluoroethane is not subject to the reporting requirements of CFR 29 1910.1000. Chlorodifluoroethane is not listed on Table Z.1.
- Chlorodifluoroethane is not listed as a Regulated Substance, per 40 CFR, Part 68, of the Risk Management for Chemical Releases as a flammable substance.

**OTHER CANADIAN REGULATIONS:** Chlorodifluoroethane is categorized as a Controlled Product, Hazard Class A, as per the Controlled Product Regulations.

## 16. OTHER INFORMATION



HAZARDOUS MATERIAL INFORMATION SYSTEM			
HEALTH (BLUE)	1		
FLAMMABILITY (RED)	4		
REACTIVITY (YELLOW)	1		
PROTECTIVE EQUIPMENT	B		
EYES	RESPIRATORY	HANDS	BODY
See Section 8			
For routine industrial applications			

**MIXTURES:** When two or more gases or liquefied gases are mixed, their hazardous properties may combine to 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 make your safety evaluation of the end product. Remember, gases and liquids have properties which can cause serious injury or death.



## 16. OTHER INFORMATION (Continued)

Further information can be found in the following pamphlets published by: Compressed Gas Association Inc. (CGA), 4221 Walney Road 5<sup>th</sup> floor, Chantilly, VA 20151-2923. Telephone: (703) 788-2700.

P-1	"Safe Handling of Compressed Gases in Containers"
P-14	"Accident Prevention in Oxygen-Rich, Oxygen-Deficient Atmospheres"
SB-2	"Oxygen Deficient Atmospheres"
AV-1	"Safe Handling and Storage of Compressed Gases"
	"Handbook of Compressed Gases"

**PREPARED BY:**

CHEMICAL SAFETY ASSOCIATES, Inc.  
9163 Chesapeake Drive, San Diego, CA 92123-1002  
619/565-0302

Fax on Demand: 1-800/231-1366



This Material Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR, 1910.1200. Other government regulations must be reviewed for applicability to this product. To the best of Air Liquide's knowledge, the information contained herein is reliable and accurate as of this date; however, accuracy, suitability or completeness are not guaranteed and no warranties of any type, either express or implied, are provided. The information contained herein relates only to this specific product. If this product is combined with other materials, all component properties must be considered. Data may be changed from time to time. Be sure to consult the latest edition.