NorLAB
A DIVISION OF NORCO, INC.

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Dichlorodifluoromethane in Air 1 PPM to 2500 PPM

MATERIAL SAFETY DATA SHEET

Identification

Product Name: Dichlorodifluoromethane in Air 1 to 2500 PPM
Chemical Name: Dichlorodifluoromethane in Air
Chemical Family: Gas Mixture
CAS Number: N/A
Common Names/Synonyms: Freon 12 in Air, R-12 in Air
MSDS Identification Code/Number: NLB 2980
Prepared by: Quality Dept

Revision Date: 05/05/11
Last Review Date: 05/05/11

Composition, Information on Ingredients, Exposure Limits

Exposure Limits[1]

Ingredient	% Volume	PEL-OSHA[2]	TLV-ACGIH[3]	LD_{50} or LC_{50} Route/Species
Dichlorodifluoromethane Formula: CCl_2F_2 CAS: 75-71-8 RTECS#: PA8200000	0.0001 to 0.025%	1000 PPM	1000 PPM TWA	LC_{50}: 600,000 PPM inhalation/rat (2 hr.)
Air Formula: O2/N2 mixture CAS: Not Available RTECS#: Not Available	99.975 to 99.9998%	Not Available	Not Available	Not Applicable

[1] Refer to individual state or provincial regulations, as applicable, for limits that may be more stringent than those listed here.
[2] As stated in 29 CFR 1910, Subpart Z (revised July1, 1993)
[3] As stated in the ACGIH 2007 Threshold Limit Values for Chemical Substances and Physical Agents

OSHA Regulatory Status: This material is classified as hazardous under OSHA regulations.
IDLH: 15,000 PPM for Dichlorodifluoromethane.

Hazards Identification

Emergency Overview:
Product contains sufficient oxygen to support respiration and combustion. Colorless, nonflammable gas that may have an ether-like odor at extremely high concentrations. Chlorofluorocarbons can cause irritation, central nervous system depression and irregular heart beat at high concentrations. Nonflammable but decomposes to toxic gases, including phosgene, under fire conditions. Use only with adequate ventilation. Contents under pressure. Use and store below $125^{O}F$ ($52^{0}C$).

Route of Entry:

Skin Contact	Skin Absorption	Eye Contact	Inhalation	Ingestion
No	No	No	Yes	No

Health Effects:

Exposure Limits	Irritant	Sensitization
Yes	No	No
Teratogen	Reproductive Hazard	Mutagen
No	No	No
Synergistic Effects None reported		

Hazards Identification Continued

Carcinogenicity: NTP: No IARC: No OSHA: No

Eye Effects:
Contact with rapidly expanding gas near point of release may cause frostbite.

Skin Effects:
Contact with rapidly expanding gas near the point of release may cause frostbite with redness, skin color change to gray or white, and blistering.

Ingestion Effects:
None known. Ingestion is unlikely as product is a gas at room temperature.

Inhalation Effects:
High concentrations of R-12 may cause dizziness tremor, cardiac arrhythmias, or cardiac arrest.

Medical Conditions Aggravated by Exposure: None known.

NFPA Hazard Codes		**HMIS Hazard Codes**		**Ratings System**
Health:	1	Health:	1	0: No Hazard
Flammability:	0	Flammability:	0	1: Slight Hazard
Instability:	0	Physical Hazard:	3	2: Moderate Hazard
				3: Serious Hazard
				4: Severe Hazard

Ratings were assigned in accordance with Compressed Gas Association (CGA) guidelines as published in CGA Pamphlet P-19, 2004 *CGA Recommended Hazard Ratings for Compressed Gases, 2nd Edition.*

First Aid Measures

Eyes:
Flush eyes with water for 15 minutes. If irritation persists or frostbite occurs, seek medical attention.

Skin:
Rinse skin thoroughly with water. If frostbite has occurred, seek medical attention immediately; do NOT rub the affected areas or flush them with water. In order to prevent further tissue damage DO NOT attempt to remove frozen clothing from frostbite areas.

Ingestion:
None required. Product is a gas at normal temperatures and conditions.

Inhalation:
PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS. Victims should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, and if breathing has stopped, administer artificial resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive.

Fire Fighting Measures

Conditions of Flammability: Not flammable		
Flash Point: Not Available	Method: Not Available	Autoignition Temperature: Not Available
LEL % None	UEL % None	
Hazardous Combustion Products: None. Chlorofluorocarbons decompose to toxic gases at fire temperatures.		
Sensitivity to mechanical shock: None		
Sensitivity to static discharge: None		

Fire Fighting Measures Continued

Fire and Explosion Hazards:
Nonflammable. May decompose yielding toxic products, which may include phosgene, hydrochloric and hydrofluoric acids. Cylinder may rupture violently from pressure when involved in a fire situation.

Extinguishing Media:
None required. Use as appropriate for surrounding materials.

Fire Fighting Instructions:
If possible, stop the flow of gas supply. Use water spray to cool adjacent cylinders and areas. Fire fighters should wear a full-face piece NIOSH/MSHA approved self-contained breathing apparatus (SCBA) operated in positive pressure mode and full turnout gear.

Accidental Release Measures

Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with inert gas prior to attempting repairs. If leak is in container or valve, contact the appropriate emergency telephone number listed in section 1or call your closest Norco/NorLab location.

Handling and Storage

Electrical Classification:
Non-hazardous

Gas mixture is non-corrosive and may be used with any common structural material.

Use only in well-ventilated areas. Valve protection caps must remain in place unless the cylinder is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure regulator when connecting cylinder to lower pressure (<3000 PSIG) piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous backflow into the cylinder.

Protect cylinders from physical damage. Store in cool, dry, well ventilated area of non-combustible construction away from heavy traffic areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 125^{O}F (52^{0}C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in – first out" inventory system to prevent full cylinders from being stored for excessive periods of time.

For additional recommendations, consult Compressed Gas Association Pamphlets P-1.

Never carry a compressed gas cylinder or a container of a gas in cryogenic liquid from in an enclosed space such as a car trunk, van or station wagon. A leak can result in a fire, explosion, asphyxiation or a toxic exposure.

Exposure Controls, Personal Protection

Engineering Controls:
Local exhaust used in combination with general ventilation as necessary to maintain air contaminants at or below acceptable exposure guidelines.

Eye/Face Protection:
Safety goggles or glasses as appropriate for the job.

Skin Protection:
Protective gloves appropriate for the job.

Exposure Controls, Personal Protection Continued

Respiratory Protection:
Positive pressure air line with full-face mask and escape bottle or self-contained breathing apparatus should be available for emergency use.

Other/General Protection:
Safety shoes.

Physical and Chemical Properties

Parameter	Value	Units
Physical state (gas, liquid, solid)	: Gas	
Vapor pressure	: Not Available	
Vapor density (Air = 1)	: Not Available	
Evaporation point	: Not Available	
Boiling point	: Not Available	
Freezing point	: Not Available	
pH	: Not Applicable	
Specific gravity	: Not Available	
Oil/water partition coefficient	: Not Available	
Solubility (H_2O)	: Negligible	
Odor threshold	: Not Applicable	
Odor and appearance	: Colorless, odorless gas. May have a slight ether odor at very high concentrations.	

Stability and Reactivity

Stability:
Stable

Incompatible Materials:
Dichlorodifluoromethane may react violently with chemically active metals such as sodium, potassium, calcium, powdered aluminum, zinc, and magnesium.

Hazardous Decomposition Products:
Chlorodifluoromethane decomposes at fire temperatures to hydrochloric and hydrofluoric acids, carbonyl fluoride and phosgene.

Hazardous Polymerization:
Does not occur.

Toxicological Information

Inhalation:
Very high concentrations may cause effects on the cardiovascular system and central nervous system, resulting in cardiac disorders and central nervous system depression.

Chronic:
There is currently no known adverse heath effects associated with chronic exposure to this gas.

Ecological Information

The gas will be dissipated rapidly in well-ventilated areas. Dichlorodifluoromethane 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. All work practice must be directed at eliminating environmental contamination.

Dichlorodifluoromethane is a classified as a class 1 ozone depleting substance.

Dichlorodifluoromethane is not expected to bioconcentrate.

Disposal Considerations

Do not attempt to dispose of waste or unused quantities in returnable cylinders. Return in the shipping container, properly labeled, with any valve outlet plugs or caps secure and valve protection cap in place, to Norco or NorLab for proper disposal. Non-refillable containers should be vented in a well-ventilated area then disposed of in accordance with local regulations, or returned to NorLab.

Transport Information

Parameter	United States DOT	Canada TDG
Proper Shipping Name:	Compressed gases, N.O.S., (Dichlorodifluoromethane, Air)	Compressed gases, N.O. S.
Hazard Class:	2.2	2.2
Identification Number:	UN 1956	UN 1956
Shipping Label:	Non-flammable Gas	Non-flammable Gas

Regulatory Information

SARA Title III Notifications and Information:
Dichlorodifluoromethane is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know act (EPCRA) of 1986 and of 40 CFR 372.

SARA Title III – Hazard Classes:
Acute Health Hazard
Sudden Release of Pressure Hazard

Dichlorodifluoromethane is subject to the reporting requirements under Title VI of the Clean Air Act Amendments of 1990: "Stratospheric Ozone Protection".

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

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

California Proposition 65: This product does not contain ingredient(s) known to the State of California to cause cancer or reproductive toxicity.

Other Information

Compressed gas cylinders shall not be refilled without the express written permission of the owner. Shipment of a compressed gas cylinder which has not been filled by the owner or with his/her (written) consent is a violation of transportation regulations.

Disclaimer of Expressed and Implied Warranties:
Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).