



MATERIAL SAFETY DATA SHEET

PRODUCT NAME: HALOCARBON 12

1. Chemical Product and Company Identification

**BOC Gases,
Division of
The BOC Group, Inc
575 Mountain Avenue
Murray Hill, NJ 07974**

**BOC Gases
Division of
BOC Canada Ltd.
5975 Falbourne Street, Unit 2
Mississauga, Ontario L5R 3W6**

**TELEPHONE NUMBER: (908) 464-8100
24-HOUR EMERGENCY TELEPHONE
NUMBER: CHEMTREC (800) 424-9300**

**TELEPHONE NUMBER: (905) 501-1700
24-HOUR EMERGENCY TELEPHONE
NUMBER: (905) 501-0802
EMERGENCY RESPONSE PLAN NO: 20101**

**PRODUCT NAME: HALOCARBON 12
CHEMICAL NAME: Dichlorodifluoromethane
COMMON NAMES/SYNONYMS: Dichlorodifluoromethane; Fluorocarbon 12; Freon ® 12
TDG (Canada) CLASSIFICATION: 2.2
WHMIS CLASSIFICATION: A, D2B**

**PREPARED BY: Loss Control (908)464-8100/(905)273-7700
PREPARATION DATE: 6/1/95
REVIEW DATES: 6/7/96**

2. Composition, Information on Ingredients

INGREDIENT	% VOLUME	PEL-OSHA ¹	TLV-ACGIH ²	LD ₅₀ or LC ₅₀ Route/Species
Dichlorodifluoromethane FORMULA: CCl ₂ F ₂ CAS: 75-71-8 RTECS #: PA8200000	> 99.0	1000 ppm TWA	1000 ppm TWA	LC ₅₀ 3348 gm/m ³ / 3H (mouse)

¹ As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993)

² As stated in the ACGIH 1994-95 Threshold Limit Values for Chemical Substances and Physical Agents

3. Hazards Identification

EMERGENCY OVERVIEW

This product does not contain oxygen and may cause asphyxia if released in a confined area. 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.

ROUTE OF ENTRY:

Skin Contact Yes	Skin Absorption No	Eye Contact Yes	Inhalation Yes	Ingestion No
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PRODUCT NAME: HALOCARBON 12

HEALTH EFFECTS:

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

Carcinogenicity: -- NTP: No IARC: No OSHA: No

EYE EFFECTS:

PERSONS WITH POTENTIAL EXPOSURE SHOULD NOT WEAR CONTACT LENSES.

SKIN EFFECTS:

Contact with the rapidly evaporating liquid may cause frostbite. Frostbite effects appear as a change in color of the skin to grey or white, possibly followed by blistering.

INGESTION EFFECTS:

Ingestion is not likely.

INHALATION EFFECTS:

Product is relatively nontoxic. CFCs can irritate the eyes, mucous membranes and respiratory system.

Inhalation of high concentrations may cause dizziness, disorientation, incoordination, narcosis, nausea or vomiting leading to unconsciousness. At high concentrations narcotic effects may be produced and may cause the heart to beat irregularly and stop.

Oxygen deficiency may occur in the presence of high concentrations resulting in asphyxiation. Maintain oxygen levels above 19.5% at sea level.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Pre-existing heart conditions.

NFPA HAZARD CODES

Health: 1
Flammability: 0
Reactivity: 0

HMS HAZARD CODES

Health: 1
Flammability: 0
Reactivity: 0

RATINGS SYSTEM

0 = No Hazard
1 = Slight Hazard
2 = Moderate Hazard
3 = Serious Hazard
4 = Severe Hazard

4. First Aid Measures

EYES:

Never introduce ointment or oil into the eyes without medical advice! If pain is present, refer the victim to an ophthalmologist for treatment and follow up. If the victim cannot tolerate light, protect the eyes with a light bandage.

SKIN:

Remove contaminated clothing and flush affected areas with lukewarm water. If irritation persists, seek medical attention.

MSDS: G-42

Revised: 6/7/96

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INHALATION:

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS. Remove victim to fresh air. Administer artificial respiration if breathing has stopped and supplement with oxygen by a trained individual. Further treatment should be symptomatic and supportive. Seek medical attention as soon as possible for follow up treatment. Remove to fresh air. If necessary, give oxygen or provide artificial respiration. Call a physician.

NOTE TO PHYSICIAN: A patient adversely affected by exposure to this product should not be given adrenalin (epinephrine) or similar heart stimulant since these would increase the risk of cardiac arrhythmias.

5. Fire Fighting Measures

Conditions of Flammability: Nonflammable		
Flash point: None	Method: Not Applicable	Autoignition Temperature: None
LEL(%): None		UEL(%): None
Hazardous combustion products: None. Decomposes to toxic gases at fire temperatures		
Sensitivity to mechanical shock: None		
Sensitivity to static discharge: None		

FIRE AND EXPLOSION HAZARDS:

If involved in a fire, product may decompose yielding toxic products, which may include phosgene, hydrochloric and hydrofluoric acids.

EXTINGUISHING MEDIA:

None required. Use media appropriate for surrounding flammable substances.

FIRE FIGHTING INSTRUCTIONS:

None required for small quantities (12 cans or less) of product.

Positive-pressure, self-contained respiratory equipment for fires involving large quantities of this material.

6. 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 container valve, contact the appropriate emergency telephone number listed in Section 1 or call your closest BOC location.

7. Handling and Storage

Product is noncorrosive and may be used with any common structural material. Silver and carbon bearing alloys can act as catalysts for decomposing the product at high temperatures. Alloys containing more than 2% magnesium should not be used if water is present.

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Use only in well-ventilated areas. Valve protection caps must remain in place unless container 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 reducing regulator when connecting cylinder to lower pressure (<150 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 back flow into the cylinder. Protect cylinders from physical damage.

Store in cool, dry, well-ventilated area of non-combustible construction away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 125°F (52°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 being stored for excessive periods of time. For additional handling recommendations, consult Compressed Gas Association Pamphlet P-1. Handle with reasonable care. Store in a cool, dry place.

Never carry a compressed gas cylinder or a container of a gas in cryogenic liquid form 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.

8. Exposure Controls, Personal Protection

EXPOSURE LIMITS¹:

INGREDIENT	% VOLUME	PEL-OSHA ²	TLV-ACGIH ³	LD ₅₀ or LC ₅₀ Route/Species
Dichlorodifluoromethane FORMULA: CCl ₂ F ₂ CAS: 75-71-8 RTECS #: PA8200000	> 99.0	1000 ppm TWA	1000 ppm TWA	LC ₅₀ 3348 gm/m ³ / 3H (mouse)

¹ Refer to individual state of provincial regulations, as applicable, for limits which may be more stringent than those listed here.

² As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993)

³ As stated in the ACGIH 1994-1995 Threshold Limit Values for Chemical Substances and Physical Agents.

ENGINEERING CONTROLS:

Hood with forced ventilation; provide local exhaust to prevent accumulation above the exposure limit.

EYE/FACE PROTECTION:

Chemical splash goggles or faceshield recommended to prevent contact with cryogenic liquid.

SKIN PROTECTION:

Neoprene rubber gloves.

RESPIRATORY PROTECTION:

Level C respiratory protection including full-face piece equipped with an escape bottle or a self-contained breathing apparatus should be available for emergency use. Operate this equipment in the positive pressure demand mode.

OTHER/GENERAL PROTECTION:

Safety shoes, eyewash "fountain."

MSDS: G-42

Revised: 6/7/96

9. Physical and Chemical Properties

PARAMETER	VALUE	UNITS
Physical state (gas, liquid, solid)	: Gas	
Vapor pressure at 70 °F	: 70.2	psia
Vapor density (Air = 1)	: 4.24	
Evaporation point	: Not available	
Boiling point	: -21.6	°F
	: -29.8	°C
Freezing point	: -252	°F
	: -158	°C
pH	: Not Available	
Specific gravity	: Not Available	
Oil/water partition coefficient	: Not Available	
Solubility (H2O)	: Negligible	
Odor threshold	: Not Available	
Odor and appearance	: Colorless gas with slight ethereal odor at concentrations greater than 20% by volume.	

10. Stability and Reactivity

STABILITY:

Stable

INCOMPATIBLE MATERIALS:

May react violently with chemically active metals such as sodium, potassium and barium, powdered magnesium, powdered aluminum and organometallics.

HAZARDOUS DECOMPOSITION PRODUCTS:

Decomposes at fire temperatures to hydrochloric and hydrofluoric acids, carbonyl fluoride and phosgene.

HAZARDOUS POLYMERIZATION:

Will not occur.

11. Toxicological Information

No chronic effects data given in the Registry of Toxic Effects of Chemical Substances (RTECS) or Sax, Dangerous Properties of Industrial Materials, 7th ed.

12. Ecological Information

No data given.

13. Disposal Considerations

Do not attempt to dispose of residual waste or unused quantities. Return in the shipping container PROPERLY LABELED, WITH ANY VALVE OUTLET PLUGS OR CAPS SECURED AND VALVE PROTECTION CAP IN PLACE to BOC Gases or authorized distributor for proper disposal.

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14. Transport Information

PARAMETER	United States DOT	Canada TDG
PROPER SHIPPING NAME:	Dichlorodifluoromethane (R-12)	Dichlorodifluoromethane (R-12)
HAZARD CLASS:	2.2	2.2
IDENTIFICATION NUMBER:	UN 1028	UN 1028
SHIPPING LABEL:	NONFLAMMABLE GAS	NONFLAMMABLE GAS

Additional Marking Requirement: If net weight of product \geq 5000 pounds, the container must be also marked with the letters "RQ".

Additional Shipping Paper Description Requirement: If net weight of product \geq 5000 pounds, the shipping papers must be also marked with the letters "RQ".

15. Regulatory Information

SARA TITLE III NOTIFICATIONS AND INFORMATION

Releases of dichlorodifluoromethane in quantities equal to or greater than the reportable quantity (RQ) of 5,000 pounds are subject to reporting to the National Response Center under CERCLA, Section 304 SARA Title III.

SARA TITLE III - HAZARD CLASSES:

Acute Health Hazard

Sudden Release of Pressure Hazard

SARA TITLE III - SECTION 313 SUPPLIER NOTIFICATION:

This product contains the following toxic chemicals 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:

CAS NUMBER	INGREDIENT NAME	PERCENT BY VOLUME
75-71-8	Dichlorodifluoromethane	> 99.0

This information must be included on all MSDSs that are copied and distributed for this material.

16. 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).