



**MATERIAL SAFETY DATA SHEET**

**PRODUCT NAME: HALOCARBON 23**

**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 Limited  
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 23  
CHEMICAL NAME: Trifluoromethane  
COMMON NAMES/SYNONYMS: Fluoroform, Freon ® 23, Trifluoromethane  
TDG (Canada) CLASSIFICATION: 2.2  
WHMIS CLASSIFICATION: A, D2B**

**PREPARED BY: Loss Control (908)464-8100/(905)501-1700.  
PREPARATION DATE: 6/1/95  
REVIEW DATES: 6/7/96**

**2. Composition, Information on Ingredients**

INGREDIENT	% VOLUME	PEL-OSHA <sup>1</sup>	TLV-ACGIH <sup>2</sup>	LD <sub>50</sub> or LC <sub>50</sub> Route/Species
Trifluoromethane FORMULA: CHF <sub>3</sub> CAS: 75-46-7 RTECS #: PB6900000	100.0	Not Available	Not Available	Not Available

<sup>1</sup> As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993)

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

**3. Hazards Identification**

<u>EMERGENCY OVERVIEW</u>
This product does not contain oxygen and may cause asphyxia if released in a confined area. Fluorocarbons can cause irritation, central nervous system depression and irregular heart beat at high concentrations. Nonflammable but decomposes to toxic gases, including hydrofluoric, under fire conditions.

**ROUTE OF ENTRY:**

Skin Contact Yes	Skin Absorption No	Eye Contact Yes	Inhalation Yes	Ingestion No
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**HEALTH EFFECTS:**

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

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

**EYE EFFECTS:**

Persons with potential exposure should not wear contact lenses.

**SKIN EFFECTS:**

None anticipated as product is a gas at room temperature.

**INGESTION EFFECTS:**

Ingestion is not likely.

**INHALATION EFFECTS:**

Product is relatively nontoxic. Fluorocarbons 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 condition.

**NFPA HAZARD CODES**

Health: 1  
Flammability: 0  
Reactivity: 0

**HMIS 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.

**SKIN:**

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

**INGESTION:**

Unlikely as product is a gas at room temperature.

**INHALATION:**

**MSDS:** G-47

**Revised:** 7/1/96

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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 hydrofluoric acid.

### EXTINGUISHING MEDIA:

None required. Use media appropriate for surrounding flammable substances.

### FIRE FIGHTING INSTRUCTIONS:

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.

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 (<750 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

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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 LIMITS<sup>1</sup>:

INGREDIENT	% VOLUME	PEL-OSHA <sup>2</sup>	TLV-ACGIH <sup>3</sup>	LD <sub>50</sub> or LC <sub>50</sub> Route/Species
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<sup>1</sup> As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993)

<sup>2</sup> Refer to individual state or provincial regulations, as applicable, for limits which may be more stringent than those listed here.

<sup>3</sup> 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:

Not needed as product is a gas at room temperature.

### SKIN PROTECTION:

Any gloves EXCEPT natural rubber gloves.

### RESPIRATORY PROTECTION:

A Type C respirator with 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."

## 9. Physical and Chemical Properties

PARAMETER	VALUE	UNITS
Physical state (gas, liquid, solid)	: Gas	
Vapor pressure at 70 °F	: 624	psia
Vapor density at 70 °F (Air = 1)	: 2.43	
Evaporation point	: Not available	
Boiling point	: -115.9	°F
	: -82.2	°C
Freezing point	: -247	°F
	: -155	°C
pH	: Not Available	
Specific gravity	: Not Available	
Oil/water partition coefficient	: Not Available	
Solubility (H2O)	: Slightly	
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 hydrofluoric acids and carbonyl fluoride.

### 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

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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.

#### 14. Transport Information

PARAMETER	United States DOT	Canada TDG
PROPER SHIPPING NAME:	Trifluoromethane (R-23)	Trifluoromethane (R-23)
HAZARD CLASS:	2.2	2.2
IDENTIFICATION NUMBER:	UN 1984	UN 1984
SHIPPING LABEL:	NONFLAMMABLE GAS	NONFLAMMABLE GAS

#### 15. Regulatory Information

##### SARA TITLE III NOTIFICATIONS AND INFORMATION

##### SARA TITLE III - HAZARD CLASSES:

Acute Health Hazard

Sudden Release of Pressure Hazard

#### 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:

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