

PRODUCT NAME: FLUOROMETHANE
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## 1. Chemical Product and Company Identification

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

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

BOC Gases  
Division of  
BOC Canada Limited  
5975 Falbourne Street, Unit 2  
Mississauga, Ontario L5R 3V8

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

**PRODUCT NAME:** Fluoromethane  
**CHEMICAL NAME:** Fluoromethane  
**COMMON NAMES/SYNONYMS:** Methyl fluoride  
**TDG (Canada) CLASSIFICATION:** 2.2  
**WHMIS CLASSIFICATION:** A, B1, D2B

**PREPARED BY:** Loss Control (908)464-8100/(905)273-7700.

**PREPARATION DATE:** 12/10/97

**REVIEW DATES:** Not Applicable

## 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
Fluoromethane FORMULA: CH <sub>3</sub> F CAS: 593-53-3 RTECS #: No Data	100	None Established	None Established	No Data

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

<sup>2</sup> As stated in the ACGIH 1997-98 Threshold Limit Values for Chemical Substances and Physical Agents

## 3. Hazards Identification

### EMERGENCY OVERVIEW

HIGHLY FLAMMABLE, odorless, colorless gas which does not contain oxygen and may cause asphyxia if released in a confined area. Contact may cause eye and skin irritation. Contact with liquid gas may cause tissue freezing and frostbite. Inhalation of high concentrations of fluorocarbons may induce cardiac arrhythmias or have a narcotic effect. DANGEROUS FIRE AND EXPLOSION HAZARD. Do not use or store near heat, sparks, flame, or other ignition sources. Do not smoke in work or storage areas. Do not use in confined area. Prevent vapor buildup. Thermal decomposition will produce toxic F<sub>2</sub>. Contents under pressure. Use and store below 120 °F. Use only with adequate ventilation.

PRODUCT NAME: FLUOROMETHANE

**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 No
Synergistic Effects None Reported		

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

**EYE EFFECTS:**

Specific information for fluoromethane was available. Liquid fluorocarbons can cause mild to moderate eye irritation. Contact with liquid may cause tissue freezing or frostbite.

**SKIN EFFECTS:**

Prolonged or repeated contact with fluorocarbons may tend to dry or defat the skin causing irritation or dermatitis. Rapidly evaporating liquid fluorocarbon may cause tissue freezing or frostbite. Fluoromethane may cause mild skin irritation with repeated contact.

**INGESTION EFFECTS:**

Ingestion is unlikely as product is a gas.

**INHALATION EFFECTS:**

Product may act as an asphyxiant before toxic effects of fluorocarbons are noted. Release of sufficient quantities may displace air oxygen content causing suffocation. Symptoms of asphyxiation may include decreased alertness, air hunger, fatigue, dizziness, headache, decreased, coordination, and coma.

Inhalation of high concentrations of fluoromethane may cause central nervous system depression with dizziness, confusion, drowsiness, or unconsciousness.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:**

May aggravate pre-existing heart condition.

**NFPA HAZARD CODES**

Health: 1  
Flammability: 4  
Reactivity: 0

**HMS HAZARD CODES**

Health: 1  
Flammability: 4  
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! In case of freezing caused by rapidly evaporating liquid, DO NOT WASH THE EYES WITH HOT OR EVEN TEPID WATER! Remove victim from the source of contamination. Open eyelids wide to allow liquid to evaporate. 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:**

Frostbite effects appear as a change in the color of the skin to gray or white possibly followed by blistering. For dermal contact or frostbite, remove contaminated clothing and soak affected area with lukewarm (body temperature) water. DO NOT USE HOT WATER OR DRY HEAT. DO NOT RUB. Soaking should be eliminated if treatment begins more than 30 minutes after exposure. A physician should assess the frostbite to determine the extent of the injury.

**INGESTION:**

Unlikely as product is a gas at room temperature.

**INHALATION:**

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVER EXPOSURE. 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 adrenaline (epinephrine) or similar heart stimulant since these may increase the risk of cardiac arrhythmias.

#### 5. Fire Fighting Measures

Conditions of Flammability: Flammable		
Flash point: No Data	Method: Not Applicable	Autoignition Temperature: No Data
LEL(% volume):	UEL(% volume):	
Hazardous combustion products: F		
Sensitivity to mechanical shock: No Data		
Sensitivity to static discharge: No Data		

**FIRE AND EXPLOSION HAZARDS:**

FLAMMABLE GAS. Dangerous fire and explosion hazard. Vapors may travel to ignition source and flash back. Explosion hazard indoors, outdoors, and in confined areas. Thermal decomposition will produce toxic F. Cylinder may rupture or explode from pressure when involved in a fire situation.

**EXTINGUISHING MEDIA:**

Water spray and fog, dry chemical, alcohol foam, carbon dioxide. If it can be done without risk, STOP THE FLOW OF GAS before attempting extinguishment. Continued flow of gas may create an explosive gas/air mixture which if ignited is far more hazardous than the original fire.

**FIRE FIGHTING INSTRUCTIONS:**

Firefighters should wear a NIOSH/MSHA approved full-facepiece self-contained breathing apparatus (SCBA) operated in positive pressure mode and full turnout or bunker gear. Additional chemical protective clothing may be required to protect against toxic decomposition products. Continue to cool flame exposed containers with water until well after flames have been extinguished. If massive fire is present in storage or cargo area, DO NOT ENTER. Fight fire from the maximum distance possible using unmanned hose holder or monitor nozzles.

**6. Accidental Release Measures**

EXTINGUISH OR REMOVE ALL IGNITION SOURCES and evacuate all personnel from affected area. IF IT CAN BE DONE WITHOUT RISK, STOP THE FLOW OF GAS OR REMOVE CYLINDER TO OUTSIDE. Vapors may travel a considerable distance to ignition source and flash back. Use water spray to cool and disperse vapors and protect personnel. Ventilate hazard area and enclosed spaces. Do not re-enter area until product has dispersed and oxygen concentrations are re-established. Use appropriate protective equipment. Clean-up personnel should be informed of the severe fire and explosion hazard. 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**

Earth bond and ground all lines and equipment associated with the product system. Electrical equipment should be non-sparking and explosion proof.

DO NOT SMOKE in work or storage areas. "No smoking" signs should be posted in storage and use areas. Grossly contaminated clothing may present a fire/explosion hazard. Use only with adequate ventilation.

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. Outside or detached storage is preferred. Do not allow the temperature where cylinders are stored to exceed 120 °F (49 °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-14, Safety Bulletin SB-2. 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.

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## 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
Fluoromethane FORMULA: CH <sub>3</sub> F CAS: 593-53-3 RTECS #: No Data	100	None Established	None Established	No Data

<sup>1</sup> Refer to individual state or provincial regulations, as applicable, for limits which may be more stringent than those listed here.

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

<sup>3</sup> As stated in the ACGIH 1997-1998 Threshold Limit Values for Chemical Substances and Physical Agents.

### ENGINEERING CONTROLS:

General ventilation used in combination with local exhaust as necessary to control air contaminants and maintain atmospheric oxygen levels to 19.5%.

### EYE/FACE PROTECTION:

Safety glasses or goggles as necessary to prevent contact.

### SKIN PROTECTION:

Neoprene gloves as necessary to prevent irritation.

### 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.

## 9. Physical and Chemical Properties

PARAMETER	VALUE	UNITS
Physical state (gas, liquid, solid)	: Gas	
Vapor pressure at 77 °F (25 °C)	: 538 psia	@ 70 °F
Vapor density (Air = 1)	: 1.1951	
Evaporation point	: Not Applicable	
Boiling point (@ 760 mm Hg)	: -78.2	°C
	: -108.8	°F
Freezing point	: -141.8	°C
	: -223.24	°F
pH	: Not Available	
Specific gravity	: 0.5786	@ 20 °C
Oil/water partition coefficient	: Not Available	
Solubility (per 100 ml H <sub>2</sub> O)	: 166	cm <sup>3</sup> (gas)
Index of Refraction	: 1.727	@ 20 °C
Odor threshold	: Not Available	
Odor and appearance	: Colorless gas with agreeable ether-like odor	

MSDS: G-289

Revised: 12/10/97

## 10. Stability and Reactivity

### STABILITY:

Stable. Avoid heat and flames.

### INCOMPATIBLE MATERIALS:

None known.

### HAZARDOUS DECOMPOSITION PRODUCTS:

Thermal decomposition will produce toxic F<sup>-</sup> (may be in the form of hydrofluoric acid, carbonyl fluoride, etc.)

### HAZARDOUS POLYMERIZATION:

Will not occur.

## 11. Toxicological Information

While compound specific data was unavailable for this product, all fluorine containing organic compounds are thought to cause similar adverse effects on the dermato-mucosal, cardiopulmonary and nervous systems. The toxicological information below is based on this premise.

**INHALATION:** Acts as a simple asphyxiant. Narcotic in high concentrations. (Sax's Dangerous Properties of Industrial Materials, 8th Edition) Inhalation of high concentrations of fluorocarbons are expected to be toxic to the cardiovascular and bronchopulmonary system.

**EYE:** Direct contact is expected to cause mild to moderate irritation.

**SKIN:** Accidental injection of fluorocarbons via high pressure injection pump can cause irreversible injury of deep tissue. Fluorocarbons tend to defat tissues causing irritation and dermatitis.

**OTHER:** Epidemiological studies in female hospital personnel and nurse anesthetists have shown associations between exposure to anesthetic vapors containing fluorine and the occurrence of cancer, spontaneous abortion, and congenital anomalies.

## 12. Ecological Information

This product does not contain chlorine and is not expected to deplete the ozone layer in the stratosphere.

## 13. Disposal Considerations

Empty containers may contain flammable residue. Handle accordingly. 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:	Methyl fluoride	Methyl fluoride
HAZARD CLASS:	2.1	2.1
IDENTIFICATION NUMBER:	UN 2454	UN 2454
SHIPPING LABEL:	FLAMMABLE GAS	FLAMMABLE GAS

## 15. Regulatory Information

### SARA TITLE III NOTIFICATIONS AND INFORMATION

#### SARA TITLE III - HAZARD CLASSES:

Fire Hazard

Sudden Release of Pressure Hazard

Acute Health 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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