MATERIAL SAFETY DATA SHEET

SECTION I - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name:	**FM-200**
Manufacturer:	Great Lakes Chemical Corporation
Address:	P.O. Box 2200
City:	West Lafayette
State:	Indiana
Zip:	47996-2200
Emergency Telephone Number:	**1-800-949-5167**
Information Telephone Number:	1-765-497-6100 **Fax:** 1-765-497-6123
Chemtrec Phone:	**1-800-424-9300**
Effective Date:	4/7/98
Supercede Date:	8/11/97
MSDS Prepared By:	Regulatory Affairs Department/Great Lakes Chemical Corporation
Synonyms:	1,1,1,2,3,3,3-Heptafluoropropane, 2H-Heptafluoropropane
Product Use:	Fire extinguishing, fire suppression, explosion suppression and inerting agent
Chemical Name:	1,1,1,2,3,3,3-Heptafluoropropane
Chemical Family:	Halogenated alkane

Additional Information

No information available

SECTION II - COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT NAME	CAS NO.	%	EXPOSURE LIMITS
1,1,1,2,3,3,3-Heptafluoropropane	431890	>99	Y (Hazardous) Not established (OSHA PEL TWA) Not established (OSHA PEL STEL) Not established (OSHA PEL CEIL) Not established (ACGIH TLV TWA) Not established (ACGIH TLV STEL) Not established (ACGIH TLV CEIL)

*Mixture. Indented chemicals components of mixture.

Additional Information

No information available

SECTION III - HAZARDS IDENTIFICATION

Emergency Overview:
Colorless gas
Odorless
Direct eye or skin contact with the liquid or cold gas can cause chilling or possibly frostbite of exposed tissues.
May cause central nervous system effects.
Inhalation of high concentrations can be harmful or fatal due to oxygen deprivation and/or heart irregularities.

Relevant Routes of Exposure: Inhalation

Signs and Symptoms of Overexposure: Symptoms similar to oxygen deprivation (headache, nausea, dizziness or loss of consciousness) may result from overexposure by inhalation. Heart irregularities such as irregular pulse or heart palpitations may indicate cardiac sensitivity. Cold, white or discolored skin or in severe cases blistering, can be a sign of frostbite caused by cold liquids or gases.

Medical Conditions Generally Aggravated By Exposure: Persons with preexisting cardiac, respiratory, or central nervous system disorders may be more susceptible to effects of an overexposure. The use of epinephrine or similar compounds can increase susceptibility to heart irregularities caused by excessive exposure to these types of compounds.

Potential Health Effects: See Section XI for additional information.

Eyes: Direct eye contact with the liquid or cold gas can cause chilling or possibly frostbite of exposed tissues.

Skin: Direct skin contact with the liquid or cold gas can cause chilling or possibly frostbite of exposed tissues.

Ingestion: Not expected to be a hazard in normal industrial use.

Inhalation: Inhalation of high concentrations can be harmful or fatal due to oxygen deprivation and/or heart irregularities (arrhythmias). Misuse of the product by deliberately inhaling high concentrations of this gas could cause death without warning.

Carcinogenicity:

NTP:	No
IARC:	No
OSHA:	No
ACGIH:	No
OTHER:	No

Additional Information

No information available

SECTION IV - FIRST AID MEASURES

Eyes: Flush with water. Get medical attention.

Skin: Flush with water; if frostbite occurs get medical attention.

Ingestion: No information available

Inhalation: Remove person to fresh air; if not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical

SECTION IV - FIRST AID MEASURES

attention.

Antidotes: No information available

Notes to Physicians and/or Protection for First-Aiders: The use of epinephrine or similar compounds can increase susceptibility to heart irregularities caused by excessive exposure to these types of compounds.

Additional Information

No information available

SECTION V - FIRE FIGHTING MEASURES

Flammable Limits in Air (% by Volume): Not applicable

Flash Point: Nonflammable gas

Autoignition Temperature: Not available

Extinguishing Media: All conventional media are suitable.

Fire Fighting Instructions: Keep cylinders cool with a water spray applied from a safe distance. Use a self-contained breathing apparatus if containers rupture or release under fire conditions. Do not allow reentry into areas where this material has been released without first ventilating to remove products of combustion/decomposition.

Unusual Fire and Explosion Hazards: Although containers of our product are provided with pressure and temperature relief devices, containers can rupture if exposed to localized heat. Thermal decomposition will generate toxic and corrosive gases.

Flammability Classification: Nonflammable gas

Known or Anticipated Hazardous Products of Combustion: Decomposition by elevated temperatures (fire conditions, glowing metal surfaces) may generate hazardous decomposition products common to other CFCs, HCFCs or HBFCs. These can include hydrogen fluoride, carbon monoxide, carbon dioxide and others.

Additional Information

NNo information availabl

SECTION VI - ACCIDENTAL RELEASE MEASURES

Accidental Release Measures: Evacuate the area and ventilate. Do not enter areas where high concentrations may exist (especially confined or poorly ventilated areas) without appropriate protective equipment including a self-contained breathing apparatus.

Personal Precautions: See Section VIII.

Environmental Precautions: No information available

Additional Information

No information available

SECTION VII - HANDLING AND STORAGE

Handling:	Use the same type of precautions as would be used in handling any cryogenic gas. Protect container from damage. Handle in well-ventilated areas. When this material is used as a firefighting agent in fixed or portable extinguishing systems, follow manufacturer's instructions for operation, inspection, maintenance and repair of the system.
Storage:	Store in a cool, dry, well-ventilated area away from incompatible materials. Keep container tightly closed.
Other Precautions:	No information available

Additional Information

No information available

SECTION VIII - EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:	No information available
Ventilation Requirements:	Use local ventilation to minimize exposure to gas. Use mechanical ventilation for general area control.

Personal Protective Equipment:

Eye/Face Protection:	Chemical splash goggles when handling liquid
Skin Protection:	Use lined neoprene gloves if handling liquid. Clothing designed to minimize skin contact
Respiratory Protection:	Wear a NIOSH/MSHA approved self-contained breathing apparatus in emergency situations. Consult the OSHA respiratory protection information located at 29CFR 1910.134 and the American National Standard Institute's Practices of Respiratory Protection Z88.2.
Other Protective Clothing or Equipment:	No information available
Exposure Guidelines:	See Section II.
Work Hygienic Practices:	Wash thoroughly after handling. Wash contaminated clothing before reuse. Make sure piping is empty before doing maintenance work.

Additional Information

No information available

SECTION IX - PHYSICAL & CHEMICAL PROPERTIES

Appearance:	Colorless gas
Boiling Point:	-16.4 degrees C (3 degrees F)
Bulk Density:	Not available
Color:	Colorless
Decomposition	

SECTION IX - PHYSICAL & CHEMICAL PROPERTIES

Temperature:	Not available
Evaporation Rate:	Not available
Freezing Point:	Not available
Heat Value:	Not available
Melting Point:	-131 degrees C (-204 degrees F)
Molecular/Chemical Formula:	C3HF7
Molecular Weight:	170
Octanol/Water Partition Coefficient:	Not available
Odor:	Odorless
Odor Threshold:	Not available
Particle Size:	Not available
Percent Volatile:	Not available
pH Value:	Not available
pH Concentration:	Not available
Physical State:	Gas
Reactivity in Water:	Not water reactive
Saturated Vapor Concentration:	Not available
Softening Point:	Not available
Solubility in Water:	260 mg/L
Specific Gravity or Density (Water=1):	1.46
Vapor Density:	6.04
Vapor Pressure:	58.8 psia at 70 degrees F (21 degreesC)
Viscosity:	Not available
Volatile Organic Compounds:	Not available
Water/Oil Distribution Coefficient:	Not available
Weight Per Gallon:	Not available

Additional Information

No information available

SECTION X - STABILITY AND REACTIVITY

Stability: Stable under normal conditions of handling and use.

Conditions to Avoid: None

Incompatibility With Other Materials: Powdered metals (ex. Al, Mg, or Zn) and strong alkalis, oxidizers or reducing agents are not compatible with this and most other halogenated organic compounds.

Hazardous Decomposition Products: Thermal decomposition may produce the following:

SECTION X - STABILITY AND REACTIVITY

Hydrogen fluoride
Carbon monoxide and carbon dioxide

Hazardous Polymerization: Will not occur

Conditions to Avoid: None

Additional Information

No information available

SECTION XI - TOXICOLOGICAL INFORMATION

VALUE (LD50 OR LC50)	ANIMAL	ROUTES	COMPONENTS
>788,696 ppm/4H	Rat	Acute Inhalation	1,1,1,2,3,3,3-Heptafluoropropane

Toxicological Information:

The human health hazards of this product are expected to be similar to other liquified gases including N2, CO2, CFCs, HCFCs, and HBFCs. Therefore, direct eye or skin contact with the liquid or cold gas can cause chilling or possibly frostbite of exposed tissues. Inhalation of high concentrations can be harmful or fatal due to oxygen deprivation and/or heart irregularities (arrhythmias). Misuse of the product by deliberately inhaling high concentrations of this gas could cause death without warning. Persons with preexisting cardiac or central nervous system disorders may be more susceptible to effects of an overexposure.

When tested with and without metabolic activation over a concentration range of 43.9-93.5%, heptafluoropropane was not mutagenic in S. typhimurium. Neither toxicity nor mutagenicity was observed in a mouse lymphoma assay when heptafluoropropane was tested to a concentration of 56.8%. Neither toxicity nor an increase in micronuclei was observed in mice exposed to 10.5% heptafluoropropane. Therefore, there is no evidence that heptafluoropropane is capable of inducing gene or chromosomal mutations in vitro or chromosomal effects in vivo. In other studies, heptafluoropropane did not show genotoxicity or cytotoxicity.

Animal studies have found the rat 4 hour LC50 to be >788,696 ppm (~80%), the highest level tested. A cardiac sensitization study in dogs found the No Observable Adverse Effect Level (NOAEL) to be 9.0%. The Lowest Observable Adverse Effect Level (LOAEL) for this study was reported to be 10.5%. A 90 day inhalation study did not find any exposure related effects at 105,000 ppm (10.5% vol./vol.), the highest level tested. Inhalation studies looking for developmental effects on pregnant rabbits and rats or their offspring did not show any exposure related effects at the highest concentrations tested (105,000 ppm).

Additional Information

No information available

SECTION XII - ECOLOGICAL INFORMATION

Ecological Information: No information available

Additional Information

No information available

SECTION XIII - DISPOSAL CONSIDERATIONS

Disposal Considerations: Non-contaminated product is reclaimable. Contact Great Lakes Chemical Corporation for information. Otherwise, dispose of waste in an approved chemical incinerator equipped with a scrubber as allowed by current Local, State/Province, Federal/Canadian laws and regulations.

Additional Information

No information available

SECTION XIV - TRANSPORT INFORMATION

U.S. DOT

Proper Shipping Name:	Heptafluoropropane
Hazard Class:	2.2
ID Number:	UN3296
Packing Group:	N/A
Labels:	Nonflammable gas
Special Provisions:	N/A
Packaging Exceptions:	306
Non-Bulk Packaging:	304
Bulk Packaging:	314, 315
Air/Rail Limit:	75 kg
Air Cargo Limit:	150 kg
Vessel Stowage:	A
Other Stowage:	N/A
Reportable Quantity:	N/A

AIR - ICAO OR IATA

Proper Shipping Name:	Heptafluoropropane
Hazard Class:	2.2
ID Number:	UN3296
Subsidiary Risk:	N/A
Packing Group:	N/A
Hazard Labels:	Nonflammable gas
Packing Instructions:	200
Air Passenger Limit Per Package:	75 kg
Packing Instruction - Cargo:	200
Air Cargo Limit Per Package:	150 kg
Special Provisions Code:	N/A

WATER - IMDG

SECTION XIV - TRANSPORT INFORMATION

Proper Shipping Name:	Heptafluoropropane
Hazard Class:	2.2
ID Number:	UN3296
Packing Group:	N/A
Subsidiary Risk:	N/A
Medical First Aid Guide Code:	350

Additional Information

EmS No. 2-09

SECTION XV - REGULATORY INFORMATION

U.S. Federal Regulations:	The components of this product are either on the TSCA Inventory or exempt (i.e. impurities, a polymer complying with the exemption rule at 40 CFR 723.250) from the Inventory.
State Regulations:	None known
International Regulations:	This material (or each component) is listed on the following inventories: EU - EINECS Canadian WHMIS Hazard Class and Division = A.
SARA Hazards:	
Acute:	Yes
Chronic:	No
Reactive:	No
Fire:	No
Pressure:	No

Additional Information

The above regulatory information represents only selected regulations and is not meant to be a complete list.

SECTION XVI - OTHER INFORMATION

NFPA Codes:	
Health:	1
Flammability:	0
Reactivity:	0
Other:	0
HMIS Codes:	
Health:	1
Flammability:	0
Reactivity:	0
Protection:	X
Label Statements:	Not available
Other Information:	Abbreviations: (L) = Loose bulk density in g/ml LOEC = Lowest observed effect concentration

SECTION XVI - OTHER INFORMATION

MATC = Maximum acceptable toxicant concentration
NA = Not available
N/A = Not applicable
NL = Not limited
NOEC = No observed effect concentration
NOEL = No observable effect level
NR = Not rated
(P) = Packed bulk density in g/ml
PNOC = Particulates Not Otherwise Classified
PNOR = Particulates Not Otherwise Regulated
REL = Recommended exposure limit
TS = Trade secret

Additional Information

Information on this form is furnished solely for the purpose of compliance with OSHA's Hazard Communication Standard, 29CFR 1910.1200 and The Canadian Environmental Protection Act, Canada Gazette Part II, Vol. 122, No. 2 and shall not be used for any other purpose.

Revision Information:
Section XIV - IMDG Code Information
Section XV - Regulatory Information