

**SECTION 1 – PRODUCT & COMPANY IDENTIFICATION**

<b>Product Identification</b>	<b>ETI FM-200 FIRE EXTINGUISHING SYSTEM</b>		
<b>Application &amp; Use</b>	ETI <b>FM-200 FIRE EXTINGUISHING SYSTEM</b> is a factory prepared gaseous clean agent to provide an effective fire fighting agent for ETI FIRE SUPPESSION SYSTEMS		
<b>Manufacturer Address</b>	<b>PT ETI FIRE SYSTEMS</b> Jl. Magelang – Kopeng Km 11 Tegalrejo Magelang – Central Java 56192 Indonesia Phone : +62 293 314 8990                      FAX : +62 293 314 8991 Email : <a href="mailto:info@etifiresystems.com">info@etifiresystems.com</a> Website : <a href="http://www.etifiresystems.com">www.etifiresystems.com</a>		
<b>Product Description</b>	100 % gaseous clean agent to provide an effective fire fighting agent.		

**SECTION 2 – COMPOSITION**

INGREDIENT	Chemical Formula	CONCENTRATION %	CAS NO.
1,1,1,2,3,3,3 heptaflouropropane	C3HF7	90%	431-89-0
N2	N2	10%	7727-37-9

**SECTION 3 – HAZARD IDENTIFIATION**

<b>EU Main Hazards</b>	Non Flammable Gas
<b>ROUTES OF ENTRY</b>	<ul style="list-style-type: none"> <li>- Eye contact</li> <li>- Inhalation</li> <li>- Skin contact</li> </ul>
<b>CARCINOGENIC STATUS</b>	Not considered carcinogenic by NTP, IARC and OSHA
<b>TARGET ORGANS</b>	<ul style="list-style-type: none"> <li>- Respiratory System</li> <li>- Skin</li> <li>- Eye</li> <li>- Cardiovascular System</li> <li>- Central Nervous System</li> </ul>
<b>HEALTH EFFECTS – EYES</b>	Direct contact with the cold gas or liquid can cause freezing of exposed tissues, with pain, redness, burns and corneal damage.
<b>HEALTH EFFECTS – SKIN</b>	Direct contact with the cold gas or liquid can cause freezing of exposed tissues.
<b>HEALTH EFFECTS – INGESTION</b>	Ingestion is not a possible route of exposure
<b>HEALTH EFFECTS – INHALATION</b>	<p>Exposure to vapor at high concentrations have the following effects :</p> <ul style="list-style-type: none"> <li>- light headedness</li> <li>- dizziness</li> <li>- difficulty with breathing</li> <li>- drowsiness</li> <li>- nausea</li> <li>- mental confusion</li> <li>- increased blood pressure</li> <li>- increased respiratory rate</li> <li>- heart irregularities</li> <li>- loss of consciousness</li> <li>- suffocation if air is displaced by vapors</li> </ul> <p>Individual with preexisting diseases of the cardiovascular system or nervous system may have increased susceptibility from excessive exposures.</p>

#### SECTION 4 – FIRST AID MEASURES

Skin	Flush with water. Obtain medical attention if frostbite or blistering occurs or redness persists.
Eye	Immediately flood the eye with plenty of warm water for at least 15 minutes, holding the eye open. Obtain medical attention if soreness or redness persists.
Ingestion	Ingestion is not considered a potential route of exposure.
Inhalation	Remove from exposure. If there is difficulty in breathing, give oxygen. Obtain medical attention immediately.
Advise to Physicians	In case of frostbite, place the frostbitten part in warm water. If warm water is not available or impractical to use, wrap the affected parts gently in blankets. <b>DO NOT USE HOT WATER.</b>  The use of epinephrine or similar compounds can increase susceptibility to heart irregularities caused by excessive exposure to these types of compounds.

#### SECTION 5 – FIRE FIGHTING MEASURES

Extinguishing Media	FM-200 is used as an extinguishing agent and therefore is not a problem when trying to control a blaze. Use extinguishing agent appropriate to other materials involved. Keep containers and surroundings cool with water spray as containers may rupture or burst in the heat of fire.
<b>UNUSUAL FIRE AND EXPLOSION HAZARDS</b>	Containers may explode in heat of fire.
<b>PROTECTIVE EQUIPMENT FOR FIRE FIGHTING</b>	Wear full protective clothing and self-contained breathing apparatus as appropriate for specific fire conditions.

#### SECTION 6 – ACCIDENTAL RELEASE MEASURES

Wear full protective clothing and self-contained breathing apparatus. Remove leaking cylinder to a safe place. Ventilate the area. Leaks inside confined spaces may cause suffocation as vapors may displace air and should not be entered without a self-contained breathing apparatus.

#### SECTION 7 – HANDLING AND STORAGE

Containers should be properly stored and secured to prevent falling or being knocked over. Do not drag, slide or roll containers. Do not drop containers or permit them to strike against each other. Never apply flame or localized heat directly to any part of the containers. Store away from sources of heat or ignition. Storage area should be:

- cool
- dry
- well ventilated
- under cover
- out of direct sunlight

#### SECTION 8 – EXPOSURE CONTROL & PERSONAL PROTECTION

Occupational Exposure Standard	Occupational exposure limits are listed below, if they exist.
1,1,1,2,3,3,3 HEPTAFLUOROPROPANE	None established

Engineering Control Measures	Use with adequate ventilation. There should be local procedures for the selection, training, inspection and maintenance of the equipment. When used in large volumes or odor becomes apparent, use local exhaust ventilation.
Respiratory protection :	Not normally required under condition of use as a portable fire extinguisher. For other applications creating oxygen deficient atmospheres, use a self contained breathing apparatus, as an air purifying respirator will not provide protection.
Hand protection :	Wear rubber gloves. Avoid contact with skin.
Eye protection :	Chemical goggles or safety glasses with side shields. Avoid contact with eyes.
Body protection :	Normal work wear.

### SECTION 9 – PHYSICAL & CHEMICAL PROPERTIES

Physical State (under pressure)	Liquefied gas
Color	Colorless
Odor	Slight odor
Specific gravity	1.46
Boiling Range/Point (°C/F)	-16.5°C/2.3°F
Flash Point (PMCC) (°C/F)	-133°C/-207°F
Solubility in Water	260 mg/L
VAPOR DENSITY (AIR = 1)	6.04
Vapor Pressure	58.8 psia @70°F
Liquid Density	1.386 g/cm <sup>3</sup> @25°C (77°F)(460.06 KPa)
Evaporation Rate	Not applicable

### SECTION 10 – REACTIVITY & STABILITY

Stability	Stable under normal conditions.
Condition to Avoid	- Heat - High temperatures - Exposure to direct sunlight
Materials to Avoid	- Powdered metals (ex. Aluminum, zinc etc) - Strong oxidizing agents - Strong reducing agents - Strong alkalies
Hazardous Polymerisation	Will not occur
Hazardous Decomposition Products	- Oxides of carbon - Hydrogen fluoride

### SECTION 11 – TOXICOLOGICAL INFORMATION & HEALTH EFFECT

Acute Toxicity	4 hour LC50 (rat) >788,698 ppm
Chronic Toxicity/Carcinogenicity	This product is not expected to cause long term adverse health effect.
Genotoxicity	This product is not expected to cause any mutagenic effect. Tests have shown that this material does not cause genetic damage in bacterial or mammalian cell culture.

Reproductive/Developmental Toxicity      This product is not expected to cause adverse reproductive effect.

## SECTION 12 – ECOLOGICAL INFORMATION

Mobility	No data available
Persistence/Degradability	No data available
Bio-accumulation	No data available
Ecotoxicity	No data available

## SECTION 13 – DISPOSAL CONSIDERATION

Dispose of container in accordance with all applicable local and national regulations. Do not cut, puncture or weld on or near to the container. If spilled, contents will vaporise to the atmosphere

## SECTION 14 – TRANSPORT INFORMATION

DOT CFR 172.101 Data	Heptafluoropropane, 2.2, UN3296
UN Proper Shipping Name	Heptafluoropropane
UN Class	(2.2) Non-Flammable/Non-Poisonous Gas
UN Number	UN3296
UN Packaging Group	Not applicable

## SECTION 15 – REGULATORY INFORMATION

### EU Label Information

	Classification and labeling have been performed to EU directive 67/548/EEC and 99/45/EC including amendments (2001/60/EC and 2006/8/EC)
EU HAZARD SYMBOL AND INDICATION OF DANGER	Non Flammable Gas
R PHRASES	None
S PHRASES	None

### US REGULATIONS (Federal, State) and INTERNATIONAL CHEMICAL REGISTRATION LAWS

TSCI Listing	This product contains ingredients that are listed on or exempt from listing on the EPA Toxic Substance Control Act Chemical Substance Inventory.
EINECS LISTING	All ingredients in this product are listed on the European Inventory of Existing Commercial Chemical Substances (EINECS) or the European List of New Chemical Substances (ELINCS) or are exempt from listing.
DSL/NDSL (CANADIAN) LISTING	All ingredients in this product are listed on the Domestic Substance List (DSL) or the Non-Domestic Substance List (NDSL) or are exempt from listing.
WHMIS CLASSIFICATION	A This product was classified in accordance with the hazard criteria of the Canadian Controlled Product Regulations and the MSDS contains all the information required by these regulations.
MA RIGHT TO KNOW LAW	All components have been checked for inclusion on the Massachusetts Substance List (MSL). Those components present at or above the de minimis concentration include: - none

PA RIGHT TO KNOW LAW	This product contains the following chemicals found on the Pennsylvania Hazardous Substance List: - none
NJ RIGHT TO KNOW LAW	This product contains the following chemicals found on the NJ Right To Know Hazardous Substance List: - none
CALIFORNIA PROPOSITION 65	This product does not contain materials which the State of California has found to cause cancer, birth defects or other reproductive harm.
SARA TITLE III SECT. 302 (EHS)	This product does not contain any chemical subject to SARA Title III Section 302.
SARA TITLE III SECT. 304	This product does not contain any chemical subject to SARA Title III Section 304
SARA TITLE III SECT. 311/312	- Immediate (Acute) Health Hazard
CATEGORISATION	- Pressure Hazard
SARA TITLE III SECT. 313	This product does not contain a chemical which is listed in Section 313 at or above de minimis concentration.

### SECTION 16 – OTHER INFORMATION

NFPA Ratings	NFPA Code for Health – 1 NFPA Code for Flammability – 0 NFPA Code for Reactivity – 0 NFPA Code for Special Hazards – None
HMIS Ratings	HMIS Code for Health – 1 HMIS Code for Flammability – 0 HMIS Code for Reactivity – 0 HMIS Code for Personal Protection – See Section 8
ABBREVIATIONS	N/A: Denotes no applicable information found or available CAS#: Chemical Abstracts Service Number ACGIH: American Conference of Governmental Industrial Hygienists OSHA: Occupational Safety and Health Administration TLV: Threshold Limit Value PEL: Permissible Exposure Limit STEL: Short Term Exposure Limit NTP: National Toxicology Program IARC: International Agency for Research on Cancer R: Risk S: Safety

#### Disclaimer

This document has been compiled by ETI Fire Systems to serve as the manufacturer’s material Safety Data Sheet (MSDS). It is based on information concerning the product which has been provided to ETI by other manufacturer or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. While ETI has taken all due care to include accurate and up-to-date information in this MSDS, ETI in no manner whatsoever, expressly or implied, warrants this information to be accurate and disclaims all liability for its use. Any person utilizing this document should seek competent professional advice to verify and assume responsibility for the suitability of this information to their particular situation.