



SAFETY DATA SHEET


Section 1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: FM-200[®]
Other Identifiers: FE-227, Pressurized Extinguisher, 2-Hydrofluoropane, 1,1,1,2,3,3,3- Heptafluoro-, HFC-227eaHP, R-227, HFC-227ea
Product Use: Fire extinguisher agent
Manufacturer: AMEREX CORPORATION
Internet Address: www.amerex-fire.com
Address: 7595 Gadsden Highway, P.O. Box 81
Trussville, AL 35173-0081
Company Telephone: (205) 655-3271
E-mail Address: info@amerex-fire.com
Emergency Contacts: Chemtrec 1(800) 424-9300 or (703) 527-3887
Issued: March 7, 2019

Section 2. HAZARDS IDENTIFICATION

GHS – Classification

Health	Environmental	Physical
Acute Toxicity: None	None	None
Skin Corrosion/Irritation: None	None	None
Skin Sensitization: None	None	None
Eye: None	None	None
Carcinogen: None	None	None

GHS – Label Symbol(s): Gas Under Pressure 
GHS – Signal Word(s): Gas Under Pressure: **Warning**

Other Hazards Not Resulting in Classification: Simple asphyxiant. May displace oxygen and cause rapid suffocation.
May cause frostbite in contact with skin or eyes.

GHS – Hazard Phrases

GHS Hazard	GHS Codes(s)	Code Phrase(s)
Physical	H280 281	*- Contents under pressure; may explode if heated. Contains refrigerated gas; may cause cryogenic burns or injury.
Health	H313	May be harmful in contact with skin.
Environmental	None	
Precautionary:		
General	P101	If medical advice is needed, have product container or label at hand.
Prevention	P251 261 271 280	Do not pierce or burn, even after use. Avoid breathing gas. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection.
Response	P312 321 336 304+340 305+351+338 313+333	Call a POISON CENTER/doctor if you feel unwell. Specific treatment (see Section 4. First Aid Measures) Thaw frosted parts with lukewarm water. Do not rub affected areas. IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing. May be harmful in contact with skin or if inhaled.
Storage	P410+403	*- Protect from sunlight. Store in well-ventilated place.
Disposal	P501	Dispose of contents/container through a licensed disposal company in accordance with local/state/national regulations.

*- If under pressure

Section 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	EC No.	REACH Reg. No.	CAS-No.	Weight %
1,1,1,2,3,3,3-Heptafluoropropane	207-079-2	NA	431-89-0	100

Adverse health effects and symptoms: None in normal quantities

Section 4. FIRST AID MEASURES

Eye Exposure: Liquid or cold gas can cause freezing injury to eyes. Flush eyes with cool water for 15 minutes. Seek medical attention immediately.

Skin Exposure: May cause cold burns or frostbite. Remove contaminated clothing and flush affected areas with lukewarm (NOT HOT) water. Seek medical attention immediately if blistering of the dermal surface or if deep tissue freezing occurs

Inhalation: May cause coughing. If respiratory irritation or distress occurs, remove victim to fresh air. Seek medical attention if problems persists.

Ingestion: None under normal conditions
Medical conditions possibly

aggravated by exposure: None

Section 5. FIRE-FIGHTING MEASURES

Flammable Properties:	Not flammable
Flash Point:	None
Suitable Extinguishing Media:	Non-combustible. Use extinguishing media suitable for surrounding conditions. Cool fire-exposed cylinders until flames are extinguished. Damaged cylinders should be handled only by specialists.
Hazardous Combustion Products:	None
<u>Explosion Data:</u>	
Sensitivity to Mechanical Impact:	Not sensitive
Sensitivity to Static Discharge:	Not sensitive
Unusual fire/explosion hazards:	Cylinders could rupture under heat of fire.
Protective Equipment and Precautions for Firefighters:	As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

Section 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions:	Evacuate personnel to safe areas. Ensure adequate ventilation, especially in confined areas. Monitor oxygen level.
Personal Protective Equipment:	None unless there is a chance of direct contact with the chemical. Wear self-contained breathing apparatus when entering area unless atmosphere is proved safe. Wear appropriate PPE for the situation.
Emergency Procedures:	Handle in accordance with good health and safety practices.
Methods for Containment:	Stop the flow of gas or remove cylinder to outdoor location if this can be done without risk. If leak is in container or container valve, contact the appropriate emergency telephone number in Section 1 or call your closest supplier location.
Methods for Clean Up:	Return cylinder to authorized distributor.
Environmental Precautions:	Prevent spreading of vapors through sewers, ventilation systems and confined areas.
Other:	If product is contaminated, use PPE and containment appropriate to the nature of the most toxic chemical/material in the mixture.

Section 7. HANDLING AND STORAGE

Personal Precautions:	Put on appropriate personal protective equipment Contains gas under pressure. Do not get in eyes or on skin or clothing. Avoid breathing gas. Empty containers retain product residue and can be hazardous. Do not puncture or incinerate container. Close valve after each use and when empty.
Conditions for Safe Storage/Handling:	If pressurized – Protect from sunlight and store in a well-ventilated place. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement. ... Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas.
Incompatible Products:	None

Section 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Chemical Name	OSHA PEL	ACGIH TLV	DFG MAK *	EU BLV
1,1,1,2,3,3,3-Heptafluoropropane	NR	NR	NR	NA

NR = Not Regulated.

<u>Engineering Controls:</u>	None
<u>Personal Protective Equipment</u>	Safety glasses

Section 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Colorless gas
Molecular Weight:	170.03 g/mole
Odor:	Light, etherial
Odor Threshold:	No information available
Decomposition Temperature °C:	No information available
Freezing Point °C:	129.5
Initial Boiling Point °C:	-17.3
Physical State:	Gas
pH:	No information available

Flash Point °C:	None
Auto-ignition Temperature °C:	None
Boiling Point/Range °C:	17.3
Melting Point/Range °C:	129.5
Flammability:	Not Flammable
Flammability Limits in Air °C:	Upper – Not Flammable; Lower-Not Flammable
Explosive Properties:	None
Oxidizing Properties:	None
Volatile Component (%vol)	Not Applicable
Evaporation Rate:	Not Applicable
Density:	7.59 g/cc (at 20°C)
Vapor Pressure:	400 kPa (at 20°C)
Specific gravity at 25 C:	Not Applicable
Solubility (in water):	0.1 g/L (at 20°C)
Partition Coefficient: octanol/water	2.29 (Log Pow)

Section 10. STABILITY AND REACTIVITY

Reactivity:	This material may be reactive with certain agents under certain conditions - see the remaining headings in this section.
Chemical Stability:	Stable under recommended storage and handling conditions.
Incompatibles:	Light and/or alkaline metals, alkaline earth metals, powdered metals, oxidizing agents.
Conditions to Avoid:	Heat
Hazardous Decomposition Products:	Gaseous hydrogen fluoride (HF), fluorophosgene The release of other hazardous decomposition products is possible.
Possibility of Hazardous Reactions:	Strong oxidizers, alkali metals and alkaline earth metals may cause fires or explosions.
Hazardous Polymerization	Does not occur

Section 11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure:	Inhalation, skin, and eye contact.
Symptoms:	
Immediate:	
Inhalation:	Coughing.
Eyes:	None (unless freezing gas causes burns or frostbite)
Skin:	None (unless freezing gas causes burns or frostbite)

Delayed: Symptoms appear to be relatively immediate
 Acute Toxicity: Non-toxic.
 Chronic Toxicity:
 Short-term Exposure: None known.
 Long-term Exposure: None known.

Acute Toxicity Values - Health

Chemical Name	LD50		LC50 (Inhalation)
	Oral	Dermal	
1,1,1,2,3,3,3-Heptafluoropropane	800,000 ppm (Rat/4h)	Not available	Not available

Reproductive Toxicity: This product's ingredients are not known to have reproductive or teratogenic effects.
 Target Organs and Effects (TOST): None

Other Toxicity Categories

Chemical Name	Germ Cell Mutagenicity	Carcinogenicity	Reproductive	TOST Single Exp	TOST Repeated Exp	Aspiration
1,1,1,2,3,3,3-Heptafluoropropane	None	None	None	None	None	None

Section 12. ECOLOGICAL INFORMATION

Ecotoxicity: Low risk.
 Persistence/Degradability: Degrades slowly
 Probability of rapid biodegradation: -0.3742 (Low)
 Anaerobic biodegradation probability: 0.6702 (Rapid)
 Bioaccumulation: 33.36
 Bioconcentration factor: 21.15 L/kg (Not bioaccumulative)
 Mobility in soil (Log Koc-MCI Method)
 Log Octanol-Water Partition Coefficient (KOWWIN)
 Log Kow (KOWWIN) 2.51
 Koc (Kow Method): 150.7 L/kg (Low mobility in soil)
 Log Koa: -0.306
 Log Kaw (HenryWin estimate): 2.816
 Fraction sorbed to airborne particulates (Mackay model): 5.28E-010
 Water Solubility: 79.5 at 25 °C
 Atmospheric oxidation half-life:
Level III Fugacity Model: 0.426% soil, 47.8% water, 1.73% sediment, 50% air

Other Adverse Ecological Effects: No other known effects at this time

Aquatic Toxicity Values – Environment – Research

Chemical Name	Acute (LC50)	Chronic (EC50)
1,1,1,2,3,3,3-Heptafluoropropane	>100 mg/L 96h Brachydanio rerio (zebra fish) >100 mg/L 48h Daphnia magna	>114 mg/L 72h Pseudokirchneriella subcapitata

Aquatic Toxicity Values – Environment – Estimates

Chemical Name	Acute (LC50)	EC50
1,1,1,2,3,3,3-Heptafluoropropane	N/A	N/A

Section 13. DISPOSAL CONSIDERATIONS

Safe Handling	None.
Waste Disposal Considerations	Dispose in accordance with federal, state, and local regulations.
Contaminated Packaging	Dispose in accordance with federal, state, and local regulations.

NOTES:

This product is not a RCRA characteristically hazardous or listed hazardous waste. Dispose of according to state or local laws, which may be more restrictive than federal laws or regulations. Used product may be altered or contaminated, creating different disposal considerations.

Section 14. TRANSPORT INFORMATION

UN Number:	3296
UN Proper Shipping Name:	HEPTAFLUOROPROPANE
Transport Hazard Class:	2
Packing Group:	NA
Marine Pollutant?:	NO
IATA	Not regulated
DOT	Not regulated

NOTES:

This product is not defined as a hazardous material under U.S. Department of Transportation (DOT) 49 CFR 172, or by Transport Canada "Transportation of Dangerous Goods" regulations. This transportation information covers the FM 200 (CAS 431-89-0) fire extinguisher agent as shipped in bulk containers and not when contained in fire extinguishers or fire extinguisher systems.

Special Precautions for Shipping:

If shipped in a stored pressure-type fire extinguisher, and pressurized with a non-flammable, non-toxic inert expellant gas, the fire extinguisher is considered a hazardous material by the US Department of Transportation and Transport Canada. The proper shipping name shall be FIRE EXTINGUISHER and the UN designation is UN 1044. The DOT hazard class/division is LIMITED QUANTITY when pressurized to less than 241 psig and when shipped via highway or rail. UN Class 2.2. Non-Flammable Gas, when shipping via air. Packing Group – N/A

Section 15. REGULATORY INFORMATION

International Inventory Status: All ingredients are on the following inventories

Country(ies)	Agency	Status
United States of America	TSCA	Yes
Canada	WHIMS	Yes
Australia	AICS	Listed or Exempt
Europe	EINECS/ELINCS	Not Classified

REACH Title VII Restrictions: No information available

Chemical Name	Dangerous Substances	Organic Solvents	Harmful Substances Whose Names Are to be Indicated on Label	Pollution Release and Transfer Registry (Class II)	Pollution Release and Transfer Registry (Class I)	Poison and Deleterious Substances Control Law
1,1,1,2,3,3,3-Heptafluoropropane	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

Component	ISHA – Harmful Substances Prohibited for Manufacturing, Importing, Transferring, or Supplying	ISHA – Harmful Substances Requiring Permission	Toxic Chemical Classification Listing (TCCL) – Toxic Chemicals	Toxic Release Inventory (TRI) – Group I	Toxic Release Inventory (TRI) – Group II
1,1,1,2,3,3,3-Heptafluoropropane	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

European Risk and Safety phrases:

EU Classification:

R Phrases: 44

S Phrases: 9

24/25

26

36/37/39

38

45

Keep in a well-ventilated place.

Avoid contact with skin and eyes.

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Wear suitable protective clothing, gloves and eye/face protection.

In case of insufficient ventilation wear suitable respiratory equipment.

In case of accident or if you feel unwell seek medical advice immediately (show the label where possible).

U.S. Federal Regulatory Information:

SARA 313:

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) - This product does not contain and chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372. None of the chemicals in this product are under SARA reporting requirements or have SARA threshold planning quantities (TPQs) or CERCLA reportable quantities (RQs), or are regulated under TSCA 8(d).

SARA 311/312 Hazard Categories:

Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard-*	Yes
Reactive Hazard	No

* - Only applicable if material is in a pressurized extinguisher.

Clean Water/Clean Air Acts:

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42) or Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61) and Section 112 of the Clean Air Act Amendments of 1990.

U.S. State Regulatory Information:

Chemicals in this product are covered under specific State regulations, as denoted below:

Alaska - Designated Toxic and Hazardous Substances: None
California – Permissible Exposure Limits for Chemical Contaminants: None
Florida – Substance List: None
Illinois – Toxic Substance List: None
Kansas – Section 302/303 List: None
Massachusetts – Substance List: None
Minnesota – List of Hazardous Substances: None
Missouri – Employer Information/Toxic Substance List: None
New Jersey – Right to Know Hazardous Substance List: None
North Dakota – List of Hazardous Chemicals, Reportable Quantities: None
Pennsylvania – Hazardous Substance List: None
Rhode Island – Hazardous Substance List: None
Texas – Hazardous Substance List: None
West Virginia – Hazardous Substance List: None
Wisconsin – Toxic and Hazardous Substances: None

California Proposition 65: No component is listed on the California Proposition 65 list.

Section 16. OTHER INFORMATION

This SDS conforms to requirements under U.S., U.K., Canadian, Australian, and EU regulations or standards, and conforms to the proposed 2003 ANSI Z400.1 format. No modifications of this SDS are authorized by AMEREX Corporation. Questions or comments should be directed to AMEREX Corporation (See Section 1).

Issuing Date	30-January-2019
Revision Date	7-March-2019; Revision C
Revision Notes	None

The information herein is given in good faith but no warranty, expressed or implied, is made.
Updated by William F. Garvin, CIH.