

# Material Safety Data Sheet FM-200®

## Section 1: Identification of the Material and Supplier

<b>Product Name</b>	FM-200®
<b>Other Names</b>	FE-227 2-Hydroperfluoropropane Propane, 1,1,1,2,3,3,3-Heptafluoro- HFC-227eaHP 2-Hydroheptafluoropropane Heptafluoropropane 2-H-heptafluoropropane 1,1,1,2,3,3,3-Heptafluoropropane R-227 R227 HFC-227ea
<b>Recommended Use</b>	Fire extinguishing agent
<b>Supplier Identification</b>	DuPont 1007 Market Street Wilmington, DE 19898
<b>Product Information</b>	1-800-441-7515 (outside the U.S. 1-302-774-1000)
<b>Medical Emergency</b>	1-800-441-3637 (outside the U.S. 1-302-774-1139)
<b>Transport Emergency</b>	CHEMTREC: 1-800-424-9300 (outside the U.S. 1-703-527-3887)

## Section 2: Hazards Identification

<b>Emergency Overview</b>	<p>Misuse or intentional inhalation abuse may lead to death without warning. Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.</p> <p>Rapid evaporation of the liquid may cause frostbite.</p>	
	Skin	Contact with liquid or refrigerated gas can cause cold burns and frostbite.
	Eyes	Contact with liquid or refrigerated gas can cause cold burns and frostbite.
	Inhalation	<p>Misuse or intentional inhalation abuse may cause death without warning symptoms, due to cardiac effects.</p> <p>Other symptoms potentially related to misuse or inhalation abuse are: Anaesthetic effects, Light-headedness, dizziness, confusion, incoordination, drowsiness, or unconsciousness, irregular heartbeat with a strange sensation in the chest, heart thumping, apprehension, feeling of fainting, dizziness or weakness.</p> <p>Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.</p>
<b>Carcinogenicity</b>	None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, or OSHA, as a carcinogen.	

### Section 3: Composition / Information on Ingredients

Component	1,1,1,2,3,3,3-Heptafluoropropane
CAS-No.	431-89-0
Concentration	100 %

### Section 4: First Aid Measures

Description of the necessary First Aid Measures	<b>EYE CONTACT</b>	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Consult a physician if necessary
	<b>SKIN CONTACT</b>	In case of contact, immediately flush skin with plenty of water for at least 15 minutes. Take off all contaminated clothing immediately. Consult a physician. Wash contaminated clothing before re-use. Treat for frostbite if necessary by gently warming affected area.
	<b>INHALATION</b>	Remove from exposure, lie down. Move to fresh air. Keep patient warm and at rest. Artificial respiration and/or oxygen may be necessary. Consult a physician.
	<b>INGESTION</b>	Is not considered a potential route of exposure.
General advice		Never give anything by mouth to an unconscious person. When symptoms persist or in all cases of doubt seek medical advice.
Notes to physician		: Because of possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, that may be used in situations of emergency life support should be used with special caution.

### Section 5: Fire Fighting Measures

Fire and Explosion Hazard	The product is not flammable. Hazardous decomposition products : Hydrogen fluoride, Carbonyl fluoride
Suitable extinguishing media	This material is a fire extinguishing agent.

### Section 6: Accidental Release Measures

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Safeguards (Personnel)	Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus. Keep upwind of leak - evacuate until gas has dispersed.
Spill Cleanup	Ventilate area using forced ventilation, especially low or enclosed places where heavy vapors might collect.

## Section 7: Handling and Storage

Handling (Personnel)	Do not breathe gas. Avoid contact with skin, eyes and clothing. Provide sufficient air exchange and/or exhaust in work rooms. For personal protection see section 8. Wash hands thoroughly after handling. Wash clothing after use. Decomposition will occur when product comes in contact with open flame or electrical heating elements. Handle in accordance with good industrial hygiene and safety practice.
Storage	Valve protection caps and valve cutlet threaded plugs must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Never attempt to lift cylinder by its cap. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder. Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Separate full containers from empty containers. Keep at temperature not exceeding 52°C. Do not store near combustible materials. Keep container tightly closed in a dry and well-ventilated place. Store in original container. Protect from contamination. Avoid area where salt or other corrosive materials are present.
Storage temperature	< 52 °C (< 126 °F)

## Section 8: Exposure Controls / Personal Protection

Engineering controls	Use only with adequate ventilation. Keep container tightly closed.
Personal protective equipment Respiratory protection	Wear NIOSH approved respiratory protection as appropriate
Hand protection	Additional protection: Impervious gloves
Eye protection	Safety glasses with side-shields Additionally wear a face shield where the possibility exists for face contact due to splashing, spraying or airborne contact with this material.
Skin and body protection	Where there is potential for skin contact, have available and wear as appropriate, impervious gloves, apron, pants, jacket, hood and boots.
Protective measures	Self-contained breathing apparatus (SCBA) is required if a large release occurs.
Exposure Guidelines	Exposure Limit Values AEL* (DUPONT) 1,000 ppm 8 & 12 hr. TWA

\* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

## Section 9: Physical and Chemical Properties

Form	Liquefied gas
Odor	none
Melting point/range	-131 °C (-204 °F)
Boiling point	-16.3 °C (2.7 °F)
Vapour Pressure	4,547 hPa at 25 °C (77 °F)
Density	1.388 g/cm <sup>3</sup> at 25 °C (77 °F) (as liquid)

## Section 10: Stability and Reactivity

Stability	Stable at normal temperatures and storage conditions.
Incompatibility	Alkali metals Alkaline earth metals, Powdered metals, Powdered metal salts
Hazardous decomposition products	Hazardous decomposition products , Hydrogen fluoride , Carbonyl fluoride, Carbon monoxide, Carbon dioxide
Hazardous reactions	Polymerization will not occur.

## Section 11: Toxicological Information

Inhalation 4 h LC50	> 788698 ppm , rat
Inhalation	dog Cardiac sensitization
Dermal	not applicable
Oral	not applicable
Skin irritation	No skin irritation, Not tested on animals Not expected to cause skin irritation based on expert review of the properties of the substance.
Eye irritation	No eye irritation, Not tested on animals Not expected to cause eye irritation based on expert review of the properties of the substance.
Sensitisation	Does not cause skin sensitization., Not tested on animals Not expected to cause sensitization based on expert review of the properties of the substance.  Did not cause sensitization on laboratory animals. There are no reports of human respiratory sensitization.
Repeated dose toxicity	Inhalation rat No toxicologically significant effects were found.
Carcinogenicity	Overall weight of evidence indicates that the substance is not carcinogenic.
Mutagenicity	Did not cause genetic damage in animals. Did not cause genetic damage in cultured mammalian cells. Did not cause genetic damage in cultured bacterial cells.
Reproductive toxicity	Animal testing showed no reproductive toxicity. Information given is based on data obtained from similar substances.
Teratogenicity	Animal testing showed no developmental toxicity.
Further information	Cardiac sensitisation threshold limit : 730190 mg/m <sup>3</sup>

## Section 12: Ecological Information

Aquatic Toxicity	
96 h LC50	Danio rerio (zebra fish) > 200 mg/l Information given is based on data obtained from similar substances.
96 h LC50	Oncorhynchus mykiss (rainbow trout) > 81.8 mg/l Information given is based on data obtained from similar substances.
72 h EC50	Pseudokirchneriella subcapitata > 114 mg/l Information given is based on data obtained from similar substances.
72 h EC50	Pseudokirchneriella subcapitata > 118 mg/l Information given is based on data obtained from similar substances.
48 h EC50	Daphnia magna (Water flea) > 200 mg/l Information given is based on data obtained from similar substances
48 h EC50	Daphnia magna (Water flea) > 97.9 mg/l Information given is based on data obtained from similar substances.
Environmental Fate	
Biodegradability aerobic	1 % OECD Test Guideline 301 Not readily biodegradable.
Biodegradability aerobic	5 % OECD Test Guideline 301 Not readily biodegradable.

## Section 13: Disposal Considerations

Waste Disposal	Can be used after re-conditioning. Recover by distillation or remove to a permitted waste disposal facility. Comply with applicable Federal, State/Provincial and Local Regulations.
Environmental Hazards	Empty pressure vessels should be returned to the supplier.

## Section 14: Transport Information

DOT	UN number	3296
	Proper shipping name	Heptafluoropropane
	Class	2.2
	Labelling No.	2.2
IATA_C	UN number	3296
	Proper shipping name	Heptafluoropropane
	Class	2.2
	Labelling No.	2.2
IMDG	UN number	3296
	Proper shipping name	Heptafluoropropane
	Class	2.2
	Labelling No.	2.2

### Section 15: Regulatory Information

SARA 313 Regulated Chemical(s)	SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.
California Prop. 65	Chemicals known to the State of California to cause cancer, birth defects or any other harm: none known

### Section 16: Other Information

HMIS	
Health	1
Flammability	0
Reactivity/Physical hazard	0
PPE	Personal Protection rating to be supplied by user depending on use conditions

*The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.*

*Significant change from previous version is denoted with a double bar.*

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