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**1. IDENTIFICATION**

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<b>Product Name</b>	FM-200® (Fire Extinguishing Agent with Expellant)
<b>Other Names</b>	Heptafluoropropane, HFC-227ea
<b>Recommended use of the chemical and restrictions on use</b>	
<b>Identified uses</b>	Fire Extinguishing Agent
<b>Restrictions on use</b>	Consult applicable fire protection codes
<b>Company Identification</b>	Kidde-Fenwal, Inc. 400 Main Street Ashland, MA 01721 USA
<b>Customer Information Number</b>	(508) 881-2000
<b>Emergency Telephone Number</b>	
<b>Chemtrec Number</b>	(800) 424-9300 (703) 527-3887 (International)
<b>Issue Date</b>	April 10, 2015
<b>Supersedes Date</b>	February 9, 2015

*Safety Data Sheet prepared in accordance with OSHA's Hazard Communication Standard (29 CFR 1910.1200) and the Globally Harmonized System of Classification and Labelling of Chemicals (GHS)*

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**2. HAZARD IDENTIFICATION**

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**Hazard Classification**

Gas under pressure – liquefied gas  
Simple Asphyxiant

**Label Elements**

Hazard Symbols



Signal Word: Warning

**Hazard Statements**

Contents under pressure; may explode if heated.  
May displace oxygen and cause rapid suffocation.

**Precautionary Statements**

**Prevention**

Do not enter confined space unless adequately ventilated.  
In case of inadequate ventilation wear respiratory protection.

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## 2. HAZARD IDENTIFICATION

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### Response

None

### Storage

Keep container tightly closed.  
Protect from sunlight and store in well-ventilated place.

### Disposal

None

### Other Hazards

Direct contact with the cold gas or liquid can cause freezing of exposed tissues. Exposure to vapor at high concentrations can cause cardiac sensitization and suffocation if air is displaced by vapors.

### Specific Concentration Limits

The values listed below represent the percentages of ingredients of unknown toxicity.

Acute oral toxicity	0%
Acute dermal toxicity	0%
Acute inhalation toxicity	0%
Acute aquatic toxicity	0%

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## 3. COMPOSITION/INFORMATION ON INGREDIENTS

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**Synonyms:** Heptafluoropropane  
This product is a substance.

Component	CAS Number	Concentration
1,1,1,2,3,3,3-Heptafluoropropane	431-89-0	>99.9%

**Note: The expellant is nitrogen.**

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## 4. FIRST- AID MEASURES

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### Description of necessary first-aid measures

#### Eyes

Immediately flood the eye with plenty of water for at least 15 minutes, holding the eye open. Obtain medical attention if soreness or redness persists.

#### Skin

Flush with water. Obtain medical attention if frostbite or blistering occurs 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.

### Most important symptoms/effects, acute and delayed

Aside from the information found under Description of necessary first aid measures (above) and Indication of immediate medical attention and special treatment needed, no additional symptoms and effects are anticipated.

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**4. FIRST- AID MEASURES**

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**Indication of immediate medical attention and special treatment needed**

**Notes 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. **DO NOT USE HOT WATER.**

The use of epinephrine or similar compounds can increase susceptibility to heart irregularities caused by excessive exposure to these types of compounds.

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**5. FIRE - FIGHTING MEASURES**

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**Suitable 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 a fire.

**Specific hazards arising from the chemical**

Containers may explode in heat of fire.

**Special Protective Actions for Fire-Fighters**

Wear full protective clothing and self-contained breathing apparatus as appropriate for specific fire conditions.

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**6. ACCIDENTAL RELEASE MEASURES**

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**Personal precautions, protective equipment and emergency procedures**

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.

**Environmental Precautions**

Prevent the material from being released into the environment.

**Methods and materials for containment and cleaning up**

Material evaporates.

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**7. HANDLING AND STORAGE**

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**Precautions for safe handling**

Wear appropriate protective clothing. Prevent skin and eye contact.

**Conditions for safe storage**

Pressurized containers should be properly stored and secured to prevent falling or being knocked over. Do not drag, slide or pressurized containers. Do not drop pressurized containers or permit them to strike against each other. Never apply flame or localized heat directly to any part of the pressurized or plastic container. Store pressurized and plastic containers away from high heat sources. Storage area should be: - cool - dry - well ventilated - under cover - out of direct sunlight

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**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

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**Control parameters**

Exposure limits are listed below, if they exist.

**1,1,1,2,3,3,3-Heptafluoropropane**

None assigned.

**Appropriate engineering controls**

Use with adequate ventilation. There should be local procedures for the selection, training, inspection and maintenance of this equipment. When used in large volumes or odor becomes apparent, use local exhaust ventilation.

**Individual protection measures**

**Respiratory Protection**

Not normally required under conditions 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.

**Skin Protection**

Wear rubber gloves. Avoid contact with skin.

**Eye/Face Protection**

Chemical goggles or safety glasses with side shields. Avoid contact with eyes.

**Body Protection**

Normal work wear.

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**9. PHYSICAL AND CHEMICAL PROPERTIES**

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**Agent – FM-200®**

**Appearance**

<b>Physical State</b>	Liquefied gas under pressure
<b>Color</b>	Colorless
<b>Odor</b>	Slight ether like
<b>Odor Threshold</b>	No data available
<b>pH</b>	Neutral
<b>Specific Gravity</b>	1.46
<b>Boiling Range/Point (°C/F)</b>	-16.4°C/3 °F
<b>Melting Point (°C/F)</b>	-129.5°C/265 °F
<b>Flash Point (PMCC) (°C/F)</b>	Not flammable
<b>Vapor Pressure</b>	540 hPa at -30 °C 29,360 hPa at 123 °C
<b>Evaporation Rate (BuAc=1)</b>	Not applicable
<b>Solubility in Water</b>	0.23 g/l at 25°C
<b>Vapor Density (Air = 1)</b>	5.8
<b>VOC (%)</b>	Not applicable
<b>Partition coefficient (n-octanol/water)</b>	2289
<b>Viscosity</b>	Not applicable
<b>Auto-ignition Temperature</b>	No data available
<b>Decomposition Temperature</b>	No data available

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Upper explosive limit</b>	Not explosive
<b>Lower explosive limit</b>	Not explosive
<b>Flammability (solid, gas)</b>	Not flammable
<b><u>Expellant - Nitrogen</u></b>	
<b>Appearance</b>	
<b>Physical State</b>	Compressed gas
<b>Color</b>	Colorless
<b>Odor</b>	None
<b>Odor Threshold</b>	No data available
<b>pH</b>	Not applicable
<b>Specific Gravity</b>	0.075 lb/ft <sup>3</sup> @70°F as vapor
<b>Boiling Range/Point (°C/F)</b>	-196°C/-321 °F
<b>Melting Point (°C/F)</b>	No data available
<b>Flash Point (PMCC) (°C/F)</b>	Not flammable
<b>Vapor Pressure</b>	838 psig @70°F and 1 atmosphere(Carbon Dioxide)
<b>Evaporation Rate (BuAc=1)</b>	No data available
<b>Solubility in Water</b>	No data available
<b>Vapor Density (Air = 1)</b>	Not applicable
<b>VOC (g/l)</b>	None
<b>VOC (%)</b>	None
<b>Partition coefficient (n-octanol/water)</b>	No data available
<b>Viscosity</b>	Not applicable
<b>Auto-ignition Temperature</b>	No data available
<b>Decomposition Temperature</b>	No data available
<b>Upper explosive limit</b>	Not explosive
<b>Lower explosive limit</b>	Not explosive
<b>Flammability (solid, gas)</b>	Not flammable

**10. STABILITY AND REACTIVITY**

**Reactivity**

Decomposes on heating. Containers may rupture or explode if exposed to heat.

**Chemical Stability**

Stable under normal conditions.

**Possibility of hazardous reactions**

Hazardous polymerization will not occur.

**Conditions to Avoid**

Heat - High temperatures - Exposure to direct sunlight

**Incompatible Materials**

Powdered metals (ex. aluminum, zinc, etc.) - strong oxidizing agents – strong reducing agents – strong alkalis

**Hazardous Decomposition Products**

Oxides of carbon – hydrogen halides – fluorocarbons – carbonyl halides

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**11. TOXICOLOGICAL INFORMATION**

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**Acute Toxicity**FM-200®

4 hour LC50(rat) &gt;788,698 ppm

Low Observed Adverse Effect Concentration (LOAEC)/dog : 105000 ppm

Cardiac sensitization

No Observed Adverse Effect Concentration (NOAEC)/dog : 90000 ppm

Nitrogen

Simple asphyxiant

**Specific Target Organ Toxicity (STOT) – single exposure**Nitrogen: Exposure to nitrogen gas at high concentrations can cause suffocation by reducing oxygen available for breathing. Breathing very high concentrations can cause dizziness**Specific Target Organ Toxicity (STOT) – repeat exposure**

No relevant studies identified.

**Serious Eye damage/Irritation**

Not expected to cause eye irritation based on review of properties of the substance.

**Skin Corrosion/Irritation**

Not expected to cause skin irritation based on review of properties of the substance.

**Respiratory or Skin Sensitization**FM-200®: Not expected to cause skin sensitization based on review of properties of the substance. Did not cause respiratory sensitization in laboratory animals.**Carcinogenicity**

Not considered carcinogenic by NTP, IARC, and OSHA.

**Germ Cell Mutagenicity**FM-200®: Animal testing and testing on bacterial or mammalian cell cultures did not show mutagenic effects.**Reproductive Toxicity**FM-200®: Animal testing showed no reproductive toxicity. (Based on data obtained from similar substances.) Animal testing showed no developmental toxicity.**Aspiration Hazard**

Not an aspiration hazard.

**Other**FM-200®: Cardiac sensitization threshold limit : 730190 mg/m<sup>3</sup>

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**12. ECOLOGICAL INFORMATION**

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**Ecotoxicity**FM-200®

LC50 &gt; 200 mg/l zebra fish 96h

EC50 &gt; 200 mg/l Water flea 48h

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**12. ECOLOGICAL INFORMATION**

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**Mobility in soil**

No relevant studies identified.

**Persistence/Degradability**

Not readily biodegradable.

**Bioaccumulative Potential**

No relevant studies identified.

**Other adverse effects**

No relevant studies identified.

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**13. DISPOSAL CONSIDERATIONS**

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**Disposal Methods**

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 vaporize to the atmosphere.

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**14. TRANSPORT INFORMATION**

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Safety Data Sheet information is intended to address a specific material and not various forms or states of containment. Specific volumes, pressures or hardware configurations containing such materials can dictate various different hazard classifications for transportation and labelling requirements. Under Federal Regulations only trained and qualified individuals are permitted to label and ship products following the applicable Department of Transportation (DOT), Federal Aviation Administration (FAA), Transport Canada (TC), International Maritime Dangerous Goods (IMDG) or International Air Transport Association (IATA) requirements.

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**15. REGULATORY INFORMATION**

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**United States TSCA Inventory**

All components of this product are in compliance with the inventory listing requirements of the US Toxic Substance Control Act (TSCA) Chemical Substance Inventory.

**Canada DSL Inventory**

All ingredients in this product have been verified for inclusion on the Domestic Substance List (DSL).

**SARA Title III Sect. 311/312 Categorization**

Pressure Hazard

**SARA Title III Sect. 313**

This product does not contain any chemicals listed in Section 313 at or above de minimis concentrations.

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**16. OTHER INFORMATION**

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**NFPA Ratings**

NFPA Code for Health - 1

NFPA Code for Flammability - 0

NFPA Code for Reactivity - 0

NFPA Code for Special Hazards – None

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**16. OTHER INFORMATION**

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**HMIS Ratings**

HMIS Code for Health - 1

HMIS Code for Flammability - 0

HMIS Code for Physical Hazard - 0

HMIS Code for Personal Protection - See Section 8

\*Chronic

**Legend**

ACGIH: American Conference of Governmental Industrial Hygienists

CAS: Chemical Abstracts Service

IARC: International Agency for Research on Cancer

N/A: Denotes no applicable information found or available

NTP: National Toxicology Program

OSHA: Occupational Safety and Health Administration

PEL: Permissible Exposure Limit

SDS: Safety Data Sheet

STEL: Short Term Exposure Limit

TLV: Threshold Limit Value

**Information Source and References**

This SDS is prepared by Hazard Communication Specialists based on information provided by internal company references.

Revision Date: April 10, 2015

Replaces: February 9, 2015

Changes made: Updated to GHS Classification.

**Prepared By:** EnviroNet LLC.

FM-200 is a registered trademark of DuPont.

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