SAFETY DATA SHEET
HFC-227ea
(Fire Extinguishing Agent with Expellant)

1. IDENTIFICATION

Product Name	HFC-227ea (Fire Extinguishing Agent with Expellant)
Other Names	Heptafluoropropane
Recommended use of the chemical and restrictions on use	
Identified uses	Fire Extinguishing Agent
Restrictions on use	Consult applicable fire protection codes
Company Identification	Kidde-Fenwal, Inc. 400 Main Street Ashland, MA 01721 USA
Customer Information Number	(508) 881-2000
Emergency Telephone Number	
Chemtrec Number	(800) 424-9300 (703) 527-3887 (International)
Issue Date	March 13, 2024
Supersedes Date	March 11, 2020

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)

2. HAZARD IDENTIFICATION

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.
Response
None
Storage
Keep container tightly closed.
Protect from sunlight and store in well-ventilated place.
Disposal
None

2. HAZARD IDENTIFICATION

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%

3. COMPOSITION/INFORMATION ON INGREDIENTS

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.

4. FIRST- AID MEASURES

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.

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.

5. FIRE - FIGHTING MEASURES

Suitable Extinguishing Media
HFC-227ea 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.

6. ACCIDENTAL RELEASE MEASURES

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.

7. HANDLING AND STORAGE

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

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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.

9. PHYSICAL AND CHEMICAL PROPERTIES

Agent: HFC-227ea	
Appearance	
Physical State	Liquefied gas under pressure
Color	Colorless
Odor	Slight ether like
Odor Threshold	No data available
pH	Neutral
Specific Gravity	1.46
Boiling Range/Point (°C/F)	-16.4°C/3 °F
Melting Point (°C/F)	-129.5°C/265 °F
Flash Point (PMCC) (°C/F)	Not flammable
Vapor Pressure	540 hPa at -30 °C 29,360 hPa at 123 °C
Evaporation Rate (BuAc=1)	Not applicable
Solubility in Water	0.23 g/l at 25°C
Vapor Density (Air = 1)	5.8
VOC (%)	Not applicable
Partition coefficient (n-octanol/water)	2289
Viscosity	Not applicable
Auto-ignition Temperature	No data available
Decomposition Temperature	No data available
Upper explosive limit	Not explosive
Lower explosive limit	Not explosive
Flammability (solid, gas)	Not flammable
Expellant: Nitrogen	
Appearance	
Physical State	Compressed gas
Color	Colorless
Odor	None
Odor Threshold	No data available
pH	Not applicable
Specific Gravity	0.075 lb/ft^3 @70°F as vapor
Boiling Range/Point (°C/F)	-196°C/-321 °F
Melting Point (°C/F)	No data available
Flash Point (PMCC) (°C/F)	Not flammable
Vapor Pressure	838 psig @70°F and 1 atmosphere(Carbon Dioxide)
Evaporation Rate (BuAc=1)	No data available

9. PHYSICAL AND CHEMICAL PROPERTIES

Solubility in Water	No data available
Vapor Density (Air = 1)	Not applicable
VOC (g/l)	None
VOC (%)	None
Partition coefficient (n-octanol/water)	No data available
Viscosity	Not applicable
Auto-ignition Temperature	No data available
Decomposition Temperature	No data available
Upper explosive limit	Not explosive
Lower explosive limit	Not explosive
Flammability (solid, gas)	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

11. TOXICOLOGICAL INFORMATION

Acute Toxicity
1,1,1,2,3,3,3-Heptafluoropropane
4 hour LC50(rat) >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.

11. TOXICOLOGICAL INFORMATION

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
1,1,1,2,3,3,3-Heptafluoropropane: 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
1,1,1,2,3,3,3-Heptafluoropropane: Animal testing and testing on bacterial or mammalian cell cultures did not show mutagenic effects.

Reproductive Toxicity
1,1,1,2,3,3,3-Heptafluoropropane: 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
1,1,1,2,3,3,3-Heptafluoropropane: Cardiac sensitization threshold limit : 730190 mg/m3

12. ECOLOGICAL INFORMATION

Ecotoxicity
1,1,1,2,3,3,3-Heptafluoropropane
LC50 > 200 mg/l zebra fish 96h
EC50> 200 mg/l Water flea 48h

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.

13. DISPOSAL CONSIDERATIONS

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.

14. TRANSPORT INFORMATION

Safety Data Sheet information is intended to address a specific material and not various forms or states of containment.

DOT CFR 172.101 Data	Heptafluoropropane, 2.2, UN3296
UN Proper Shipping Name	Heptafluoropropane
UN Class	(2.2) Non-Flammable Gas
UN Number	UN3296
UN Packaging Group	Not applicable
Classification for AIR Transportation (IATA)	Consult current IATA Regulations prior to shipping by air.
Classification for Water Transport IMDG	Consult current IMDG Regulations prior to shipping by water. Heptafluoropropane, 2.2, UN3296

This section is believed to be accurate at the time of preparation. It is not intended to be a complete statement or summary of the applicable laws, rules, or hazardous material regulations, and is subject to change. Users have the responsibility to confirm compliance with all laws, rules, and hazardous material regulations in effect at the time of shipping.

15. REGULATORY INFORMATION

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
Gas under pressure

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

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

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

16. OTHER INFORMATION

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

Revision Date: March 13, 2024
Replaces: March 11, 2020

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