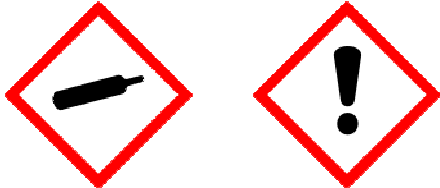


**Section 1 – Chemical Product and Company Identification**

<b>Product Name</b>	HFC-227ea
<b>Chemical Name</b>	1,1,1,2,3,3,3-Heptafluoropropane
<b>Synonym</b>	2H-Heptafluoropropane; HFC-227ea; R-227; MH227®; FM-200™; FE-227™
<b>Product Use</b>	Fire extinguishing agent
<b>Manufacturer</b>	Shanghai Waysmos Fine Chemical Co., Ltd.
<b>Address</b>	388 Liangle Road, Laogang Town, Pudong New Area, Shanghai 201322, China
<b>Email</b>	sales@waysmos.com
<b>Telephone</b>	86-21-58162351
<b>Fax</b>	86-21-58162299

**Section 2 –Hazard Identification**

<b>OSHA/HCS status</b>	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)
<b>Classification of the substance or mixture</b>	Gases under pressure - Liquefied gas
<b>GHS label elements</b>	
<b>Hazard pictograms</b>	
<b>Signal word</b>	Warning
<b>Hazard statements</b>	H280: Contains gas under pressure; may explode if heated P210: Keep away from heat/sparks/open flame. – No smoking P233: Keep container tightly closed in a cool/well-ventilated place
<b>Precautionary statements</b>	P260: Do not breathe dust/fumes/gas/vapours/spray P273: Avoid release to the environment P280: Wear protective gloves/protective clothing/eye protection/face protection P403: Use and store only in a well-ventilated area May cause frostbite May displace oxygen and cause rapid suffocation
<b>Other Hazard</b>	Overheating and over pressurizing may cause gas release or violent cylinder bursting In addition to any other important health or physical hazards, this product may displace oxygen and cause rapid suffocation

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### Section 3 – Composition/Information on Ingredients

Ingredient name	CAS No.	%(weight)
1,1,1,2,3,3,3 - heptafluoropropane	431-89-0	≥99.90

### Section 4 – First Aid Measures

<b>Inhalation</b>	Remove to fresh air Oxygen or artificial respiration if needed If unconscious, place in recovery position and get medical attention immediately
<b>Skin</b>	Flush exposed skin with lukewarm water (not hot), or use other means to warm skin slowly Remove contaminated clothing and shoes Get medical attention if frostbitten by liquid or if irritation persists
<b>Eyes</b>	Immediately flush with large amounts of water for at least 15 minutes Get medical attention if irritation occurs
<b>Ingestion</b>	As this product is a gas, refer to the inhalation section
<b>Note to physician</b>	Immediate medical attention is not required When symptoms persist or in all cases of doubt seek medical advice

### Section 5 – Fire Fighting Measures

<b>Extinguishing media</b>	Heptafluoropropane is a fire extinguishing media. Use media appropriate for surrounding material
<b>Special hazards arising from the substance or mixture</b>	Thermal decomposition can lead to release of irritating or toxic gases/vapors: carbon oxides, halogenated compounds Contains gas under pressure. In a fire or if heated, a pressure increase will occur and the container may burst or explode
<b>Special protective equipment for firefighters</b>	Wear self-contained breathing apparatus with a full face-piece operated in positive pressure mode and chemical-protective clothing. Prevent fire extinguishing water from contaminating surface water or the ground water system

### Section 6 – Accidental Release Measures

<b>Personal precautions, protective equipment and emergency procedures</b>	Refer to SECTION 8 for personal protective equipment. Prevention of skin and eye contact. Ensure adequate ventilation. Remove all sources of ignition. Shut off gas supply if this can be done safely. Isolate area until gas has dispersed
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<b>Environmental precautions</b>	Do not discharge into drains/surface waters/groundwater
<b>Methods and material for containment and cleaning up</b>	Evacuate area. Keep upwind. Stop leak if without risk. Ventilate area especially low places remove open flames and heating elements. Disperse gas with floor level forced air
<b>Reference to other SECTIONS</b>	See SECTION 7 for information on safe handling See SECTION 8 for information on personal protection equipment See SECTION 13 for information on disposal

### **Section 7 – Handling and Storage**

<b>Handling</b>	Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement
<b>Storage</b>	Keep container tightly closed and in a cool, well-ventilated place. Keep out of direct sunlight. Keep away from heat and ignition sources
<b>Packing material</b>	Steel drum

### **Section 8 – Exposure Controls/Personal Production**

#### **8.1 Control parameters**

**Occupational exposure limit values** Not established

**DNEL (Derived No Effect Level) for workers and the general population** Not available

**PNEC (Predicted No Effect Concentration) values** Not available

#### **8.2 Exposure controls**

**Appropriate engineering controls** Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits

#### **Personal protective equipment**

**Respiratory Protection** In case of inadequate ventilation wear respiratory protection

**Skin Protection** Wear protective gloves/clothing to prevent contact

**Eye Protection** Safety glasses/chemical splash goggles

**Environmental exposure controls** Do not empty into drains

### **Section 9 – Physical and Chemical Properties**

#### **9.1 Information on basic physical and chemical properties**

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<b>Appearance</b>	Liquefied gas
<b>Color</b>	colorless
<b>Odour</b>	inodorous
<b>pH</b>	Not available
<b>Melting point</b>	Not available
<b>Boiling point</b>	-16.36 °C
<b>Flash point</b>	Not available
<b>Evaporation rate</b>	Not available
<b>Flammability (solid, gas)</b>	Not flammable
<b>Upper/lower flammability or explosive limits</b>	Not available
<b>Vapour pressure</b>	457.7 Kpa (25°C)
<b>Specific gravity (H<sub>2</sub>O=1)</b>	1.388 g/cm <sup>3</sup>
<b>Solubility(ies)</b>	Not available
<b>Partition coefficient: n-octanol/water</b>	log Kow = 2.11
<b>Auto-ignition temperature</b>	Not available
<b>Viscosity</b>	0.226 mPa.s (25°C)
<b>Explosive properties.</b>	Not available
<b>Oxidising properties</b>	Not available

### 9.2 Other information

No data available.

## Section 10 – Stability and Reactivity

<b>Reactivity</b>	Stable under recommended storage and handling conditions (see SECTION 7, handling and storage)
<b>Chemical stability</b>	Stable under normal conditions of use
<b>Possibility of hazardous reactions</b>	No known hazardous reactions
<b>Conditions to avoid</b>	Keep away from heat and ignition sources. Protect from sunlight
<b>Incompatible materials</b>	Strong oxidizing materials
<b>Hazardous decomposition products</b>	Thermal decomposition can lead to release of irritating or toxic gases/vapors: carbon oxides, halogenated compounds

## Section 11 – Toxicological Information

### 11.1 Information on toxicological effects

#### Acute Toxicity

Ingredient name	LD50 Oral	LD50 Dermal	LC50 Inhalation
1,1,1,2,3,3,3 - heptafluoropropane	Not data available	Not data available	788,698 ppm/4h (rat).

<b>Skin corrosion/irritation</b>	No information available
<b>Serious eye damage/irritation</b>	No information available

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<b>Respiratory or skin sensitization</b>	No information available
<b>Germ cell mutagenicity</b>	No information available
<b>Reproductive toxicity</b>	No information available
<b>STOT-single exposure</b>	No information available
<b>STOT-repeated exposure</b>	No information available
<b>Aspiration hazard</b>	No information available
<b>Carcinogenicity</b>	Not listed as a carcinogen by NTP, IARC, or OSHA

### Section 12 – Ecological Information






<b>Toxicity (Ecotoxicity Fish, LC<sub>50</sub>)</b>	Not available
<b>Degradability</b>	Atmospheric lifetime is approximately 34.2 years
<b>Bioaccumulation/ Accumulation</b>	Bioaccumulation is not expected (Log Kow < 3)
<b>Mobility in Environmental Media</b>	Not available
<b>Other adverse effects</b>	Ozone Depletion Potential (CFC 11 = 1.0): 0.00 Global Warming Potential (CO <sub>2</sub> = 1.0): 3,220

### Section 13 –Disposal Considerations

#### Waste Disposal Method

Disposal must be made according to local and national regulations. Empty containers should be taken for local recycling, recovery or waste disposal.

### Section 14—Transport Information

Item	DOT	TDG	Mexico	IMDG	IATA / ICAO
UN-Number	3296	3296	3296	3296	3296
UN proper shipping name	Heptafluoropropane	Heptafluoropropane	Heptafluoropropane	Heptafluoropropane	Heptafluoropropane
Hazard class	2.2	2.2	2.2	2.2	2.2
Label					
Packaging Group	-	-	-	-	-

#### Special precautions for user

Avoid transportation in vehicles where the load space is not separated from the driver's compartment. Ensure valves are closed and not leaking. Always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident.

**Section 15—Regulatory Information**

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

**Listed in international inventories:**

<b>Ingredient name</b>	TSCA	DSL	NDSL	ELINCS	ENCS	CHINA	KECL	PICCS	AICS
1,1,1,2,3,3,3 - heptafluoropropane	YES	YES	NDA	YES	YES	YES	YES	NDA	YES

**15.2. Other regulations**

**US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 302**

**Extremely Hazardous Substance (40 CFR 355, Appendix A)**

- not regulated.

**US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required**

- not regulated.

**US. EPA CERCLA Hazardous Substances (40 CFR 302)**

- not regulated.

**US. New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)**

- not regulated.

**US. Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323)**

- not regulated.

**US. California Safe Drinking Water & Toxic Enforcement Act (Proposition 65)**

- not regulated.

**Section 16 – Other Information**

In accordance with good practices of personal cleanliness and hygiene handle with the care and avoid unnecessary contact with this product.

This information is being supplied to you under OSHA Hazard Communication Standard 29 CFR 1910.1200 and is offered in good faith as typical values and not as a product specification. The information contained herein is based on the data available to us and is believed to be true and accurate.

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