SHTG 227 (HFC-227ea) SAFETY DATA SHEET

Version: 4.0
Issue Date: 15 January 2019
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UL File: EX27856

SECTION 1 IDENTIFICATION

Product Name	SHTG 227 (HFC-227ea)
Chemical Name	1,1,1,2,3,3,3-Heptafluoropropane
Synonym	HFC-227ea / R-227ea / FM-200
CAS No.	431-89-0
EC No.	207-079-2
Recommended Use	Clean agent fire extinguishing system
Supplier	Safety Hi-Tech Global LLC
Address	16192 Coastal Highway, Lewes, Delaware 19958, USA
Phone	+1 (302) 510-1465
Email	info@sht-global.com
Emergency Tel.	+1 (302) 510-1465

SECTION 2 HAZARDS IDENTIFICATION

GHS Classification — Pressurized product (cylinders)

Classification	Gases under pressure, Liquefied gas (H280) · Chronic hazard to aquatic environment, Category 3 (H412)
Signal Word	Warning
Hazard Statements	H280 — Contains gas under pressure; may explode if heated. H412 — Harmful to aquatic life with long lasting effects.
Precautionary Statements	P410+P403 — Protect from sunlight. Store in a well-ventilated place. P273 — Avoid release to the environment. P501 — Dispose of contents/container to an approved waste disposal plant.

GHS Classification — Non-pressurized (agent only)

Classification	Chronic hazard to aquatic environment, Category 3 (H412)
Signal Word	None
Hazard Statements	H412 — Harmful to aquatic life with long lasting effects.
Precautionary Statements	P273 — Avoid release to the environment. P501 — Dispose of contents/container to an approved waste disposal plant.
Other Hazards	Vapors are heavier than air and may cause suffocation in enclosed spaces.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	EC No.	Weight-%
1,1,1,2,3,3,3-Heptafluoropropane	431-89-0	207-079-2	≥ 99.0%

SECTION 4 FIRST AID MEASURES

General	Do not get in eyes, on skin, or on clothing. In case of accident, seek medical advice immediately.
Inhalation	Remove victim to fresh air. Obtain medical attention immediately for any breathing difficulty. Vapors are heavier than air and may cause suffocation by reducing oxygen available for breathing. Administer oxygen if required.
Skin Contact	Wash with soap and plenty of water. Remove contaminated clothing immediately. Liquid contact may cause frostbite — thaw frosted parts with lukewarm water. If irritation persists, call a physician.

Eye Contact	Immediately flood the eye with plenty of water for several minutes, holding the eye open. Remove contact lenses if present. Obtain medical attention if soreness or redness persists.
Ingestion	Not an expected route of exposure. Seek medical advice immediately. Do not induce vomiting.
Treatment	Treat symptomatically. Note to physicians: cardiac sensitization may occur at concentrations above NOAEL of 9.0% v/v. Do not administer adrenaline or sympathomimetic drugs.

SECTION 5 FIREFIGHTING MEASURES

Extinguishing Media	This product is itself a fire extinguishing agent. Use extinguishing measures appropriate to other materials involved. Keep pressurized containers cool with water spray.
Special Hazards	Thermal decomposition may release hydrogen fluoride (HF) and fluorophosgene — both irritating and potentially toxic. Pressurized containers may rupture or explode in fire.
Advice for Firefighters	Wear full protective clothing and self-contained breathing apparatus. Evacuate personnel to safe areas. Stay upwind.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal Precautions	Evacuate personnel to safe areas. Ensure adequate ventilation. Avoid contact with skin, eyes or clothing.
Environmental Precautions	Prevent entry into waterways, sewers, or confined areas. Notify local authorities if spillage cannot be contained.
Containment & Cleanup	Allow substance to evaporate. Avoid breathing vapors. Avoid release to the environment.

SECTION 7 HANDLING AND STORAGE

Handling	Handle with good industrial hygiene and safety practices. Ensure adequate ventilation. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product.
Storage	Keep container tightly closed in a dry, well-ventilated place. Storage temperature: ≤ 52°C (125°F). Keep away from heat, sparks, flame, open flames, and hot surfaces. Keep out of reach of children. Store in original container.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limit	No occupational exposure limit established. Manufacturer recommended limit: 1,000 ppm, 8 hr TWA (cardiac sensitization NOAEL: 9.0% v/v).
Engineering Controls	Ensure adequate ventilation. Provide showers and eyewash stations.
Respiratory Protection	Wear suitable respiratory equipment when ventilation is insufficient.
Hand Protection	Wear protective gloves; use materials impervious to the product.
Eye/Face Protection	Wear safety glasses with side shields or chemical goggles.
Skin Protection	Wear suitable protective clothing.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Colorless gas
Odor	Odorless
Boiling Point	-16.4°C (2.5°F)
Melting / Freezing Point	-131.0°C (-203.8°F)
Flash Point	Not applicable — non-flammable
Flammability	Not flammable
Vapor Pressure	457.7 kPa at 25°C (66.4 psi at 77°F)
Vapor Density (air = 1)	6.04
Density	1.46 g/cm³
Solubility in Water	260 mg/L at 25°C

Partition Coeff. (LogPow)	2.11
Autoignition Temperature	532°C (990°F)
Global Warming Potential	2,900 (100-year ITH)
Ozone Depletion Potential	0

SECTION 10 STABILITY AND REACTIVITY

Reactivity	Contact with strong oxidizers, alkali metals, and alkaline earth metals may cause fires or explosions. Pressurized containers may rupture or explode if exposed to heat.
Chemical Stability	Stable under recommended storage conditions.
Hazardous Polymerization	Does not occur.
Conditions to Avoid	Heat, flames, sparks, strong oxidizers, compressed air, oxygen, chlorine.
Incompatible Materials	Strong oxidizers, alkali metals, alkaline earth metals, powdered metals, compressed air, oxygen, chlorine.
Hazardous Decomposition	Hydrogen fluoride (HF), Fluorophosgene. Both products are irritating and potentially toxic.

SECTION 11 TOXICOLOGICAL INFORMATION

Parameter	Value	Species / Conditions
Inhalation LC50	> 788,696 ppm	Rat, 4h
Oral LD50	Not determined	—
Dermal LD50	Not determined	—
NOAEL (cardiac sensitization)	9.0% v/v	Dog, inhalation
Skin Irritation	Non-irritating	Rabbit study
Eye Irritation	No significant irritation	Rabbit study
Sensitization	No sensitization responses observed	—
Mutagenicity	Genotoxicity: negative	In vitro and in vivo
Carcinogenicity	Not considered carcinogenic (NTP, IARC, OSHA)	—

SECTION 12 ECOLOGICAL INFORMATION

Organism	Value	Conditions
Algae (Pseudokirchnerella subcapitata)	EC50 > 114 mg/L	72h
Fish	LC50: no data	—
Crustacea (Daphnia magna)	EC50 > 200 mg/L	48h

Persistence / Degradability	Not readily biodegradable under test conditions.
Bioaccumulation	LogPow = 2.11; low bioaccumulation potential.
Mobility in Soil	No information available.

SECTION 13 DISPOSAL CONSIDERATIONS

Waste Disposal	Dispose in accordance with applicable regional, national and local laws and regulations.
Contaminated Packaging	Dispose in accordance with applicable regional, national and local laws and regulations.

SECTION 14 TRANSPORT INFORMATION

UN Number	3296
Proper Shipping Name	HEPTAFLUOROPROPANE (Refrigerant Gas R-227)

Hazard Class	2.2 — Non-flammable, non-toxic gas
Packing Group	Not regulated
Environmental Hazards	Non-marine pollutant
MARPOL / IBC Code	Not applicable

SECTION 15 REGULATORY INFORMATION

Inventory	TSCA	DSL	EINECS	ENCS	IECSC	KECL	AICS
431-89-0	✓	✓	✓	✓	✓	✓	✓

SECTION 16 OTHER INFORMATION

Version	4.0
Issue Date	15 January 2019
Previous Revision	22 August 2023 (v3.0)
Revision Date	18 September 2025
Revision Notes	v4.0: Corrected boiling point to -16.4°C; added pressurized/non-pressurized GHS classification; added cardiac sensitization NOAEL; expanded incompatible materials; updated regulatory compliance.
Compliance	This SDS complies with Regulation (EC) No. 1907/2006 (REACH) and OSHA Hazard Communication Standard (29 CFR 1910.1200).

The information provided in this Safety Data Sheet is correct to the best of our knowledge at the date of its publication. The information is designed as guidance for safe handling, use, processing, storage, transportation, disposal, and release only and is not to be considered a warranty or quality specification. — End of Safety Data Sheet —