

MATERIAL SAFETY DATA SHEET

HFC227ea

FILE NO.: MSDS227ea A-Gas RemTec
MSDS DATE: December /2012

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: HFC227ea
SYNONYMS: Heptafluoropropane,R-227ea, RT-227™, FM200™, FE-227™*
Product Use: Fire extinguishing agent

RECLAIMER: A-Gas RemTec
ADDRESS: 1100 Haskins Road
Bowling Green, OH 43402 USA
WWW.REMTEC.NET
Cage Code: 4LMC6



EMERGENCY PHONE: 1-800-633-8253 PERS in USA
INTERNATION EMERGENCY PHONE: 1-801-629-0667
OTHER CALLS: 1-419-867-8990
FAX PHONE: 1-419-867-3279

PREPARED BY: A-Gas RemTec

SECTION 2: HAZARD IDENTIFICATION

HAZARD CLASSIFICATION: Non Flammable Gas
SIGNAL WORD: WARNING
HAZARD STATEMENT: Gas under pressure.
Frost bite may occur from vapor stream.
Gas weighs less than air asphyxiation may occur in enclosed areas.
Inhalation may cause heart thumping, apprehension, lightheadedness, feeling of fainting, dizziness, weakness, loss of consciousness and death in high concentrations.
Individuals with preexisting cardiac, respiratory or central nervous system conditions may be susceptible to overexposure.

PICTORIAL: Gas Cylinder



OTHER HAZARDS:

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAME: 1,1,1,2,3,3,3-Heptafluoropropane
CHEMICAL FAMILY: Fluorinated Hydrocarbon
CHEMICAL FORMULA: CF₃CHF₂CF₃

CAS Number: 431-89-0
PERCENTAGE: greater than 99.0%

SECTION 4: FIRST AID MEASURES

EYES: Immediately flush eyes with water for at minimum of 20 minutes.
SKIN: Flush skin with warm running water for 20 minutes.
INGESTION: Not applicable
INHALATION: Remove victim to fresh air. Give symptomatic and supportive care.

NOTES TO PHYSICIANS OR FIRST AID PROVIDERS: Adrenalin is contraindicated in the treatment of overexposure. Due to possible disturbances of cardiac rhythm, catecholamine drugs, such as spinephrice should only be used with special caution in situation of emergency life support.

SECTION 5: FIRE-FIGHTING MEASURES

FLAMMABLE PROPERTIES: Non flammable
FLASH POINT: Not applicable
AUTOIGNITION TEMPERATURE: Not applicable

NFPA HAZARD CLASSIFICATION: 0 = Minimal 1 = Slight 2 = Moderate 3= Serious 4 = Severe

HEALTH: 1 FLAMMABILITY: 0 REACTIVITY: 1



SECTION 5: FIRE-FIGHTING MEASURES CONTINUED

EXTINGUISHING MEDIA: HFC227ea is a fire extinguishing media. Use extinguishing media appropriate for surrounding fire.

PROTECTIVE EQUIPMENT: General fire fighting protective equipment.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Cylinders are equipped with pressure release devices to vent contents exposed to high temperatures. Cylinders may rupture under fire conditions. Cool cylinders with water spray.

HAZARDOUS DECOMPOSITION PRODUCTS: Combustion or heat of fire may produce hazardous decomposition. Gas will decompose in high heat forming toxic gases such as hydrogen fluoride and Carbonyl fluoride.

SECTION 6: ACCIDENTAL RELEASE MEASURES

IMMEDIATE RESPONSE: If the release is caused by an open valve and it is safe for operator to close, do so. If possible to transfer the remaining gas in the cylinder in a safe manner to a separate tank, do so. If the release cannot be isolated or closed and it is a significant amount, allow the gas to release in place or safely move cylinder to a safe area. Evacuate area in the event of a significant release in an enclosed area.

ACCIDENTAL RELEASE MEASURES: Keep unwind. Ventilate area, especially low places. Remove open flames and heating elements. Disperse gas with floor level forced air. Gas will evaporate.

SECTION 7: HANDLING AND STORAGE

HANDLING AND STORAGE: Operators should be familiar with CGA pamphlet P-1 Safe Handling of Compressed Gases in Containers. Do not allow cylinders to be stored in areas where heat may rise over 130°F

OTHER PRECAUTIONS: Use properly rated DOT or ASME cylinders/tanks. Do not fill cylinders if inspection date has expired. Cylinders that have been previously filled to inspection expiration date may still be shipped in accordance with CFR.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Proper recovery equipment with trained operator to be utilized.

VENTILATION: Use adequate mechanical ventilation.

RESPIRATORY PROTECTION: If non-routine use or emergency occurs or in low or closed area use Niosh/MSHA approved respirator or supplied air respirator or SCBA, as required. Use in accordance with 20 CFR 1901-134

EYE PROTECTION: Safety glasses with side shields or Chemical splash goggles.

SKIN PROTECTION: Avoid bare skin to protect against frostbite.

HAND AND FOOT PROTECTION: Rubber or Heavy leather gloves and safety shoes when handling cylinders.

WORK HYGIENIC PRACTICES: Wash hands after use and before eating or drinking.

EXPOSURE GUIDELINES:

	<u>ppm</u>	<u>mg/m3</u>
Dupont AEL	1000	
Dupont TLV-TWA:	8 and 12 hour	

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Liquefied Gas under pressure

APPEARANCE: Clear - colorless

ODOR: None

MOLECULAR WEIGHT: 170.03

SPECIFIC GRAVITY (H2O = 1): 1.46 g/MI

MELTING POINT @ 1 ATM: -205°F (-132°C)

BOILING POINT: 2.6°F (-16.3°C)

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES CONTINUED

EVAPORATION RATE: Not Applicable
VAPOR PRESSURE: (hPa/25°C 77°F) 4,547 66 PSIA @ 77°F (25°C)
CRITICAL PRESSURE: 424.7 psia
CRITICAL TEMPERATURE: 215.1°F (101.75°C)
VAPOR DENSITY (AIR = 1): 7.2 @ 77°F (25°C)
LIQUID DENSITY: 86.6 lb/ft³ @ 77°F (25°C)
SOLUBILITY IN WATER: 260mg/L
AUTO IGNITION TEMPERATURE: Not Applicable
DECOMPOSITION TEMPERATURE: 13,000°F (7000°C)
VISCOSITY LIQUID: .579 lb/ft-hr

SECTION 10: STABILITY AND REACTIVITY

REACTIVITY: Strong Alkalis, alkali earth metals, fires of metal hydrides, powdered metals and powdered metal salts.

STABILITY: Stable

CONDITIONS TO AVOID (STABILITY): Avoid high heat (above 130°F (54°C)) on cylinders.

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: Thermal decomposition product include hydrogen fluoride, carbonyl fluoride, carbon monoxide and carbon dioxide.

HAZARDOUS POLYMERIZATION: Not Applicable

SECTION 11: TOXICOLOGICAL INFORMATION

TOXICOLOGICAL INFORMATION:

ROUTES OF ENTRY: Inhalation: Yes Skin: No Ingestion: No

ACUTE TOXICITY: LD50-LC50 Mixture – 4 HR LC50 (RAT) > 788,696 PPM

REPRODUCTIVE/DEVELOPMENT TOXICTY: No effects

CARCINOGENICITY: Not listed as a carcinogen by NTP, IARC, or OSHA

DESCRIPTION OF SYMPTOMS: Inhalation of high concentration may lead to unconsciousness and possible death. Effects of overexposure by inhalation may include non specific discomfort, such as nausea, headache, or weakness, or temporary central nervous system depression with effects such as dizziness, headache, confusion, in coordinate, and loss of consciousness. Higher exposures by inhalation may cause temporary alteration the heart's electrical activity with irregular pulse, palpitations, or inadequate circulation.

Individuals with pre-existing diseases of the central nervous or cardiovascular system may have increased susceptibility to the toxicity of excessive exposure.

SECTION 12: ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION: HFC227ea is not an Ozone Depleting Substance. HFC227ea is a Global Warmer and has a Global Warming Potential (GWP) of 3220.

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Send cylinder with residual gas to a halon reclamation facility for recovery and/or disposal. Contact A-Gas RemTec for reclamation or disposal.

SECTION 14: TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION

PROPER SHIPPING NAME: Heptafluoropropane
HAZARD CLASS: 2.2, Non-Flammable Gas
UN NUMBER: UN3296
PACKING GROUP: Not Applicable
LABEL STATEMENT: Class 2.2 (Non-Flammable)
BOL: UN3296, Heptafluoropropane, 2.2



SECTION 14: TRANSPORT INFORMATION CONTINUED

Other: Avoid transport in vehicles where the load space is not separated from the driver's compartment. Ensure Vehicle driver is aware of the potential hazards of the containers and what action to take in the event of an accident or an emergency.

Prior to transporting cylinders ensure that they are firmly secured and;
Cylinder valve is closed and not leaking
Valve outlet cap nut or plug (if provided) is correctly connected

WATER TRANSPORTATION: Same as above

AIR TRANSPORTATION: Cargo Aircraft Only 150kg maximum net/pkg

SECTION 15: REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS

TSCA (TOXIC SUBSTANCE CONTROL ACT): HFC227ea is listed in the TSCA Inventory

CERCLA (COMPREHENSIVE RESPONSE COMPENSATION, AND LIABILITY ACT): Reportable Quantity (RQ): Not Applicable

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT):

SECTIONS 302/304: Not Applicable

SECTIONS 311/312: Immediate Health: No, Pressure: Yes, Delayed Health: No, Reactivity: No, Fire: No

SECTIONS 313: Not Applicable

INTERNATIONAL REGULATIONS:

CANADIAN DSL/NDSL: HFC227ea is on the DSL Inventory

CANADIAN WHMIS: HFC 227ea is categorized as a Controlled Product, Hazard Class A, Compressed Gas.

EINECS LISTING (EUROPEAN INVENTORY OF EXISTING COMMERCIAL CHEMICAL SUBSTANCES):
All ingredients of HFC227ea are listed.

SECTION 16: OTHER INFORMATION

ABBREVIATIONS: DSL – Domestic Substance List
NDSL – Non-Domestic Substance List
WHMIS - Workplace Hazardous Materials Information System

PREPARATION INFORMATION: A-Gas RemTec
DATE PREPARED: December 2012

1DISCLAIMER: Details given in this document are for information purposes only and are believed to be correct. Information is provided without warranty. A-Gas RemTec is not liable for any damage which may result from the use or reliance on this information.

*FM-200 is made by and is a registered trademark of Great Lakes Chemical Corporation.

*FE-227 is made by and is a trademark of DuPont

A-Gas RemTec does not manufacture or license FM-200 or FE-227.