



The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont  
Material Safety Data Sheet

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6161FR Dymel 227ea/p  
Revised 22-APR-2002  
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CHEMICAL PRODUCT/COMPANY IDENTIFICATION  
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Material Identification

CAS Number : 431-89-0  
Formula : CF<sub>3</sub> CHF CF<sub>3</sub>  
Molecular Weight : 170.04  
CAS Name : Propane, 1,1,1,2,3,3,3-Heptafluoro-

Tradenames and Synonyms

FE-227ea  
2-Hydroperfluoropropane  
Propane, 1,1,1,2,3,3,3-Heptafluoro-  
HFC-227ea  
2-Hydroheptafluoropropane  
FM-200(tm) Great Lakes Chemical Corp.  
Heptafluoropropane  
HFA-227ea

Company Identification

MANUFACTURER/DISTRIBUTOR  
DuPont Fluoroproducts  
1007 Market Street  
Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-800-441-7515 (outside the U.S.  
302-774-1000)  
Transport Emergency : CHEMTREC 1-800-424-9300(outside U.S.  
703-527-3887)  
Medical Emergency : 1-800-441-3637 (outside the U.S.  
302-774-1000)

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COMPOSITION/INFORMATION ON INGREDIENTS  
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Components

Material	CAS Number	%
1,1,1,2,3,3,3-Heptafluoropropane	431-89-0	99+

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HAZARDS IDENTIFICATION  
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## # Potential Health Effects

Based on animal data, exposure to HFC-227ea by inhalation may cause suffocation, if air is displaced by vapors, and irregular heart beat with a strange sensation in the chest, "heart thumping," apprehension, lightheadedness, feeling of fainting, dizziness, weakness, sometimes progressing to loss of consciousness and death.

HFC-227ea may cause frostbite if liquid or escaping vapor contacts the skin.

HFC-227ea may cause "frostbite-like" effects if the liquid or escaping vapors contact the eyes.

In one study, human volunteers were selected to inhale HFC-227ea at a concentration of 6000 ppm but the study was terminated due to a rise in pulse rate that was believed to be unrelated to the chemical. In a subsequent study with human volunteers inhaling concentrations up to 8000 ppm no clinically significant effects were observed for any of the measured laboratory parameters.

Individuals with preexisting diseases of the cardiovascular system or nervous system may have increased susceptibility from excessive exposures.

## Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

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FIRST AID MEASURES  
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## First Aid

## INHALATION

If inhaled, immediately remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

## SKIN CONTACT

Treat for frostbite if necessary by gently warming affected area.

## EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

## (FIRST AID MEASURES - Continued)

## INGESTION

Ingestion is not considered a potential route of exposure.

## Notes to Physicians

THIS MATERIAL MAY MAKE THE HEART MORE SUSCEPTIBLE TO ARRHYTHMIAS. Catecholamines such as adrenaline, and other compounds having similar effects, should be reserved for emergencies and then used only with special caution.

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FIRE FIGHTING MEASURES  
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## Flammable Properties

1,1,1,2,3,3,3-Heptafluoropropane is not flammable, however in the presence of a flame or ignition source it may decompose to form toxic hydrogen fluoride or carbonyl fluoride.

Non-flammable.

## Extinguishing Media

Use media appropriate for surrounding material.

## Fire Fighting Instructions

Self-contained breathing apparatus (SCBA) may be required if cylinders rupture or release under fire conditions.

Keep cylinders cool with water spray applied from a safe distance.

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ACCIDENTAL RELEASE MEASURES  
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## Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus. Keep upwind of leak - evacuate until gas has dispersed.

## Initial Containment

Use forced ventilation to disperse vapors.

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HANDLING AND STORAGE  
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## Handling (Personnel)

Do not breathe gas. Avoid contact with eyes, skin, or clothing.  
Wash thoroughly after handling. Wash clothing after use.

## Storage

Store in a well ventilated place. Store in a cool, dry place.  
Keep container tightly closed.

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EXPOSURE CONTROLS/PERSONAL PROTECTION  
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## Engineering Controls

Use only with adequate ventilation. Keep container tightly closed.

## Personal Protective Equipment

## EYE/FACE PROTECTION

Wear safety glasses or coverall chemical splash goggles.

## RESPIRATORS

Wear NIOSH approved respiratory protection, as appropriate.

## PROTECTIVE CLOTHING

Where there is potential for skin contact have available and wear  
as appropriate impervious gloves, apron, pants, and jacket.

## Exposure Guidelines

## Exposure Limits

Dymel 227ea/p

AEL \* (DuPont) : 1000 ppm, 8 & 12 Hr. TWA

\* AEL is DuPont's Acceptable Exposure Limit. Where governmentally  
imposed occupational exposure limits which are lower than the AEL  
are in effect, such limits shall take precedence.

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PHYSICAL AND CHEMICAL PROPERTIES  
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## Physical Data

Boiling Point : -15.6 C (3.9 F)  
Melting Point : -133 C (-207 F)  
Vapor Pressure : 66.69 psia @ 25 C (77 F) (460.06 kPa)  
Liquid Density : 1.386 g/cm<sup>3</sup> @ 25 C (77 F) (86.53 lb/ft<sup>3</sup>)  
Critical temperature : 101.6 C (214.9 F) @  
Critical pressure : 424.7 psia (2930 kPa)

## (PHYSICAL AND CHEMICAL PROPERTIES - Continued)

Odor : Slight Ethereal  
Form : Liquified Gas

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STABILITY AND REACTIVITY  
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## Chemical Stability

Stable at normal temperatures and storage conditions.

Avoid sources of heat or open flame.

## Incompatibility with Other Materials

Incompatible with strong reducing agents such as alkali metals (e.g., sodium, potassium), alkali-earth metals (e.g., magnesium, calcium), and powdered aluminum or zinc.

## Decomposition

Decomposes by reaction with high temperature (open flames, glowing metal surfaces, etc.) forming hydrofluoric acid, carbon monoxide and carbon dioxide.

## Polymerization

Polymerization will not occur.

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TOXICOLOGICAL INFORMATION  
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## # Animal Data

## HFC-227ea

Inhalation 4 hour LC50: > 788,698 ppm in rats

Repeated exposure of rats by inhalation for 4 weeks at concentrations up to 50,000 ppm revealed no toxicologically significant effects. The NOEL for this study was 50,000 ppm. A 90-day inhalation study in rats did not find any exposure related effects at 105,000 ppm. The NOEL for this study was 105,000 ppm.

Cardiac sensitization, a potentially fatal disturbance of heart rhythm associated with a heightened sensitivity to the action of epinephrine, occurred in dogs at 105,000 ppm. The NOAEL for cardiac sensitization was 90,000 ppm. In a different study to evaluate cardiac sensitization in dogs, concentrations of 90,000, 105,000, and 14,000 ppm caused a dose-related increase in incidence and severity; at 90,000 ppm effects were minimal or mild in nature.

Inhalation studies of HFC-227ea in rabbits and rats do not

## (TOXICOLOGICAL INFORMATION - Continued)

suggest developmental toxicity at concentrations up to 105,000 ppm. Tests have shown that HFC-227ea does not cause genetic damage in bacterial or mammalian cell cultures. Tests in animals for carcinogenicity or reproductive toxicity have not been conducted.

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DISPOSAL CONSIDERATIONS  
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## Waste Disposal

Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Incinerate material in accordance with Federal, State/Provincial and Local requirements.

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TRANSPORTATION INFORMATION  
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## Shipping Information

DOT  
Proper Shipping Name : Heptafluoropropane  
Hazard Class : 2.2  
I.D. No. (UN/NA) : UN 3296  
DOT Label(s) : Nonflammable Gas

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REGULATORY INFORMATION  
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## U.S. Federal Regulations

TSCA Inventory Status : Listed.

TITLE III HAZARD CLASSIFICATIONS SECTIONS 311, 312

Acute : Yes  
Chronic : No  
Fire : No  
Reactivity : No  
Pressure : No

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OTHER INFORMATION  
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## NFPA, NPCA-HMIS

NFPA Rating  
Health : 1  
Flammability : 0  
Reactivity : 1  
  
NPCA-HMIS Rating  
Health : 1

(Continued)

Flammability : 0  
Reactivity : 0

Personal Protection rating to be supplied by user depending on use conditions.

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The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : MSDS Coordinator  
> : DuPont Fluoroproducts  
Address : Wilmington, DE 19898  
Telephone : (800) 441-7515

# Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS