



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

Page 1

-----  
"FREON" 116 Refrigerant  
2011FR Revised 7-JAN-1997  
-----

-----  
CHEMICAL PRODUCT/COMPANY IDENTIFICATION  
-----

Material Identification

"FREON" is a registered trademark of DuPont.

Corporate MSDS Number : DU001067  
Formula : CF3-CF3  
Grade : REFRIGERANT

Tradenames and Synonyms

CC0913

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)

-----  
COMPOSITION/INFORMATION ON INGREDIENTS  
-----

Components

Material	CAS Number	%
HEXAFLUOROETHANE (FC-116)	76-16-4	100

-----  
HAZARDS IDENTIFICATION  
-----

Potential Health Effects

Inhalation of high concentrations of vapor is harmful and may cause heart irregularities, unconsciousness, or death. Intentional misuse or deliberate inhalation may cause death without warning. Vapor reduces oxygen available for breathing and is heavier than air. Liquid contact can cause frostbite.

HUMAN HEALTH EFFECTS:

## (HAZARDS IDENTIFICATION - Continued)

Skin contact with the liquid can cause frostbite. Prolonged skin contact may cause temporary tingling, numbness, coldness, or drying of skin. Eye contact with the liquid may initially include mild eye irritation with discomfort, tearing, or blurring of vision.

Inhalation may include nonspecific discomfort such as nausea, headache, or weakness. Inhalation of high concentrations may include temporary nervous system depression with anesthetic effects such as dizziness, headache, confusion, incoordination, and loss of consciousness; temporary alteration of the heart's electrical activity with irregular pulse, palpitations, or inadequate circulation.

Individuals with preexisting diseases of the central nervous system or cardiovascular system may have increased susceptibility to the toxicity of 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.

-----  
FIRST AID MEASURES  
-----

## First Aid

## INHALATION

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

## SKIN CONTACT

Flush skin with water for at least 15 minutes. Treat for frostbite if necessary by gently warming the affected area. Get medical attention if irritation is present.

## EYE CONTACT

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

## INGESTION

Ingestion is not considered a potential route of exposure.

## (FIRST AID MEASURES - Continued)

## Notes to Physicians

Because of possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, should only be used with special caution in situations of emergency life support.

-----  
FIRE FIGHTING MEASURES  
-----

## Flammable Properties

Flash Point : Will not burn  
Method : TOC  
Flammable limits in Air, % by Volume  
LEL : Not applicable  
UEL : Not applicable  
Autoignition : >870 C (>1598 F)  
Autodecomposition : Not determined

## Fire and Explosion Hazards:

Cylinders are equipped with pressure and temperature relief devices, but still may rupture under fire conditions. Decomposition may occur.

## Extinguishing Media

As appropriate for combustibles in area.

## Fire Fighting Instructions

Use water spray or fog to cool containers. Self-contained breathing apparatus (SCBA) is required if cylinders rupture or release under fire conditions.

-----  
ACCIDENTAL RELEASE MEASURES  
-----

## Safeguards (Personnel)

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

## Accidental Release Measures

Ventilate area, especially low or enclosed places where heavy vapors might collect. Remove open flames. Wear self-contained breathing apparatus (SCBA) for large spills or when a release occurs.

-----  
HANDLING AND STORAGE  
-----

## Handling (Personnel)

Avoid breathing high concentrations of vapor. Avoid contact of skin or eyes with liquid or cold vapors. Use with sufficient ventilation to keep employee exposure below recommended limits.

## Storage

Store containers in a clean, dry area. Do not heat above 52 C (125 F).

-----  
EXPOSURE CONTROLS/PERSONAL PROTECTION  
-----

## Engineering Controls

Normal ventilation for standard manufacturing procedures is generally adequate. Local exhaust should be used when large amounts are released. Mechanical ventilation should be used in low or enclosed places.

## Personal Protective Equipment

Impervious gloves and chemical splash goggles should be worn when handling liquid. Under normal conditions, no respiratory protection is required when using this product. Self-contained breathing apparatus (SCBA) is required if a spill occurs.

## Exposure Guidelines

## Applicable Exposure Limits

HEXAFLUOROETHANE (FC-116)  
PEL (OSHA) : None Established  
TLV (ACGIH) : None Established  
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.

-----  
PHYSICAL AND CHEMICAL PROPERTIES  
-----

## Physical Data

Boiling Point : -78.3 C (-108.9 F)  
Vapor Pressure : 439 psia @ 19.7 C (67.5 F) C (67.5 deg F)  
Vapor Density : 4.8 (Air=1.0)  
% Volatiles : 100 WT%  
Odor : Slight ethereal  
Form : Liquefied gas

## (PHYSICAL AND CHEMICAL PROPERTIES - Continued)

Color : Clear, colorless  
Density : 1.57 g/cm<sup>3</sup> @ -78 C (-108 F) - Liquid C  
(-109 deg F) - Liquid

-----  
STABILITY AND REACTIVITY  
-----

## Chemical Stability

Material is stable. However, avoid open flames and high temperatures.

## Incompatibility with Other Materials

Incompatible with alkali or alkaline earth metals- powdered Al, Zn, Be, etc.

## Decomposition

Decomposition products are hazardous. This material can be decomposed by high temperatures (open flames, glowing metal surfaces, etc.) forming hydrofluoric acid and possibly carbonyl fluoride.

## Polymerization

Polymerization will not occur.

-----  
TOXICOLOGICAL INFORMATION  
-----

## Animal Data

Inhalation 4-hour LC50: >800,000 ppm in rats

Effects observed in animals by inhalation include decreased growth rate, pulmonary changes, irregular respiration, increased urine volume and creatinine, reversible pathological changes in the kidneys, and increased urinary fluoride concentration. One study showed no arrhythmogenic effects in dogs at a concentration of 20% "Freon" 116, while another study did show some arrhythmogenic effects in both guinea pigs and dogs. Long-term inhalation exposures resulted in an initial decrease in growth rate, but no other adverse changes were noted. No animal test reports are available to define carcinogenic, developmental, or reproductive hazards. The compound does not produce genetic damage in bacterial cell cultures but has not been tested in animals.

-----  
DISPOSAL CONSIDERATIONS  
-----

## Waste Disposal

Comply with Federal, State, and local regulations. Reclaim by distillation or remove to a permitted waste disposal facility.

-----  
TRANSPORTATION INFORMATION  
-----

## # Shipping Information

## DOT/IMO/IATA

Proper Shipping Name : HEXAFLUOROETHANE, COMPRESSED  
Hazard Class : 2.2  
UN No. : 2193  
Shipping Label : Nonflammable Gas

Shipping Containers:  
Cylinders

-----  
REGULATORY INFORMATION  
-----

## U.S. Federal Regulations

TSCA Inventory Status : Reported/Included.

TITLE III HAZARD CLASSIFICATIONS SECTIONS 311, 312

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

## HAZARDOUS CHEMICAL LISTS

SARA Extremely Hazardous Substance - No  
CERCLA Hazardous Substance - No  
SARA Toxic Chemical - No

-----  
OTHER INFORMATION  
-----

## NFPA, NPCA-HMIS

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

(Continued)

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

---

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