



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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"FREON" 114
3038FR Revised 20-APR-2004

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"FREON" is a registered trademark of DuPont.

Corporate MSDS Number : DU001061
CAS Number : 76-14-2
Formula : CClF₂CClF₂

Tradenames and Synonyms

DICHLOROTETRAFLUOROETHANE
DICHLOROTETRAFLUOROETHANE, 1,2-
ETHANE, 1,2-DICHLOROTETRAFLUORO
F-114
REFRIGERANT 114

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	%
*1,2-DICHLORO-1,1,2,2-TETRAFLUOROETHANE ("FREON" 114)	76-14-2	100

* Disclosure as a toxic chemical is required under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

HAZARDS IDENTIFICATION

Potential Health Effects

Skin contact with the liquid may include mild skin irritation mainly due to rapid evaporation, with possible discomfort or rash. Prolonged skin contact may cause temporary tingling, numbness, coldness, or drying of skin. There are no reports of human sensitization. Significant skin permeation, and systemic toxicity, after contact appears unlikely.

Eye contact with the liquid may include mild eye irritation with discomfort, tearing, or blurring of vision.

Inhalation of high concentrations may include: temporary nervous system depression with anaesthetic effects such as dizziness, headache, confusion, incoordination, and loss of consciousness. Gross overexposure may cause temporary alteration of the heart's electrical activity with irregular pulse, palpitations, or inadequate circulation. One report in the literature cites several volunteers exposed to high concentrations of FC-114 from an aerosol can, experienced a temporary alteration of respiration and lowered heart rate.

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

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

SKIN CONTACT

Flush with water. Treat for frostbite if necessary. Get medical attention if irritation is present.

EYE 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 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 : Not determined
Autodecomposition : 593 C (1099 F)

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

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

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 places where heavy vapors might collect. Remove open flames. Use self-contained breathing apparatus (SCBA) in case of large spills. Comply with Federal, State, and local regulations on reporting releases.

HANDLING AND STORAGE

Handling (Personnel)

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

Storage

Clean, dry area. Do not heat above 125 deg 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 should be used if liquid contact with skin is possible. Chemical splash goggles should be available for use as needed to prevent liquid contact with the eyes. Under normal manufacturing conditions, no respiratory protection is required when using this product. Self-contained breathing apparatus (SCBA) is required if a large release occurs.

Exposure Guidelines

Exposure Limits

"FREON" 114

PEL (OSHA)	: 1,000 ppm, 7,000 mg/m ³ , 8 Hr. TWA
TLV (ACGIH)	: 1,000 ppm, 6,990 mg/m ³ , 8 Hr. TWA, A4
AEL * (DuPont)	: None Established

* 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	: 4 C (39 F)
Vapor Pressure	: 31 psia @ 25 C (77 F) (77 deg F)
Vapor Density	: 6.2 (Air=1.0) @ 25 C (77 F)
% Volatiles	: 100 WT%
Evaporation Rate	: >1 (CCl ₄ =1.0)
Solubility in Water	: 0.013 WT% @ 25 C (77 F)

(PHYSICAL AND CHEMICAL PROPERTIES - Continued)

Odor : Slight ethereal
Form : Liquefied gas
Color : Clear, colorless
Density : 1.46 g/cm³ @ 25 C (77 F) - Liquid C (77 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. "FREON" 114 can decompose at high temperatures (open flames, glowing metal surfaces, etc.) forming hydrochloric and hydrofluoric acids, and possibly carbonyl halides.

Polymerization

Polymerization will not occur.

Other Hazards

Decomposition : Decomposition products are hazardous. "FREON" 114 can decompose at high temperatures (open flames, glowing metal surfaces, etc.) forming hydrochloric and hydrofluoric acids, and possibly carbonyl halides.

TOXICOLOGICAL INFORMATION

Animal Data

Inhalation 0.5 hour LC50: 720,000 ppm in rats
Oral ALD: >2250 mg/kg (in peanut oil) in rats

No standard testing has been done for skin or eye irritancy, or for animal sensitization; however, a concentrated spray of FC-114 caused mild skin and eye irritation in animals.

The effects in animals during single high exposures (25-500 times the TLV) include respiratory irritation and altered respiration, anaesthesia and central nervous system effects,

(TOXICOLOGICAL INFORMATION - Continued)

and irregular heartbeat (cardiac arrhythmias) due to the heart being made more sensitive to adrenalin (cardiac sensitization). Anaesthetized animals given high doses showed slight cardiovascular effects and altered blood pressure. In one study, repeated high exposures at 200,000 ppm caused respiratory irritation and slight hematology effects in rats and mice. However, in the same study, no effects were seen at 100,000 ppm. Repeated exposure of guinea pigs to high concentrations resulted in slight liver effects. Long-term exposure to 10,000 ppm caused no evidence of toxicity in rats and rabbits.

Repeated spraying of FC-114 onto the skin caused irritation and slight inflammation.

Repeated ingestion of FC-114 in corn or peanut oil caused no nutritional, hematological, biochemical or histopathological signs of toxicity.

One limited study in which mice were exposed for 23 months to a chlorofluorocarbon mixture containing 25% FC-114, showed no evidence of carcinogenic activity or other signs of toxicity. This compound does not produce genetic damage in bacterial cell cultures but has not been tested in animals. Tests for developmental or reproductive toxicity have not been performed.

ECOLOGICAL INFORMATION

Ecotoxicological Information

Aquatic Toxicity:

96-hour LC50, killifish: 45 ppm

DISPOSAL CONSIDERATIONS

Waste Disposal

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

TRANSPORTATION INFORMATION

Shipping Information

DOT/IMO/IATA

Proper

Shipping Name : 1,2-DICHLORO-1,1,2,2-TETRAFLUOROETHANE
Hazard Class : 2.2
Un No. : 1958
Shipping Label : Nonflammable Gas

Shipping Containers:

Tank Cars
Tank Trucks
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 : No

LISTS:

Extremely Hazardous Substance -No
CERCLA Hazardous Substance -No
Toxic Chemicals -Yes

OTHER INFORMATION

NFPA, NPCA-HMIS

NPCA-HMIS Rating

Health : 1
Flammability : 0
Reactivity : 1

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.

(Continued)

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