



DuPont Chemicals

2012FR

Revised 7-OCT-1996

Printed 10-FEB-1997

"FREON" 500 Refrigerant

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"FREON" is a registered trademark of DuPont.

Corporate MSDS Number DU001075

Formula CC12F2/CH3CHF2 (AZEOTROPE)

Company Identification

MANUFACTURER/DISTRIBUTOR
DuPont
Wilmington, DE 19898

PHONE NUMBERS

Product Information 1-800-441-9450
Transport Emergency CHEMTREC: 1-800-424-9300
Medical Emergency 1-800-441-3637

COMPOSITION/INFORMATION ON INGREDIENTS

Components Material	CAS Number	%
*	75-71-8	
*METHANE, DICHLORODIFLUORO- ("FREON" 12)		73.8
ETHANE, 1,1-DIFLUORO- (FC-152a)	75-37-6	26.2

* 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

Inhalation of high concentrations of vapor is harmful and may cause heart irregularities, unconsciousness, or death. Intentional misuse or deliberate inhalation may cause death

(Continued)

HAZARDS IDENTIFICATION(Continued)

without warning. Vapor reduces oxygen available for breathing and is heavier than air. Liquid contact can cause frostbite.

HUMAN HEALTH EFFECTS:

Human health effects of overexposure by skin contact with the liquid may include frostbite or mild skin irritation with discomfort. "FREON" 12 has been infrequently associated with skin sensitization in humans. Eye contact with the liquid or high vapor concentrations may include eye irritation with discomfort, tearing, or blurring of vision. Inhalation may include nonspecific discomfort, such as nausea, headache, or weakness; or temporary nervous system depression with anesthetic effects such as dizziness, headache, confusion, incoordination, and loss of consciousness.

Higher exposures (>20%) may lead to temporary lung irritation effects with cough, discomfort, difficulty breathing, or shortness of breath; temporary alteration of the heart's electrical activity with irregular pulse, palpitations, or inadequate circulation; abnormal kidney function as detected by laboratory tests; or fatality from gross overexposure.

Individuals with preexisting diseases of the central nervous system, cardiovascular system, lungs or kidneys 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 high concentrations are inhaled, 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

In case of skin contact, flush with water for 15 minutes. Treat for frostbite if necessary by gently warming affected areas. Get medical attention if irritation is present.

EYE CONTACT

In case of eye contact, immediately flush eyes with

(Continued)

FIRST AID MEASURES(Continued)

plenty of water for 15 minutes. Call a physician.

IF SWALLOWED

Ingestion is not considered a potential route of exposure.

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
Flammable limits in Air, % by Volume	
LEL	Not applicable
UEL	Not applicable
Autoignition	Not determined

Autodecomposition Temperature:

Dichlorodifluoromethane:	<760 deg C (<1400 deg F)
Difluoroethane	: <445 deg C (<836 deg F)

Fire and Explosion Hazards:

Use water spray or fog to cool containers. Cylinders are equipped with temperature and pressure relief devices but may still 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 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 places where heavy vapors might collect. Wear self-contained breathing apparatus (SCBA) for large spills. Remove open flames.

(Continued)

HANDLING AND STORAGE**Handling (Personnel)**

Avoid breathing vapors. Avoid liquid contact 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 places.

Personal Protective Equipment

Impervious gloves and chemical splash goggles should be used if contact with liquid is possible. Under normal manufacturing 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**

METHANE, DICHLORODIFLUORO- ("FREON" 12)			
PEL	(OSHA)	1,000 ppm, 4,950 mg/m ³ , 8 Hr. TWA	
TLV	(ACGIH)	1,000 ppm, 4,950 mg/m ³ , 8 Hr. TWA, A4	
AEL *	(DuPont)	None Established	
ETHANE, 1,1-DIFLUORO- (FC-152a)			
PEL	(OSHA)	None Established	
TLV	(ACGIH)	None Established	
AEL *	(DuPont)	1000 ppm, 8 Hr. TWA	
WEEL	(AIHA)	1000 ppm, 8 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	-33 C (-27 F)
Vapor Pressure	232 psia at 54 deg C (130 deg F)
Vapor Density	3.7 (Air = 1)
% Volatiles	100 WT%
Evaporation Rate	(CCl ₄ = 1)
	Less than 1
Odor	Slight ethereal
Form	Liquified gas
Color	Colorless
Density	1.16 g/cc at 25 deg C (77 deg F) - Liquid

Appearance : Clear

(Continued)

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.

Polymerization

Polymerization will not occur.

Other Hazards

Decomposition : Decomposition products are hazardous. "FREON" 500 Refrigerant can be decomposed by high temperatures (open flames, glowing metal surfaces, etc.) forming hydrochloric and hydrofluoric acids, and possibly carbonyl halides.

TOXICOLOGICAL INFORMATION**Animal Data**

"FREON" 12

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

Oral ALD : >1000 mg/kg in rats

No significant irritation was seen when a mixture containing "FREON" 12 was sprayed onto the skin and eyes of animals.

Effects from single high exposure include anesthesia and irregular heartbeat (cardiac arrhythmias) due to the heart being made more sensitive to adrenalin (cardiac sensitization). Repeated high exposures altered respiratory function. Long-term studies showed no significant clinical, blood chemistry, or pathological effects following repeated or long term exposures.

Effects from repeated or long-term ingestion of this material include slight alterations in blood chemistry and body weight gain. No other clinical, biochemical or pathological signs of toxicity have been observed.

Tests in animals demonstrate no carcinogenic activity and no developmental or reproductive toxicity. The compound does not produce heritable genetic damage in animals or genetic damage in bacterial and mammalian cell cultures.

FC-152a

Inhalation 4-hour ALC: 383,000 ppm in rats

Oral ALD : >1500 mg/kg in rats

(Continued)

TOXICOLOGICAL INFORMATION(Continued)

The compound is untested for skin or eye irritancy, and for animal sensitization. Effects of a single exposure to high levels include labored breathing, lung irritation, lethargy, incoordination and loss of consciousness. Cardiac sensitization occurred in dogs exposed to a concentration of 150,000 ppm in air and given an intravenous epinephrine challenge. Effects of repeated exposure include increased urinary fluoride, reduced kidney weight, and reversible kidney changes. Effects of a single high oral dose include weight loss and lethargy.

Tests in animals demonstrate no carcinogenic activity or developmental effects. Tests in animals for reproductive effects have not been performed. This compound does not produce genetic damage in bacterial cell cultures but has not been tested in animals.

ECOLOGICAL INFORMATION**Ecotoxicological Information****AQUATIC TOXICITY:**

"FREON" 12: 48 hour EC50 - Daphnia magna: 95 mg/L.

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

DOT/IMO

Proper Shipping Name

DICHLORODIFLUOROMETHANE AND
DIFLUOROETHANE AZEOTROPIC
MIXTURE

Hazard Class

2.2

UN No.

2602

DOT/IMO Label

NONFLAMMABLE GAS

Shipping Containers

Cylinders

Ton Tanks

Reportable Quantity : "FREON" 12: 5000 lbs/2270 kg

(Continued)

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

LISTS:

Extremely Hazardous Substance -No
 CERCLA Hazardous Substance -(Yes)*
 Toxic Chemicals -(Yes)*

*"FREON" 12 component only

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.

Responsibility for MSDS : DuPont Chemicals
 Address : Engineering & Product Safety
 > : P.O. Box 80709, Chestnut Run
 > : Wilmington, DE 19880-0709
 Telephone : (302) 999-4946

Indicates updated section.

End of MSDS