DU PONT

MATERIAL SAFETY DATA SHEET

=25C05=

IDENTIFICATION 2W198, 2W199, 2W218 25C05

Freon* 22 Flurocarbon

CHEMICAL FAMILY
Halogenated Hydrocarbon

FORMULA
$CHClF_2$

TSCA INVENTORY STATUS
Reported/Included

MANUFACTURER/DISTRIBUTOR
E. I. du Pont de Nemours & Co. (Inc.)

SARA/TITLE III STATUS
See ADDITIONAL INFORMATION Section

ADDRESS
Wilmington, DE 19898

PRODUCT INFORMATION PHONE
(800) 441-9450

MEDICAL EMERGENCY PHONE
(800) 441-3637

TRANSPORTATION EMERGENCY PHONE
CHEMTREC (800) 424-9300

PHYSICAL DATA

BOILING POINT
-40.8°C (-41.4°F)

PERCENT VOLATILE BY VOLUME
100

LIQUID DENSITY
1.194 g/cc at 25°C (77°F)

VAPOR PRESSURE
151 psia at 25°C (77°F)

VAPOR DENSITY (Air = 1)
3.03 at 25°C (77°F)

SOLUBILITY IN WATER
0.30% by wt. at 25°C (77°F)

pH INFORMATION
Neutral

EVAPORATION RATE (CCl_4 = 1)
>1

FORM
Liquefied gas

APPEARANCE
Clear

COLOR
Colorless

ODOR
Slight ethereal

*Registered U.S. Pat. & Tm. Office, Du Pont Company. FREON® 22 Fluorocarbon is made only by Du Pont.

HAZARDOUS COMPONENTS

MATERIAL(S)	CAS NO.	APPROXIMATE %
Methane, Chlorodifluoro (FREON® 22)	75-45-6	100

HAZARDOUS REACTIVITY

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

INCOMPATIBILITY
Alkali or alkaline earth metals—powdered Al, Zn, Be, etc.

DECOMPOSITION
FREON® 22 Fluorocarbon can be decomposed by high temperatures (open flames, glowing metal surfaces, etc.) forming hydrochloric and hydrofluoric acids—possibly carbonyl halides.

POLYMERIZATION
Will not occur.

FIRE AND EXPLOSION DATA

FLASH POINT
None METHOD TOC

FLAMMABLE LIMITS IN AIR, % BY VOL.
LOWER Not applicable
UPPER Not applicable

AUTOIGNITION TEMPERATURE
Not available.

AUTODECOMPOSITION TEMPERATURE
632°C (1170°F)

FIRE AND EXPLOSION HAZARDS
Other burning material may cause FREON® 22 Fluorocarbon to burn weakly. Use water spray or fog to cool containers. Cylinders are equipped with pressure and temperature relief devices but may rupture under fire conditions. Decomposition may occur.

EXTINGUISHING MEDIA
As appropriate for combustibles in area. Extinguishant for other burning material in area is sufficient to stop burning.

SPECIAL FIREFIGHTING INSTRUCTIONS
Self-contained breathing apparatus (SCBA) is required if cylinders rupture or contents are released under fire conditions.

HEALTH HAZARD INFORMATION

PRINCIPAL HEALTH HAZARDS (Including Significant Routes, Effects, Symptoms of Overexposure, and Medical Conditions Aggravated by Exposure)

Inhalation of high concentrations of vapor is harmful and may cause heart irregularities, unconsciousness, or death. Intentional misuse can be fatal. Vapor reduces oxygen available for breathing and is heavier than air. Liquid contact can cause frostbite.

Inhalation 4-hour LC_{50}: 220,000 ppm in rats

The compound is untested for skin and eye irritancy, and is untested for animal sensitization. Toxicity described in animals exposed by inhalation to concentrations ranging from 5% to 70% include effects on the central nervous system, liver, lungs, kidneys, spleen, cardiac sensitization; decreased body weight gain; and partial anesthesia. In chronic inhalation studies, FC-22 produced a small, but statistically significant, increase of tumors in male rats, but not female rats or male or female mice, at a concentration of 50,000 ppm (v/v). In the same studies, no carcinogenic effects were seen in either species at concentrations of 10,000 ppm or 1000 ppm (v/v) FC-22 was mutagenic in bacterial cell cultures but not mammalian cell cultures, and was not mutagenic in whole animal assays. A slight, but significant, increase in developmental toxicity (eye malformations, decreased fetal weights) has been observed in the offspring of rats exposed to high concentrations (50,000 ppm) of FC-22, a concentration which was also maternally toxic; no effects on the fetus or the maternal rats were seen at 1000 or 100 ppm. Developmental toxicity studies in rabbits at 50,000, 1000 and 100 ppm FC-22 were negative. Studies of the effects of FC-22 on male reproductive performance have been negative. Specific studies to evaluate the effect on female reproductive performance have not been conducted, however, limited information obtained from studies on developmental toxicity do not indicate adverse effects on female reproductive performance at concentrations up to 50,000 ppm (v/v).

Human health effects of overexposure to the vapors by inhalation may include temporary nervous system depression with anaesthetic effects such as dizziness, headache, confusion, incoordination, and loss of consciousness. Higher exposures to the vapors may cause temporary alteration of the heart's electrical activity with irregular pulse, palpitations, or inadequate circulation; or fatality from gross overexposure. Skin contact with the liquid may cause frostbite.

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

CARCINOGENICITY
Not listed as a carcinogen by IARC, NTP, OSHA, or ACGIH. But see Principal Health Hazards Section above.

EXPOSURE LIMITS
PEL (OSHA): 1000 ppm, 3500 mg/m³
TLV* (ACGIH): 1000 ppm, 3500 mg/m³
AEL (Du Pont): 1000 ppm

*TLV is a registered trademark of the American Conference of Governmental Industrial Hygienists.

HEALTH HAZARD INFORMATION (cont'd)

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

FIRST AID
IF LARGE 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.

IN CASE OF SKIN CONTACT: Flush with water. Treat for frostbite if necessary.

IN CASE OF EYE CONTACT: Immediately flush eyes with plenty of water. Call a physician.

IF SWALLOWED: Ingestion is not considered a potential route of exposure.

NOTE 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.

PROTECTION INFORMATION

GENERALLY APPLICABLE CONTROL MEASURES
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
Lined butyl gloves and chemical splash goggles should be used when handling liquid. 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.

DISPOSAL INFORMATION

SPILL, LEAK OR RELEASE
Ventilate area—especially low places where heavy vapors might collect. Remove open flames. Use self-contained breathing apparatus (SCBA) for large spills or releases.

WASTE DISPOSAL
Reclaim by distillation. Comply with Federal, State and local regulations.

SHIPPING INFORMATION

DOT (172.101)	DOT/IMO (172.102)
PROPER SHIPPING NAME Chlorodifluoromethane	PROPER SHIPPING NAME Chlorodifluoromethane
HAZARD CLASS Nonflammable Gas	HAZARD CLASS Nonflammable Gas, 2.2
UN NO. 1018	UN NO. 1018
DOT LABEL Nonflammable Gas	IMO/ICAO LABEL Nonflammable Gas
DOT PLACARD Nonflammable Gas	

SHIPPING CONTAINERS
Cylinders, tank trucks, tank cars.

ADDITIONAL INFORMATION

STORAGE CONDITIONS
Clean, dry area. Do not heat above 125°F.

NPCA-HMIS RATINGS

Health	1
Flammability	0
Reactivity	1
Personal Protection	-

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

SARA/TITLE III HAZARD CATEGORIES AND LISTS

Product Hazard Categories:		Lists:	
Chronic Health	- No	Extremely Hazardous Substance	- No
Acute Health	- Yes	CERCLA Hazardous Substance	- No
Fire Hazard	- No	Toxic Chemicals	- No
Pressure Hazard	- Yes		
Reactivity Hazard	- No		

DATE OF LATEST REVISION/REVIEW: 5/89

PERSON RESPONSIBLE FOR MSDS:
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