



Du Pont Chemicals

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"FREON" 22

MATERIAL IDENTIFICATION

Corporate Number DU000025

"FREON" is a registered trademark of Du Pont.

Manufacturer/Distributor DuPont
1007 Market Street
Wilmington, DE 19898

Phone Numbers Product Information 1-800-441-9442
Transport Emergency CHEMTREC: 1-800-424-9300
Medical Emergency 1-800-441-3637

Chemical Family HALOGENATED HYDROCARBON

Trade Names and Synonyms CC0335

Du Pont Registry Number DP31-32-7

Formula CHClF₂

Molecular Weight 86.47

TSCA Inventory Status Reported/Included

NPCA-HMIS Ratings Health: 1
Flammability: 0
Reactivity: 1
Personal Protection rating to be supplied by user depending on use conditions.

COMPONENTS

Material	CAS Number	Percent
METHANE, CHLORODIFLUORO- (HCFC 22)	75-45-6	100

(continued)

PHYSICAL DATA

Boiling Point	-40.8°C (-41.4°F)
Vapor Pressure	151 psig at 25 deg C (77 deg F)
Vapor Density	(Air = 1.0) 3.03 at 25 deg C (77 deg F)
% Volatiles	100 WT %
Evaporation Rate	>1 (CCl4 = 1.0)
Water Solubility	0.30 WT % at 25°C (77°F)
pH	Neutral
Odor	Slight ethereal
Form	Liquefied gas
Color	Clear, colorless
Density	1.194 g/cc at 25 deg C (77 deg F) - Liquid

HAZARDOUS REACTIVITY

Instability	Material is stable. However, avoid open flames and high temperatures.
Incompatibility	Incompatible with alkali or alkaline earth metals- powdered Al, Zn, Be, etc.
Polymerization	Polymerization will not occur.
Decomposition	: Decomposition products are hazardous. "FREON" 22 can be decomposed by high temperatures (open flames, glowing metal surfaces, etc.) forming hydrochloric and hydrofluoric acids, and possibly carbonyl halides.

FIRE AND EXPLOSION DATA

Flash Point	Will not burn
Autoignition	632°C (1,170°F)

Other burning materials may cause HCFC 22 to burn weakly.

Chlorodifluoromethane is not flammable at ambient temperatures and atmospheric pressure. However, chlorodifluoromethane has been shown in tests to be combustible at pressures as low as 60 psig at ambient temperature when mixed with air at concentrations of 65 volume % air. Experimental data have also been reported which indicate combustibility of "FREON" 22 in the presence of certain concentrations of chlorine.

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FIRE AND EXPLOSION DATA (continued)

Fire and Explosion Hazards	Cylinders 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 Fire Fighting Instructions	Use water spray or fog to cool containers. Self-contained breathing apparatus (SCBA) is required if cylinders rupture or contents are released under fire conditions.

HEALTH HAZARD INFORMATION

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.

ANIMAL DATA:

Inhalation 4-hour LC50: 220,000 ppm in rats

The compound is a skin irritant and a slight eye irritant, but is not a skin sensitizer in animals.

Effects from single high exposures include central nervous system depression, anesthesia, rapid breathing, lung congestion, microscopic liver changes, and cardiac sensitization. No toxic effects or abnormal histopathological observations occurred in rats repeatedly exposed to concentrations ranging from 10,000 to 50,000 ppm (v/v). Long-term exposures to 50,000 ppm (v/v) of vapors produced organ weight increases and a decrease in body weight gain, but no increased mortality or adverse hematological effects.

In chronic inhalation studies, HCFC-22, at a concentration of 50,000 ppm (v/v), produced a small, but statistically significant increase of late-occurring tumors involving salivary glands in male rats, but not female rats or male or female mice. In the same studies, no increased incidence of tumors was seen in either species at concentrations of 10,000 ppm or 1,000 ppm (v/v).

Long-term administration in corn oil produced no effects on body weight or mortality.

HCFC-22 was mutagenic in some strains of bacteria in bacterial cell cultures, but not mammalian cell cultures or animals. It did not cause heritable genetic damage in mammals.

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HEALTH HAZARD INFORMATION (continued)

A slight, but significant increase in developmental toxicity was observed at high concentrations (50,000 ppm) of HCFC-22, a concentration which also produced toxic effects in the adult animal. Based on these findings, and other negative developmental studies, HCFC-22 is not considered a unique hazard to the conceptus. Studies of the effects of HCFC-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.

HUMAN HEALTH EFFECTS:

Skin contact with the liquid may include frostbite. Prolonged overexposure may cause defatting or dryness of the skin. Eye contact with liquid may include eye irritation with discomfort, tearing, or blurring of vision.

Inhalation may include temporary nervous system depression with anesthetic effects such as dizziness, headache, confusion, incoordination, and loss of consciousness.

Higher exposures may lead to temporary alteration of the heart's electrical activity with irregular pulse, palpitations, or inadequate circulation. Fatality may occur from gross overexposure.

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

Carcinogenicity	None of the components in this material is listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.
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Applicable Exposure Limits

METHANE, CHLORODIFLUORO- (HCFC 22)	
AEL * (Du Pont)	None Established
TLV (ACGIH)	1,000 ppm, 3,540 mg/m ³ - 8 Hr TWA
PEL (OSHA)	None Established

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

Safety Precautions

Use with sufficient ventilation to keep employee exposure below recommended limits. "FREON" 22 should not be mixed with air for leak testing. In general, it should not be used or allowed to be present with high concentrations of air above atmospheric pressure. Contact with chlorine or other strong oxidizing agents should also be avoided.

FIRST AID**INHALATION**

(continued)

FIRST AID (continued)

If 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 contact, flush skin with lukewarm water. Do not use hot water. If frostbite has occurred call a physician.

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.

Notes to Physician

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.

PROTECTION INFORMATION**Generally Applicable Control Measures and Precautions**

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 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**

NOTE: Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up.

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

Waste Disposal

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

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SHIPPING INFORMATION

DOT/IMO	
Proper Shipping Name	CHLORODIFLUOROMETHANE
Hazard Class	2.2
UN No.	1018
DOT/IMO Label	NONFLAMMABLE GAS
Shipping Containers	Tank Car Tank Truck Cylinders

STORAGE CONDITIONS

Clean, dry area. Do not heat above 52 deg C (125 deg F).

TITLE III HAZARD CLASSIFICATIONS

Acute	Yes
Chronic	No
Fire	No
Reactivity	No
Pressure	Yes

LISTS:

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

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
Engineering & Product Safety
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Wilmington, DE 19880-0709

Indicates updated section.

End of MSDS