The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

"FREON" 23
2025FR Revised 4-NOV-2002

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"FREON" is a registered trademark of DuPont.

Corporate MSDS Number : DU001064
CAS Number : 75-46-7
Formula : CHF3
CAS Name : Trifluoromethane

Tradenames and Synonyms

CC0914

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	%
METHANE, TRIFLUORO-	75-46-7	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)

Overexposure by inhalation may include nonspecific discomfort such as nausea, headache, or weakness; temporary nervous system depression with anesthetic effects such as dizziness, headache, confusion, incoordination, and loss of consciousness; or with gross overexposure (>20%), possibly temporary alteration of the heart's electrical activity with irregular pulse, palpitations, or inadequate circulation.

Individuals with preexisting diseases of the central nervous or cardiovascular system may have increased susceptibility to the toxicity of excessive exposures. Eye or skin contact with the liquid may cause frostbite.

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 person calm. Call a physician. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

SKIN CONTACT
Flush with water. Treat for frostbite if necessary by gently warming affected areas.

EYE CONTACT
In case of liquid contact, immediately flush eyes with plenty of water for 15 minutes. Call a physician.

INGESTION
Ingestion is not considered a potential route of exposure.

Notes to Physicians

Because of possible disturbances of cardiac rhythm, catecholamine drugs, such a epinephrine, should be considered only as a last resort in life-threatening emergencies.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point: No flash point

Flammable Limits in air, % by Volume:
LEL : None per ASTM E681
UEL : None per ASTM E681
Autoignition: Not determined

Fire and Explosion Hazards:

Containers may rupture under fire conditions. Decomposition may occur.

Contact of welding or soldering torch flame with high concentrations of refrigerant can result in visible changes in the size and color of torch flames. This flame effect will only occur in concentrations of product well above the recommended exposure limits, therefore, stop all work and ventilate to disperse refrigerant vapors from the work area before using any open flames.

HFC-23 is not flammable in air at temperatures up to 100 deg. C (212 deg. F) at atmospheric pressure. However, mixtures of HFC-23 with high concentrations of air at elevated pressure and/or temperature can become combustible in the presence of an ignition source. HFC-23 can also become combustible in an oxygen enriched environment (oxygen concentrations greater than that in air). Whether a mixture containing HFC-23 and air, or HFC-23 in an oxygen enriched atmosphere become combustible depends on the inter-relationship of 1) the temperature, 2) the pressure, and 3) the proportion of oxygen in the mixture. In general, HFC-23 should not be allowed to exist with air above atmospheric pressure or at high temperatures; or in an oxygen enriched environment. For example, HFC-23 should NOT be mixed with air under pressure for leak testing or other purposes.

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. Water runoff should be contained and neutralized prior to release.

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

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

DuPont Fire Emergency Exposure Limits (FEEL) are established to facilitate the safe release of a fire extinguishant into spaces normally occupied by people to extinguish a fire or prevent an explosion and specify airborne concentrations of brief durations which should not result in permanent adverse health effects or interfere with escape. For more information on the applicability of FEEL's, contact DuPont. The DuPont Fire Emergency Exposure Limit (FEEL) for this material is 20% v/v for up to 15 minutes with a 1 minute not-to-exceed ceiling of 23% v/v.

HANDLING AND STORAGE

Handling (Personnel)

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

Storage

Valve protection caps and valve cutlet threaded plugs must remain in place unless container is secured with valve outlet piped to use point. Do NOT drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Never attempt to lift cylinder by its cap. Use a pressure reducing regulator when connecting cylinder to lower pressure piping or systems. Do NOT heat cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.

Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Separate full containers from empty containers. Storage area temperatures should not exceed 125 deg F (52 deg C) and should be free of combustible materials. Avoid area where salt or other corrosive materials are present. Avoid excessive inventory

(HANDLING AND STORAGE - Continued)

and storage time. Use a first-in first-out system. Keep accurate inventory records.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

Normal ventilation for routine 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 when handling liquid. Chemical splash goggles should be worn 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 spill or release occurs.

Exposure Guidelines

Exposure Limits
"FREON" 23

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	: -82.1 C (-115.8 F)
Vapor Pressure	: 686 psig at 25 deg C (77 deg F)
Vapor Density	: 2.4 (Air = 1)
% Volatiles	: 100 WT%
Solubility in Water	: 0.1 WT% @ 25 C (77 F)
Odor	: Slight ethereal
Form	: Compressed gas or liquefied gas
Color	: Clear, colorless
Density	: 1.44 g/cc at -82 deg C (-115.7 deg F)

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 HF, COF_2, or CO. These materials are toxic and irritating. Contact should be avoided.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

Inhalation 4-hour LC50: >663,000 ppm in rats

HFC-23 is untested for skin and eye irritancy, and for animal sensitization.

Effects from single high inhalation exposure to HFC-23 include anaesthetic effects, and nonspecific effects such as weight loss were observed at concentrations >22%. No cardiac sensitization was observed in dogs after breathing 800,000 ppm for periods of 5-10 minutes following epinephrine challenge. In another test, dogs exposed to up to 30% or up to 50% (with aditional oxygen), had no positive responses. No cardiac sensitization occurred in baboons exposed by inhalation to 10%, 30%, 50%, or 70% HFC-23 before or after an epinephrine challenge; there was a dose-related decrease in heart rates and differences in respiratory rates during exposure.

No animal tests are available to define the carcinogenic hazards of HFC-23. The maternal and developmental NOAEL was 50,000 ppm. HFC-23 is not considered a unique developmental hazard to the conceptus. There were no developmental or reproductive effects.

Tests have shown that HFC-23 does not produce genetic damage in bacterial or mammalian cell cultures. It has not produced genetic damage in tests on animals.

DISPOSAL CONSIDERATIONS

Waste Disposal

Reclaim by distillation or remove to permitted waste facility. Dispose of in accordance with all Federal, State, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

DOT/IMO/IATA
Proper Shipping Name : Trifluoromethane
Hazard Class : 2.2
UN No. : 1984
DOT/IMO Label : Nonflammable Gas

Shipping Containers

Cylinders
Ton Tanks
Tank Trucks

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

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