



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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3021FR FE-241  
Revised 20-OCT-1995  
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CHEMICAL PRODUCT/COMPANY IDENTIFICATION  
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Material Identification

Corporate MSDS Number : DU002932  
CAS Number : 2837-89-0  
Formula : CHClF-CF3  
Molecular Weight : 136.48  
CAS Name : 2-CHLORO-1,1,1,2-TETRAFLUOROETHANE

Tradenames and Synonyms

1-Chloro-1,2,2,2-Tetrafluoroethane

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)

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COMPOSITION/INFORMATION ON INGREDIENTS  
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Components

Material	CAS Number	%
* *ETHANE, 2-CHLORO-1,1,1,2-TETRAFLUORO- (HCFC-124)	2837-89-0	94.7
* *ETHANE, 1-CHLORO-1,1,2,2-TETRAFLUORO (HCFC-124a)	354-25-6	5

\* 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.

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HAZARDS IDENTIFICATION  
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## 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:

Skin contact may cause frostbite from exposure to the liquid.

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.

Gross overexposure may cause: Central nervous system depression with drowsiness or unconsciousness; irregular heart beat with a strange sensation in the chest, "heart thumping", apprehension, lightheadedness and feeling of fainting.

Higher exposures (>20%) may lead to these effects: 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.

"Frostbite-like" effects may occur if the liquid or escaping vapors contact the eyes.

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.

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FIRST AID MEASURES  
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## First Aid

## INHALATION

If high concentrations are inhaled, immediately remove to fresh air. Keep person calm. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

## SKIN CONTACT

Flush skin with water for at least 15 minutes after excessive contact. Treat for frostbite if necessary by gently warming affected area. Seek medical assistance if irritation is present. Wash contaminated clothing before reuse.

## 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 Physicians

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.

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FIRE FIGHTING MEASURES  
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## Flammable Properties

Flash Point : Will not burn  
Flammable limits in Air, % by Volume  
LEL : Not applicable  
UEL : Not applicable  
Autoignition : Not determined  
Autodecomposition : Not determined

## Fire and Explosion Hazards:

Cylinders may rupture under fire conditions. Decomposition may occur.

## Extinguishing Media

As appropriate for combustibles in the area.

## (FIRE FIGHTING MEASURES - Continued)

## Fire Fighting Instructions

Use water spray to cool containers. Self-contained breathing apparatus (SCBA) may be required if cylinders rupture and contents are released under fire conditions.

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ACCIDENTAL RELEASE MEASURES  
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## 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 or enclosed places where heavy vapors might collect. Remove open flames. Comply with Federal, State, and local regulations for reporting releases.

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HANDLING AND STORAGE  
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## Handling (Personnel)

Avoid breathing vapors. Avoid liquid contact with skin or eyes. Use with sufficient ventilation to keep employee exposure below the recommended limit.

## Storage

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

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EXPOSURE CONTROLS/PERSONAL PROTECTION  
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## Engineering Controls

Use with sufficient ventilation to keep employee exposure below the recommended exposure limit. Local exhaust should be used when large amounts are released. Mechanical ventilation should be used for low or enclosed places.

## Personal Protective Equipment

Lined butyl gloves should be used to avoid prolonged or repeated exposure. Chemical splash goggles should be available for use as needed to prevent eye contact. 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 CONTROLS/PERSONAL PROTECTION - Continued)

## # Exposure Guidelines

## Exposure Limits

FE-241

PEL (OSHA)	: None Established
TLV (ACGIH)	: None Established
AEL * (DuPont)	: 1000 ppm, 8 & 12 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.

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PHYSICAL AND CHEMICAL PROPERTIES  
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## Physical Data

Boiling Point	: -11 C (12 F) @ 760 mm Hg
Vapor Pressure	: 61 psia at 25 deg C (77 deg F)
Freezing Point	: -199 C (-326 F)
% Volatiles	: 100 WT%
Solubility in Water	: 1.71 WT% @ 24 C (75 F)
Odor	: Slight ethereal
Form	: Liquefied gas
Color	: Clear, colorless

Critical Temperature	: 122.2 deg C (252 deg F)
Critical Pressure	: 518.3 psia
Saturated Vapor Density	: 6.882 g/l at B.P.
Critical Volume	: 246.4 cc/g mol
Critical Density	: 0.554 g/cc

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STABILITY AND REACTIVITY  
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## Incompatibility with Other Materials

Incompatible with alkali or alkaline earth metals- powdered Al, Zn, Be, etc.

## Polymerization

Polymerization will not occur.

## (STABILITY AND REACTIVITY - Continued)

## Other Hazards

- Instability : Material is stable. However, avoid extended contact with open flames or temperatures greater than 538 deg C (1,000 deg F) except when used as a fire extinguishant in properly designed fire extinguishing systems.
- Decomposition : Decomposition products are hazardous. This compound can be decomposed by high temperatures (open flames, glowing metal surfaces, etc.) forming hydrochloric and hydrofluoric acids, and possibly carbonyl halides.

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TOXICOLOGICAL INFORMATION  
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## Animal Data

Inhalation 4-hour ALC: 230,000 - 300,000 ppm in rats

Single exposure caused: Cardiac sensitization, a potentially fatal disturbance of heart rhythm associated with a heightened sensitivity to the action of epinephrine. Lowest-Observed-Adverse-Effect-Level for cardiac sensitization: 25,000 ppm. Single exposure caused: the following temporary effects - Inactivity or anaesthesia. Low blood pressure. Repeated exposure caused: Decreased body weight. Altered clinical chemistry. These effects were reversible. Repeated exposure caused: the following temporary effects - Inactivity or anaesthesia. Lethargy. Incoordination. Altered respiratory rate. One study showed: Increased liver weight.

In animal testing this material has not caused carcinogenicity, developmental toxicity. No animal data are available to define the following effects of this material: reproductive toxicity. Tests have shown that this material does not cause genetic damage in bacterial or mammalian cell cultures, or in animals. This material has not been tested for its ability to cause permanent genetic damage in reproductive cells of mammals (not tested for heritable genetic damage).

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DISPOSAL CONSIDERATIONS  
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## Waste Disposal

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

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TRANSPORTATION INFORMATION  
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## Shipping Information

DOT/IMO  
Proper Shipping Name : 1-CHLORO-1,2,2,2-TETRAFLUOROETHANE  
Hazard Class : 2.2  
UN No. : 1021  
DOT/IMO Label : NONFLAMMABLE GAS

## Shipping Containers

Tank Cars.

Cylinders  
Ton Tanks-----  
REGULATORY INFORMATION  
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## 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 -No  
Toxic Chemicals -No

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OTHER INFORMATION  
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## NFPA, NPCA-HMIS

NPCA-HMIS Rating  
Health : 1  
Flammability : 0  
Reactivity : 1

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

## Additional Information

HCFC-124 is TSCA-listed but its use is controlled by a TSCA Section 5, Significant New Use Rule (SNUR); 40 CFR 721.3180. The SNUR prohibits the commercial use of HCFC-124 as a blowing agent in the manufacture of structural insulation foams for commercial or consumer purposes. Activity related to this application is therefore limited to technical research and development conducted in accordance with the requirements of the R&D Exemption of the TSCA PMN regulations. Refer to 40 CFR 720.36 for further details on the requirements of this Exemption. All other uses of HCFC-124 are permitted.

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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