

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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6087FR "SUVA" 95 (R-508B)  
Revised 10-JUL-1997  
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CHEMICAL PRODUCT/COMPANY IDENTIFICATION  
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Material Identification

Corporate MSDS Number : DU008080

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	%
TRIFLUOROMETHANE	75-46-7	30-50
HEXAFLUOROETHANE	76-16-4	50-70

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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 can be fatal. 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 inhalation may include nonspecific discomfort such as nausea, headache, or weakness; temporary nervous system depression with anaesthetic effects such as dizziness, headache, confusion, incoordination, and loss of consciousness; or with gross overexposure, possibly temporary alteration of the heart's electrical activity with irregular pulse, palpitations, or

## (HAZARDS IDENTIFICATION - Continued)

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.

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FIRST AID MEASURES  
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## First Aid

IF HIGH CONCENTRATIONS ARE INHALED: Immediately remove to fresh air. Keep persons calm. Call a physician. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

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

IN CASE OF EYE CONTACT: Flush with water. Call a physician if frostbite occurs.

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 considered only as a last resort in life-threatening emergencies.

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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.

## (FIRE FIGHTING MEASURES - Continued)

## 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, producing HF, CO and possibly COF<sub>2</sub>.

## Extinguishing Media

Use media appropriate for surrounding material.

## Fire Fighting Instructions

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.

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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

Material evaporates at atmospheric pressure (vaporizes). Ventilate area - especially low places where heavy vapors might collect. Remove open flames.

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HANDLING AND STORAGE  
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## Handling (Personnel)

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

## Storage

Clean, dry area. Do not heat above 51.7 deg. C (125 deg. F)

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EXPOSURE CONTROLS/PERSONAL PROTECTION  
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## 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

Neoprene rubber or leather 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

## Applicable Exposure Limits

## TRIFLUOROMETHANE

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

## HEXAFLUOROETHANE

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.

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PHYSICAL AND CHEMICAL PROPERTIES  
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## Physical Data

Boiling Point : -88 C (-126 F)  
Vapor Density : (Air = 1)  
% Volatiles : 100 WT%  
Odor : Slight ethereal  
Form : Compressed Gas  
Color : Clear, colorless

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STABILITY AND REACTIVITY  
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## Chemical Stability

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

## Decomposition

This product can be decomposed by high temperatures (open flames, glowing metal surfaces, etc.) forming HF, COF<sub>2</sub> or CO. These materials are toxic and irritating. Contact should be avoided.

## Polymerization

Polymerization will not occur.

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TOXICOLOGICAL INFORMATION  
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## # Animal Data

## TRIFLUOROMETHANE:

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

Material is untested for skin and eye irritancy, and for animal sensitization.

Effects from single high inhalation exposure to Trifluoromethane 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 additional oxygen), had no positive responses. No cardiac sensitization occurred in baboons exposed by inhalation to 10%, 30%, 50%, or 70% Trifluoromethane 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 Trifluoromethane. The maternal and developmental NOAEL was 50,000 ppm. Trifluoromethane is not considered a unique developmental hazard to the conceptus. There were no developmental or reproductive effects.

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

## HEXAFLUOROETHANE:

## (TOXICOLOGICAL INFORMATION - Continued)

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

Effects observed in animals by inhalation include decreased growth rate, pulmonary changes, irregular respiration, increased urine volume and creatinine, reversible pathological changes in the kidneys, and increased urinary fluoride concentration. One study showed no arrhythmogenic effects in dogs at a concentration of 20%, while another study did show some arrhythmogenic effects in both guinea pigs and dogs. Long-term inhalation exposures resulted in an initial decrease in growth rate, but no other adverse changes were noted. No animal test reports are available to define carcinogenic, developmental, or reproductive hazards. The compound does not produce genetic damage in bacterial cell cultures but has not been tested in animals.

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DISPOSAL CONSIDERATIONS  
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## Waste Disposal

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

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TRANSPORTATION INFORMATION  
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## Shipping Information

DOT/IMO  
Proper Shipping Name : COMPRESSED GAS, N.O.S.  
(FLUORINATED HYDROCARBONS)  
Hazard Class : 2.2  
UN No. : 1956  
DOT/IMO Label : Nonflammable Gas

## Shipping Containers

Cylinders and ton tanks.

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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

## (REGULATORY INFORMATION - Continued)

Pressure : Yes

## LISTS:

SARA Extremely Hazardous Substance - No  
CERCLA Hazardous Substance - No  
SARA 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.

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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