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

"SUVA" 408A
6135FR Revised 26-OCT-2005

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"SUVA" is a registered trademark of DuPont.

Formula : CH3CF3/CHCLF2/CHF2CF3
Molecular Weight : 280.5
CAS Name : 1,1,1-TRIFLUOROETHANE/CHLORODIFLUOROMETHANE/PENTAFLUOROETHANE
Grade : MIXTURE

Tradenames and Synonyms

R-143A/R-22/R-125 BLEND

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	%
*Chlorodifluoromethane (HCFC-22)	75-45-6	47
1,1,1-Trifluoroethane (HFC-143A)	420-46-2	46
Pentafluoroethane (HFC-125)	354-33-6	7

* 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.

HAZARDS IDENTIFICATION

Potential Health Effects

INHALATION:

Immediate effects of overexposure may cause central nervous system depression with dizziness, confusion, incoordination, drowsiness or unconsciousness. Gross overexposure may cause: Irregular heart beat with a strange sensation in the chest, "heart thumping", apprehension, lightheadedness, feeling of fainting, dizziness, weakness, sometimes progressing to loss of consciousness and death. Other effects include: Suffocation, if air is displaced by vapors or fatality from gross over-exposure. Decomposition products are hazardous.

SKIN CONTACT:

Short-term overexposure may cause frostbite, if liquid or escaping vapor contacts the skin. Repeated and/or prolonged exposure may cause defatting of the skin with itching, redness or rash.

EYE CONTACT: Contact with the vapor or aerosol may cause eye irritation with tearing, pain, blurred vision or "frostbite-like" effects.

ADDITIONAL HEALTH EFFECTS: Increased susceptibility to the effects of this material may be observed in persons with pre-existing disease of the: central nervous system, cardiovascular system.

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

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

(FIRST AID MEASURES - Continued)

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

THIS MATERIAL MAY MAKE THE HEART MORE SUSCEPTIBLE TO ARRHYTHMIAS. Catecholamines such as adrenaline, and other compounds having similar effects, should be reserved for emergencies and then used only with special caution.

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:

Cylinders 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 limit, therefore stop all work and ventilate to disperse refrigerant vapors from the work area before using any open flames.

SUVA 408Ais not flammable in air at temperatures up to 100 deg C (212 deg F) at atmospheric pressure. However, mixtures of SUVA 408A with high concentrations of air at elevated pressure and/or temperature can become combustible in the presence of an ignition source. SUVA 408A can also become combustible in an oxygen enriched environment (oxygen concentrations greater than that in air). Whether a mixture containing SUVA 408A and air, or SUVA 408A in an oxygen enri atmosphere becomes combustible depends on the inter-relationship of 1) the temperature 2) the pressure, and 3) the proportion of oxygen in the mixture. In general, SUVA 408A should not be allowed to exist with air above atmospheric pressure or at high temperatures; or in an

(FIRE FIGHTING MEASURES - Continued)

oxygen enriched environment. For example: SUVA 408A should NOT be mixed with air under pressure for leak testing or other purposes.

Experimental data have also been reported which indicate combustibility of HCFC-22, a component in this blend, in the presence of chlorine.

Extinguishing Media

Use extinguishing media appropriate to surrounding fire conditions.

Fire Fighting Instructions

Keep cylinders cool with water spray or fog. Self-contained breathing apparatus (SCBA) is required if cylinders rupture and contents are released under fire conditions. Water runoff should be contained and neutralized prior to release.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

May decompose during contact with flames, heating elements, or in combustion engines releasing irritating, toxic, and corrosive gases. Container may explode if heated due to resulting pressure risk. Some mixtures of HCFCs and/or HFCs, and air or oxygen may be combustible if pressurized and exposed to extreme heat or flame.

Hydrogen fluoride or hydrogen chloride fumes emitted during a fire can react with water to form hydrofluoric acid or hydrochloric acid. Wear neoprene gloves when handling refuse from fire.

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

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

HANDLING AND STORAGE

Handling (Personnel)

Do not get in eyes, on skin or clothing. Do not breathe vapor or mist. Use with sufficient ventilation to keep employee exposure below recommended limits. Wash contaminated clothing prior to reuse.

Handling (Physical Aspects)

Keep away from heat, sparks and flames. Open container only in well-ventilated area.

Storage

Keep away from heat, sparks and flames. Store in a well ventilated area away from heat and sunlight.

Close container after each use. Store below 120 F (49 C).

EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal Protective Equipment

Impervious 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 Guidelines

Applicable Exposure Limits

Chlorodifluoromethane (HCFC-22)

PEL	(OSHA)	: None Established
TLV	(ACGIH)	: 1,000 ppm, 3,540 mg/m3, 8 Hr. TWA, A4
AEL *	(DuPont)	: None Established

1,1,1-Trifluoroethane (HFC-143A)

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

Pentafluoroethane (HFC-125)

(Applicable Exposure Limits - Continued)

PEL	(OSHA)	: None Established
TLV	(ACGIH)	: None Established
AEL *	(DuPont)	: 1000 ppm, 8 & 12 Hr. TWA
WEEL	(AIHA)	: 1000 ppm, 4900 mg/m3, 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.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Boiling Point	: -46.3 F (-43.5 C)
Specific Gravity	: 1.04 @ 25 C (77 F)
Vapor Pressure	: 151.5 psia @ 70 F (21 C)
Vapor Density	: 3.25 (Air=1.0)
Color	: Clear, Colorless.
Form	: Liquified Gas.
Odor	: Faint, Ethereal.
Solubility in Water	: Slight
% Volatiles	: 100 %

STABILITY AND REACTIVITY

Chemical Stability

Stable. This material is chemically stable under normal and anticipated storage and handling conditions. However, avoid temperatures above 800 deg F.

Conditions to Avoid

Avoid flames, extremely hot metal surfaces, heating elements, combustion engines, etc.

Incompatibility with Other Materials

Avoid contact with strong alkali or alkaline earth metals, finely powdered metals such as aluminum, magnesium or zinc and strong oxidizers since they may react with or accelerate decomposition of this material.

Decomposition

Thermal decomposition products include hydrogen fluoride, hydrogen chloride, carbon monoxide, carbon dioxide and chlorine and possibly carbonyl halides. These materials are toxic and irritating. Contact should be avoided.

TOXICOLOGICAL INFORMATION

Animal Data

HCFC-22:

Inhalation: 4 hour, LC50, rat: 220,000 ppm

Animal testing indicates this material is a slight eye irritant.

Animal testing indicates this material is a skin irritant, but not a skin sensitizer.

Long-term exposure caused by ingestion cause no significant toxicological effects.

Single exposure to high doses by inhalation caused central nervous system depression, inactivity or anaesthesia, lung noise, altered respiratory rate, histopathological changes of the liver. cardiac sensitization, a potentially fatal disturbance of heart rhythm associated with a heightened sensitivity to the action of epinephrine. Repeated exposure caused no significant toxicological effects. Long-term exposure caused reduced weight gain, increased adrenals, kidney, liver, and pituitary weight.

ADDITIONAL TOXICOLOGICAL 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 1000 ppm (v/v). Animal data show developmental effects only at exposure levels producing other toxic effects in the adult animal. This material is not considered a unique developmental hazard to the conceptus. Reproductive data on male animals show no change in reproductive performance. 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. This material produces genetic damage in bacterial cell cultures. In mammalian cell cultures and animals, this material has not produced genetic toxicity. In animal testing, this material has not caused permanent genetic damage in reproductive cells of mammals (has not produced heritable genetic damage).

HFC-125:

Inhalation: 4 hour, ALC, rat: > 709,000 ppm

(TOXICOLOGICAL INFORMATION - Continued)

This material has not been tested for eye irritation.

This material has not been tested for skin irritation or sensitization.

Single exposure to high doses by inhalation caused lethargy, labored breathing, weak cardiac sensitization, a potentially fatal disturbance of heart rhythm caused by a heightened sensitivity to the action of epinephrine.
Lowest-Observed-Adverse-Effect-Level for cardiac sensitization: 100,000 ppm. Repeated exposure caused no significant toxicological effects.
No-Observed-Adverse-Effect-Level (NOAEL): 50,000 ppm

ADDITIONAL TOXICOLOGICAL EFFECTS:

No animal data are available to define the following effects of this material: carcinogenicity, reproductive toxicity. In animal testing this material has not caused developmental 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).

HFC-143A:

Inhalation 4 hour LC50: > 540,000 ppm in rats

The compound is untested for skin and eye irritancy, and is untested for animal sensitization.

Inhalation: Single exposure to 500,000 ppm caused anaesthesia, but no mortality at 540,000 ppm. Cardiac sensitization occurred in dogs at 300,000 ppm from the action of exogenous epinephrine. Two, 4-week inhalation studies have been conducted. In the first study, pathological changes in the testes were observed at all exposures concentrations; no effects were observed in females. The testicular effect was considered related to the method used to expose the rats to HFC-143A. In the second study using the same exposure concentrations, no effects were noted in males at any concentration. Data from a 90-day study revealed no effects in male or female rats at exposures up to 40,000 ppm.

Long-term exposure by ingestion caused significantly decreased body weights in male rats fed 300 mg/kg for 52 weeks, but there was no effect on mortality. Tests in rats demonstrated no carcinogenic activity when HFC-143A was administered orally in corn oil at 300 mg/kg/day, five days a week, for 52 weeks and observed for an additional 73 weeks. Tests in animals demonstrate no developmental

(TOXICOLOGICAL INFORMATION - Continued)

toxicity. No animal test reports are available to define reproductive hazards. Tests in bacterial cell cultures demonstrate mutagenic activity, but the compound did not induce oncogenic transformation of cells in culture. HFC-143A was not mutagenic in animals.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

HCFC-22:

48 hour EC50 - Daphnia magna: 433 mg/L
96 hour LC50 - Zebra fish: 777 mg/L

HFC-143A:

96 hour LC50 - Rainbow trout: > 40 mg/L

TRANSPORTATION INFORMATION

Shipping Information

DOT/IMO/IATA

Proper Shipping Name	: LIQUEFIED GAS, N.O.S. (TRIFLUOROETHANE, CHLORODIFLUOROMETHANE)
Hazard Class	: 2.2
DOT/IMO Label	: NONFLAMMABLE GAS
UN No.	: UN 3163

OTHER INFORMATION

NFPA, NPCA-HMIS

NPCA-HMIS Rating

Health	: 1
Flammability	: 0
Reactivity	: 1

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

(Continued)

# 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