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-- SAFETY DATA SHEET --

DuPont Fluorochemicals

Ref. 000001416/N/NS

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Print date 2002-05-31

Revision date: 2001-12-01

In accordance with the legislation of the European community

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Product name: SUVA* 134a Refrigerant
Supplier: Du Pont de Nemours (Nederland) B.V.
Dordrecht Works
Baanhoekweg 22
NL-3313 LA DORDRECHT
+31(78)630.1567 / 630.1011
Emergency telephone number: +44-2871-861.313 (GB)

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name of the substance	Weight %	CAS-No	EC-No.
1,1,1,2-Tetrafluoroethane (R134a)	100	811-97-2	212-377-0

3. HAZARDS IDENTIFICATION

Most important hazards: Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.
Specific hazards: Rapid evaporation of the liquid may cause frostbite. May cause cardiac arrhythmia.

4. FIRST AID MEASURES:

General advice: Never give anything by mouth to an unconscious person.
Inhalation: Move to fresh air. Oxygen or artificial respiration if needed. Do not give adrenaline or similar drugs.
Eye contact: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
Skin contact: Wash off immediately with plenty of water. Take off all contaminated clothing immediately.

5. FIRE-FIGHTING MEASURES:

Suitable extinguishing media: any
Specific hazards: pressure build-up
Specific methods: Cool containers / tanks with spray water.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Evacuate personnel to safe areas. Ensure adequate ventilation. wear personal protective equipment
Environmental precautions: Evaporates.
Methods for cleaning up: Evaporates.

* DuPont's registered trademark

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7. HANDLING AND STORAGE:

Handling: Technical measures/Precautions: Provide sufficient air exchange and/or exhaust in work rooms.
Safe handling advice: Use only in well-ventilated areas. Do not breathe vapours or spray mist. System Leak Testing: Do not pressure test any system with air/HFC-134a mixtures. Can form a combustible mixture with air at pressures above atmospheric when air concentration exceeds 60 % by volume.

Storage: Technical measures/Storage conditions: Keep tightly closed in a dry, cool and well-ventilated place.
Incompatible products: flammable materials, Organic peroxide.
Packaging material: Store in original container..

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering measures: Ensure adequate ventilation, especially in confined areas.

Control parameters: DuPont's acceptable exposure limit: AEL(8-h and 12-h TWA) = 1000 ml/m³; DuPont(1999)

Personal protective equipment:
Respiratory protection: For rescue and maintenance work in storage tanks use self-contained breathing apparatus. Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.

Eye protection: safety glasses
Hand protection: rubber gloves
Hygiene measures: Do not smoke.

9. PHYSICAL AND CHEMICAL PROPERTIES

Tested according to

Form:		liquefied gas
Colour:		colourless
Odour:		ether-like
pH: (°C)	(at g/l H ₂ O)	neutral
Boiling point/range:	(1 bar)	-26,5 °C
Melting point/range:	(1 bar)	-101,0 °C
Flash point:		does not flash
Autoignition temperature:		>750 °C
Explosive properties:		
Vapour pressure:	(25 °C)	666.1 kPa
	(50 °C)	1319.0 kPa
Relative density:	(25 °C)	1,21 kg/l (liquid)
Solubility:		
- water solubility	(25 °C) (1 bar)	0,15 wt %
Viscosity:	(25 °C) (1 bar)	0,205 mPa.s (liquid)

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10. STABILITY AND REACTIVITY:

Stability: No decomposition if used as directed.

Materials to avoid: alkali metals, alkaline earth metals, powdered metal salts, powdered Al, Zn, Be, etc,

Hazardous decomposition products: hydrogen halides, traces of carbonyl halides,

Conditions to avoid: The product is not flammable in air under ambient conditions of temperature and pressure. When pressurised with air or oxygen the mixture may become flammable. Certain mixtures of HCFCs or HFCs with chlorine may become flammable or reactive under certain conditions.

11. TOXICOLOGICAL INFORMATION

Acute toxicity: ALC/inhalation/4h/rat = 567 ml/l

Local effects: Concentrations substantially above the TLV value may cause narcotic effects. Inhalation of decomposition products in high concentration may cause shortness of breath (lung oedema).

Long term toxicity: Did not show carcinogenic, teratogenic or mutagenic effects in animal experiments.

Specific effects: May cause cardiac arrhythmia.
Cardiac sensitisation threshold limit: 312'975 mg/m3
Anaesthetic effects threshold limit: 834'600 mg/m3
Rapid evaporation of the liquid may cause frostbite.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects Halocarbon global warming potential; HGWP; (R-11 = 1) = 0,28
Ozone depletion potential; ODP; (R-11 = 1) = 0

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products: Can be used after re-conditioning.

Contaminated packaging:

14. TRANSPORT INFORMATION

UN/ID No.: 3159

ADR/RID

Class: 2 Subrisks: n.a. Hazard labels: 2
Packing group: n.a. TREM-CARD: 20G39-A HI/UN No: 20/3159
Proper shipping name: 3159 1,1,1,2-Tetrafluoroethane, 2, ADR

IMO

Class: 2.2 Subrisks: n.a. Hazard labels: 2
Packing group: n.a.
Proper shipping name: 1,1,1,2-Tetrafluoroethane

ICAO

Class: 2.2 Subrisks: n.a. Hazard labels: 2
Packing group: n.a.
Proper shipping name: 1,1,1,2-Tetrafluoroethane

n.a. = not applicable

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15. REGULATORY INFORMATION

According to EC-Dir. 67/548, as amended, the product does not need to be labelled.

16. OTHER INFORMATION

Recommended use: refrigerant

Further information: For further information contact the local DuPont office or DuPont's nominated distributors.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.