



DuPont™ SUVA® 134a refrigerant

Version 6.1

Revision Date 15.07.2011

Ref.130000000349

This SDS adheres to the standards and regulatory requirements of Great Britain and may not meet the regulatory requirements in other countries.

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

Product identifier

Product name : DuPont™ SUVA® 134a refrigerant
Types : ASHRAE Refrigerant number designation: R-134a
Registration number : 01-2119459374-33-0002
Synonyms : 1,1,1,2-Tetrafluoroethane
HFC-134a

Relevant identified uses of the substance or mixture and uses advised against

Use of the Substance/Mixture Refrigerant

Details of the supplier of the safety data sheet

Company : Du Pont de Nemours (Nederland) B.V.
Baanhoekweg 22
NL-3313 LA Dordrecht
Netherlands
Telephone : +31-78-630.1011
E-mail address : sds-support@che.dupont.com

Emergency telephone number

Emergency telephone number : +44-(0)8456-006.640

2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

Gases under pressure, H280: Contains gas under pressure; may explode if heated.
Liquefied gas

Not a hazardous substance or mixture according to EC-directives 67/548/EEC or 1999/45/EC.



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Label elements



Gas cylinder

Warning

H280 Contains gas under pressure; may explode if heated.

Special labelling of certain substances and mixtures Contains: 1,1,1,2-Tetrafluoroethane / Contains fluorinated greenhouse gas covered by the Kyoto Protocol.

P410 + P403 Protect from sunlight. Store in a well-ventilated place.

Other hazards

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).
This substance is not considered to be very persistent nor very bioaccumulating (vPvB).
Rapid evaporation of the liquid may cause frostbite.
Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.
May cause cardiac arrhythmia.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substances

| Registration number | Classification according Directive 67/548/EEC | Classification according Regulation 1272/2008 (CLP) | Concentration |
|---------------------|---|---|---------------|
|---------------------|---|---|---------------|

1,1,1,2-Tetrafluoroethane (CAS-No.811-97-2) (EC-No.212-377-0)

| | | | |
|-----------------------|--|-----------------|-------|
| 01-2119459374-33-0002 | | Press. Gas H280 | 100 % |
|-----------------------|--|-----------------|-------|

Mixtures

not applicable

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

Description of first aid measures

General advice : If unconscious place in recovery position and seek medical advice. Never give anything by mouth to an unconscious person. If breathing is irregular or stopped, administer artificial respiration. If symptoms persist, call a physician.



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- Inhalation : Move to fresh air. Keep patient warm and at rest. Artificial respiration and/or oxygen may be necessary.
- Skin contact : Take off all contaminated clothing immediately. Flush area with lukewarm water. Do not use hot water. If frostbite has occurred, call a physician.
- Eye contact : Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Get medical attention.
- Ingestion : Is not considered a potential route of exposure.

Most important symptoms and effects, both acute and delayed

- Symptoms : Skin contact may provoke the following symptoms:, Frostbite, Inhalation may provoke the following symptoms:, Shortness of breath, Dizziness, Weakness, Nausea, Headache, narcosis, Irregular cardiac activity

Indication of any immediate medical attention and special treatment needed

- Treatment : Do not give adrenaline or similar drugs.

5. FIREFIGHTING MEASURES

Extinguishing media

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Special hazards arising from the substance or mixture

- Specific hazards during firefighting : pressure build-up

Advice for firefighters

- Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.

- Further information : Cool containers / tanks with water spray.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

- Personal precautions : Evacuate personnel to safe areas. Ventilate the area. Refer to protective measures listed in sections 7 and 8.

Environmental precautions

- Environmental precautions : Should not be released into the environment.

Methods and materials for containment and cleaning up

- Methods for cleaning up : Evaporates.



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Reference to other sections

For disposal instructions see section 13.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling : Provide sufficient air exchange and/or exhaust in work rooms. For personal protection see section 8.

Advice on protection against fire and explosion : No special protective measures against fire required.

Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Keep container tightly closed in a dry and well-ventilated place. Store in original container.

Advice on common storage : No materials to be especially mentioned.

Specific end uses

no data available

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

If sub-section is empty then no values are applicable.

Components with workplace control parameters

| Type Form of exposure | Control parameters | Update | Basis | Remarks |
|--------------------------|-----------------------|--------|-------|---------|
|--------------------------|-----------------------|--------|-------|---------|

1,1,1,2-Tetrafluoroethane (CAS-No. 811-97-2)

| | | | | |
|-----|--------------------------|------|----------|--|
| TWA | 4 240 mg/m3 1 000 ppm | 2007 | EH40 WEL | |
|-----|--------------------------|------|----------|--|

Derived No Effect Level

- 1,1,1,2-Tetrafluoroethane : Type of Application (Use): Workers
Exposure routes: Inhalation
Health Effect: Chronic effects, Systemic toxicity
Value: 13 936 mg/m3
- : Type of Application (Use): Consumers
Exposure routes: Inhalation
Health Effect: Chronic effects, Systemic toxicity
Value: 2 476 mg/m3

Predicted No Effect Concentration



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- 1,1,1,2-Tetrafluoroethane : Value: 0,1 mg/l
Compartment: Fresh water
- : Value: 0,01 mg/l
Compartment: Marine water
- : Value: 1 mg/l
Compartment: Water
Remarks: Intermittent use/release
- : Value: 0,75 mg/kg
Compartment: Fresh water sediment
- : Value: 73 mg/l
Compartment: Water
Remarks: Sewage treatment plants

Exposure controls

- Engineering measures : Ensure adequate ventilation, especially in confined areas.
- Eye protection : Safety glasses
- Hand protection : Material: Heat insulating gloves
- Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.
- 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.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

- Form : Liquefied gas
- Colour : colourless
- Odour : slight, ether-like
- Freezing point : -108 °C at 1 013 hPa
- Boiling point : -26 °C at 1 013 hPa
- Autoignition temperature : 743 °C at 1 013 hPa
- Lower explosion limit/ lower flammability limit : Type: lower flammability limit, not applicable
- Upper explosion limit/ upper flammability limit : Type: upper flammability limit, not applicable



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Vapour pressure : 5 740 hPa at 25 °C
Relative density : 4,24 at 20 °C
Water solubility : 1 g/l at 25 °C
Partition coefficient: n-
octanol/water : POW: 1,06 at: 25 °C

Other information

no data available

10. STABILITY AND REACTIVITY

Reactivity : Decomposes on heating.
Chemical stability : The product is chemically stable.
Possibility of hazardous reactions : Stable under recommended storage conditions.
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.
Incompatible materials : Alkali metals Alkaline earth metals Powdered metals Powdered metal salts
Hazardous decomposition products : Hazardous thermal decomposition products may include:
Hydrogen fluoride
Carbon oxides
Fluorocarbons
Carbonyl fluoride

11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

Acute oral toxicity

- 1,1,1,2-Tetrafluoroethane
not applicable

Acute inhalation toxicity

- 1,1,1,2-Tetrafluoroethane
LC50 / rat :567 000 ppm

/ dog
Cardiac sensitization

Acute dermal toxicity



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- 1,1,1,2-Tetrafluoroethane
not applicable

Skin irritation

- 1,1,1,2-Tetrafluoroethane
rabbit
Classification: Not classified as irritant
Result: slight irritation
Not expected to cause skin irritation based on expert review of the properties of the substance.

human
Classification: Not classified as irritant
Result: No skin irritation

Eye irritation

- 1,1,1,2-Tetrafluoroethane
rabbit
Classification: Not classified as irritant
Result: slight irritation
Not expected to cause eye irritation based on expert review of the properties of the substance.

human
Classification: Not classified as irritant
Result: No eye irritation

Sensitisation

- 1,1,1,2-Tetrafluoroethane
guinea pig
Classification: Not a skin sensitizer.
Result: Did not cause sensitization on laboratory animals.
Not expected to cause sensitization based on expert review of the properties of the substance.

Did not cause sensitization on laboratory animals. There are no reports of human respiratory sensitization.

Repeated dose toxicity

- 1,1,1,2-Tetrafluoroethane
Inhalation rat
No toxicologically significant effects were found.

Mutagenicity assessment

- 1,1,1,2-Tetrafluoroethane
Animal testing did not show any mutagenic effects. Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

Carcinogenicity assessment

- 1,1,1,2-Tetrafluoroethane
Not classifiable as a human carcinogen.



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Toxicity to reproduction assessment

- 1,1,1,2-Tetrafluoroethane
No toxicity to reproduction

Human experience

Excessive exposures may affect human health, as follows:

Inhalation
Severe shortness of breath, narcosis, Irregular cardiac activity

Further information

May cause cardiac arrhythmia. Rapid evaporation of the liquid may cause frostbite. Inhalation of decomposition products in high concentration may cause shortness of breath (lung oedema).

12. ECOLOGICAL INFORMATION

Toxicity

Toxicity to fish

- 1,1,1,2-Tetrafluoroethane
LC50 / 96 h / *Oncorhynchus mykiss* (rainbow trout): 450 mg/l

Toxicity to aquatic plants

- 1,1,1,2-Tetrafluoroethane
EC50 / 72 h / Algae: > 118 mg/l
Information given is based on data obtained from similar substances.

Toxicity to aquatic invertebrates

- 1,1,1,2-Tetrafluoroethane
EC50 / 48 h / *Daphnia magna* (Water flea): 980 mg/l

Persistence and degradability

Biodegradability

/ 28 d
Biodegradation: 3 %
Method: Closed Bottle test
Not readily biodegradable.

Bioaccumulative potential

no data available

Mobility in soil

no data available

Results of PBT and vPvB assessment



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PBT and vPvB assessment

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT). / This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

Other adverse effects

Ozone depletion potential

0

Global warming potential (GWP)

1 300

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Product : Can be used after re-conditioning.

Contaminated packaging : Empty pressure vessels should be returned to the supplier.

14. TRANSPORT INFORMATION

ADR

Class: 2
Classification Code: 2A
HI No: 20
UN number: 3159
Labelling No.: 2.2
Proper shipping name: 1,1,1,2-Tetrafluoroethane
Tunnel restriction code: (C/E)

IATA_C

Class: 2.2
UN number: 3159
Labelling No.: 2.2
Proper shipping name: 1,1,1,2-Tetrafluoroethane

IMDG

Class: 2.2
UN number: 3159
Labelling No.: 2.2
Proper shipping name: 1,1,1,2-Tetrafluoroethane

15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

no data available

Chemical Safety Assessment

A Chemical Safety Assessment has been carried out for this substance.



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16. OTHER INFORMATION

Full text of H-Statements referred to under section 3.

H280 Contains gas under pressure; may explode if heated.

Further information

|| An Exposure Scenario (ES) is not required.
Before use read DuPont's safety information., For further information contact the local DuPont office or DuPont's nominated distributors., ® DuPont's registered trademark

Significant change from previous version is denoted with a double bar.

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 guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The above information relates only to the specific material(s) designated herein and may not be valid for such material(s) used in combination with any other materials or in any process or if the material is altered or processed, unless specified in the text.