DuPont™ SUVA® 134a refrigerant

Version 3.0
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This SDS adheres to the standards and regulatory requirements of Malaysia and may not meet the regulatory requirements in other countries.

SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product information

Trade name	:	DuPont™ SUVA® 134a refrigerant
Use of the Substance/Mixture	:	Refrigerant
Company	:	Du Pont Malaysia Sdn Bhd Level 7, Menara CIMB, No 1, Jalan Stesen Sentral 2, Kuala Lumpur Sentral, 50470 Kuala Lumpur Malaysia
Telephone	:	+60 3 2859 0700
Telefax	:	+60 3 2859-0840
Emergency telephone number	:	1800-82-0055

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : HFC-134a
SUVA® 134a

Components

Chemical Name	CAS-No.	Concentration
1,1,1,2-Tetrafluoroethane (HFC-134a)	811-97-2	100 %

SECTION 3: HAZARD IDENTIFICATION

Specific hazards
Misuse or intentional inhalation abuse may lead to death without warning.
Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.
Rapid evaporation of the liquid may cause frostbite.

SECTION 4: FIRST AID MEASURES

General advice	:	Never give anything by mouth to an unconscious person. When symptoms persist or in all cases of doubt seek medical advice.
Inhalation	:	Remove from exposure, lie down. Move to fresh air. Keep patient warm and at rest. Artificial respiration and/or oxygen may be necessary. Consult a physician.
Skin contact	:	In case of contact, immediately flush skin with plenty of water for at least 15 minutes. Take off all contaminated clothing immediately. Consult a physician. Wash contaminated clothing before re-use. Treat for frostbite if necessary by gently warming affected area.

Eye contact	:	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Consult a physician if necessary.
Ingestion	:	Is not considered a potential route of exposure.

Notes to physician

Treatment	:	Because of possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, that may be used in situations of emergency life support should be used with special caution.

SECTION 5: FIREFIGHTING MEASURES

Suitable extinguishing media	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Specific hazards during firefighting	:	Pressure build-up. Fire or intense heat may cause violent rupture of packages.
Special protective equipment for firefighters	:	In the event of fire, wear self-contained breathing apparatus.
		Wear neoprene gloves during cleaning up work after a fire.
Further information	:	Cool containers / tanks with water spray. Water runoff should be contained and neutralized prior to release.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions	:	Evacuate personnel to safe areas. Ventilate area, especially low or enclosed places where heavy vapours might collect. Refer to protective measures listed in sections 7 and 8.
Environmental precautions	:	Should not be released into the environment.
Methods for cleaning up	:	Evaporates.
Additional advice	:	Self-contained breathing apparatus (SCBA) is required if a large release occurs. Avoid open flames and high temperatures.

SECTION 7: HANDLING AND STORAGE

Handling

Advice on safe handling	:	Use sufficient ventilation to keep employee exposure below recommended limits. For personal protection see section 8.
Advice on protection against fire and explosion	:	The product should not be mixed with air for leak testing or used with air for any other purpose above atmospheric pressure. Contact with chlorine or other strong oxidizing agents should also be avoided.

Storage

Requirements for storage areas and containers	:	Do not drag, slide or roll cylinders. Never attempt to lift cylinder by its cap. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder. Keep at temperature not exceeding 52°C. Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from contamination. Protect cylinders from damage. Keep away from direct sunlight. Store only in approved containers.
Storage temperature	:	< 52 °C

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

No information available.

Engineering measures	:	Ensure adequate ventilation, especially in confined areas.
Biological occupational exposure limits	:	No information available.

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.
Hand protection	:	Heat insulating gloves
Eye protection	:	Wear safety glasses with side shields., Additionally wear a face shield where the possibility exists for face contact due to splashing, spraying or airborne contact with this material.
Skin protection	:	impervious clothing
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice.
Protective measures	:	Self-contained breathing apparatus (SCBA) is required if a large release occurs.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Form	:	Liquefied gas
Colour	:	colourless
Odour	:	slight , ether-like
pH	:	no data available

Melting point/range	:	-103 - -101 °C (1,013 hPa)
Boiling point	:	-26.1 °C (1,013 hPa)
Flash point	:	does not flash
Ignition temperature	:	> 743 °C 1,013 hPa
Oxidizing properties	:	The product is not oxidizing.
Vapour pressure	:	6,661 hPa (25 °C)
		13,190 hPa (50 °C)
Density	:	1.21 g/cm3 (25 °C) (as liquid)
		0.0042 g/cm3 (25 °C) (1,013 hPa)
		0.0053 g/cm3 (-26.1 °C) (1,013 hPa)
Relative density	:	1.208 (25 °C)
Water solubility	:	1.5 g/l (25 °C) (1,013 hPa)
Relative vapour density	:	3.6 at 25°C (77°F) and 1013 hPa (Air = 1.0)

SECTION 10: STABILITY AND REACTIVITY

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.
Materials to avoid	:	Alkali metals, Alkaline earth metals, Powdered metals, Powdered metal salts
Hazardous decomposition products	:	
Hazardous reactions	:	Stable under recommended storage conditions.

SECTION 11: TOXICOLOGICAL INFORMATION

Acute toxicity

Inhalation

1,1,1,2-Tetrafluoroethane (HFC-134a)	:	LC50/4 h/rat(gas): > 567000 ppm No Observed Adverse Effect Concentration/dog(gas): 40000 ppm Cardiac sensitization Low Observed Adverse Effect Concentration (LOAEC)/dog(gas): 80000 ppm Cardiac sensitization

Skin corrosion/irritation

1,1,1,2-Tetrafluoroethane (HFC-134a)	:	Species: rabbit Result: No skin irritation

Classification: Not classified as irritant

Serious eye damage/eye irritation

1,1,1,2-Tetrafluoroethane (HFC-134a) : Species: rabbit
Result: No eye irritation
Classification: Not classified as irritant

Respiratory or skin sensitisation

1,1,1,2-Tetrafluoroethane (HFC-134a) : Species: guinea pig
Result: Does not cause skin sensitisation.
Classification: Does not cause skin sensitisation.

Species: rat
Result: Does not cause respiratory sensitisation.
Classification: Does not cause respiratory sensitisation.

Germ cell mutagenicity

1,1,1,2-Tetrafluoroethane (HFC-134a) : Animal testing did not show any mutagenic effects.

Carcinogenicity

1,1,1,2-Tetrafluoroethane (HFC-134a) : Animal testing did not show any carcinogenic effects.

Reproductive toxicity

1,1,1,2-Tetrafluoroethane (HFC-134a) : Reproductive toxicity: No toxicity to reproduction
No effects on or via lactation
Teratogenicity: Animal testing showed no developmental toxicity.

Specific Target Organ Toxicity

Specific target organ toxicity - single exposure

1,1,1,2-Tetrafluoroethane (HFC-134a) : The substance or mixture is not classified as specific target organ toxicant, single exposure.

Specific target organ toxicity - repeated exposure

1,1,1,2-Tetrafluoroethane (HFC-134a) : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aspiration hazard

1,1,1,2-Tetrafluoroethane (HFC-134a) : No aspiration toxicity classification

Other

1,1,1,2-Tetrafluoroethane (HFC-134a) : Repeated dose toxicity:
Inhalation/rat gas
NOAEL: 50000,
No toxicologically significant effects were found.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity effects

Acute and prolonged toxicity to fish

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

134a)

Toxicity to aquatic plants

1,1,1,2-Tetrafluoroethane (HFC-134a)	:	ErC50/96 h/Algae: 142 mg/l Information given is based on data obtained from similar substances. NOEC/72 h/Pseudokirchneriella subcapitata (green algae): 13.2 mg/l Information given is based on data obtained from similar substances.

Acute toxicity to aquatic invertebrates

1,1,1,2-Tetrafluoroethane (HFC-134a)	:	EC50/48 h/Daphnia magna (Water flea): 980 mg/l

Persistence and degradability

1,1,1,2-Tetrafluoroethane (HFC-134a)	:	Result: Not biodegradable.

Bioaccumulation
No information available.

Mobility in soil
No information available.

Hazardous to the ozone layer

DuPont™ SUVA® 134a refrigerant	:	Ozone-Depletion Potential: 0

Other adverse effects

DuPont™ SUVA® 134a refrigerant	:	Global warming potential (GWP): 1430

SECTION 13: DISPOSAL INFORMATION

Product	:	Can be used after re-conditioning.
Contaminated packaging	:	Disposable containers: Dispose of in accordance with local regulations.

SECTION 14: TRANSPORT INFORMATION

IMDG

UN number	:	3159
Proper shipping name	:	1,1,1,2-TETRAFLUOROETHANE
Class	:	2.2
Marine pollutant	:	no

IATA

UN number	:	3159
Proper shipping name	:	1,1,1,2-TETRAFLUOROETHANE
Class	:	2.2

Matters needing attention for transportation	:	not applicable

SECTION 15: REGULATORY INFORMATION

National regulatory information

not regulated

SECTION 16: OTHER INFORMATION

Sources of key data used to compile the Safety Data Sheet:

Department:

Du Pont Malaysia Sdn Bhd
Level 7, Menara CIMB, No 1, Jalan Stesen Sentral 2, Kuala Lumpur Sentral, 50470 Kuala Lumpur
Malaysia

Further information:

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

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