

Safety Data Sheet according to Regulation (EC)

No. 1907/2006 (REACH)

Printed 03.12.2010
Revision 03.12.2010 (GB) Version 13.4

R 134a

0046

1. Identification of the substance/mixture and of the company/undertaking

Product identifier

Name of product R 134a
Art-Nr.: 0046
Name of substance 1,1,1,2-tetrafluoroethane (R 134a)
EC No 212-377-0
REACH registration number 01-2119459374-33
CAS No 811-97-2

Manufacturer/distributor

GHC Gerling, Holz & Co. Handels GmbH
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Advice

Phone +49 (0) 40 853 123-0
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Emergency advice

GHC Gerling, Holz & Co. Handels GmbH
Phone +49 (0) 40 853 123-0

Recommended intended purpose(s)

Refrigerant.

2. Hazards identification

Classification according to Regulation (EC) No 1272/2008 [CLP/GHS]

Hazard classes and Hazard categories	Hazard Statements	Classification procedure
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Liquef. Gas	H280	
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Hazard statements for physical hazards

H280 Contains gas under pressure; may explode if heated.

Additional hints

The substance is not classified as hazardous according to directive 67/548/EEC.

Labelling according to Regulation (EC) No 1272/2008 [CLP/GHS]



GHS04

Signal word

Warning

Hazard statements for physical hazards

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Precautionary Statements

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Storage

P403 Store in a well-ventilated place.

Supplemental Hazard information (EU)

Environmental properties

Contains fluorinated greenhouse gases covered by the Kyoto Protocol.

Adverse human health effects and symptoms

Contact with liquid may cause cold burns/frostbite.

Asphyxiant in high concentrations.

Information pertaining to special dangers for human and environment

Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

3. Composition/information on ingredients

CAS No 811-97-2

1,1,1,2-tetrafluoroethane (R 134a)

EC No 212-377-0

REACH registration number 01-2119459374-33

4. First aid measures

General information

Remove contaminated soaked clothing immediately.

Adhere to personal protective measures when giving first aid.

Seek medical advice immediately.

In case of inhalation

Remove the casualty into fresh air and keep him immobile.

Seek medical treatment immediately.

In case of respiratory standstill give artificial respiration by respiratory bag (Ambu bag) or respirator. Send for a doctor.

In case of skin contact

In case of contact with skin wash off with warm water.

In case of frostbite rinse with plenty of water. Don't remove clothing.

In case of frostbite spray with lukewarm (not hot) water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance.

In case of eye contact

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Call for a doctor immediately.

In case of ingestion

Ingestion is not considered a potential route of exposure.

Treatment (Advice to doctor)

Symptomatic treatment and give antidote.

Do not give any preparations of the adrenalin-ephedrine group.

Long-term inhaling of separation products may cause pulmonary oedema.

5. Firefighting measures

Suitable extinguishing media

Product does not burn, fire-extinguishing activities according to surrounding.

Extinguishing media which must not be used for safety reasons

Full water jet

Special hazards arising from the substance or mixture

In case of fire formation of dangerous gases possible.

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Hydrogen fluoride (HF)
Carbonyl fluoride.

Special protective equipment for fire-fighters

Use breathing apparatus with independent air supply (isolated).
Wear full protective clothing.

Additional information

Cool endangered containers with water spray jet.
Exposure to fire may cause containers to rupture/explode.

6. Accidental release measures

Personal precautions

See chapter 8.
Remove persons to safety.

Environmental precautions

If possible, stop flow of product.
Do not discharge into the drains/surface waters/groundwater.
Prevent spread over a wide area (e.g. by containment or oil barriers).
Do not discharge into the subsoil/soil.

Methods for cleaning up

Ensure adequate air ventilation.
Allow to vaporise.

Additional Information

Informations for safe handling see chapter 7.
Informations for personal protective equipment see chapter 8.

7. Handling and storage

Advice on safe handling

Use only in thoroughly ventilated areas.
Transfer and handle only in enclosed systems.
Provide good room ventilation even at ground level (vapours are heavier than air).
Prevent cylinders from falling over.
Ensure valve protection device is correctly fitted.
Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
Open valve slowly to avoid pressure shock.
Do not allow backfeed into the container.
Suck back of water into the container must be prevented.
No water to valves, flanges and other fittings.
Purging of pipes and valves with inert gases - to avoid: water, solvents.

Advice on protection against fire and explosion

The product is not combustible.

Requirements for storage rooms and vessels

Keep in closed original container.
Ventilate store-rooms thoroughly.
Suitable materials: Normalised steel and carbon steel, tempered steel, aluminium alloys, stainless steel.
Valve: Suitable materials: Brass, copper alloys, carbon steels, aluminium alloys, stainless steel.

Advice on storage compatibility

Do not store with combustible materials.
Do not store together with animal feedstuffs.
Do not store together with food.

Further information on storage conditions

Keep container tightly closed.

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Store only in original container at temperature of 50°C maximum (=122°F).
Prevent cylinders from falling over.
Keep container in a well-ventilated place
Protect of heat.

Information on storage stability

At appropriate storage unlimited stability.

Recommendation(s) for intended use

Use in accordance with regulation (EC) No 842/2006 on certain fluorinated greenhouse gases.

! 8. Exposure controls/personal protection

Additional advice on system design

no

Ingredients with occupational exposure limits to be monitored

CAS No	Name	Code	[mg/m ³]	[ppm]	Remark
811-97-2	1,1,1,2-Tetrafluoroethane (HFC 134a)	WEL, 8 hours	4240	1000	EH40 / 2005, United Kingdom

! Additional advice

DNEL (consumers, inhalation): 2476 mg/m³; chronic effects, systemic toxicity.

DNEL (workers, inhalation): 13936 mg/m³; chronic effects, systemic toxicity.

Respiratory protection

Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.

Keep self contained breathing apparatus readily available for emergency use.

In case of rescue and maintenance activities in storage containers use environment-independent breathing apparatus because of risk of suffocation by edging out of air oxygen

Hand protection

Leather gloves

Eye protection

safety goggles, in case of increased risk add protective face shield

Skin protection

protective clothing

General protective measures

Do not inhale gases/vapours/aerosols.

Hygiene measures

At work do not eat, drink and smoke.

! Limitation and surveillance of the environment

PNEC (freshwater): 0,1 mg/l

PNEC (sea water): 0,1 mg/l

PNEC (water): 1 mg/l (temporary use / release)

PNEC (freshwater sediment): 0,75 mg/kg

PNEC (water): 73 mg/l (wastewater treatment plants)

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9. Physical and chemical properties

Form	Colour	Odour
Gaseous / liquefied under pressure.	colourless	ethereal

Important health, safety and environmental information

	Value	Temperature	at	Method	Remark
pH value in delivery state	not applicable				
boiling point	-26,1 °C		1013 hPa		
melting point	-108 °C				
Flash point	no				
Ignition temperature	743 °C				
Lower explosion limit	no				
Upper explosion limit	no				
Vapour pressure	5630 hPa	20 °C			
Density	1,226 g/cm ³	20 °C			liquid phase
Rel. vapour density	4,24	20 °C			air = 1
Solubility in water	1 g/l	25 °C			
Partition coefficient (log p_{OW})	1,06	25 °C			
Viscosity dynamic	0,22 mPa*s	20 °C			liquid phase

Oxidizing properties

no

Explosive properties

no

Additional information

Vapours are heavier than air.

10. Stability and reactivity**Conditions to avoid**

May form a flammable mixture with air or oxidizing agents at high pressure.

Heat sources / heat - risk of bursting.

Materials to avoid

Reactions with alkali metals.

Reactions with earth alkali metals.

Reactions with metals in powder form.

Hazardous decomposition products

Carbon monoxide

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Carbon dioxide
Fluorophosgene on contact open flame or glowing objects
Hydrogen fluoride

Thermal decomposition

Remark No decomposition if used as directed.

Additional information

Stable under normal conditions.

! 11. Toxicological information**Acute toxicity/Irritability/Sensitization**

	Value/Validation	Species	Method	Remark
LD50 acute oral	not applicable			
LD50 acute dermal	not applicable			
LC50 acute inhalation	567000 ppm (4 h)	rat		
Irritability skin	low irritant effect - not necessary to label	rabbit		
Irritability eye	low irritant - no labeling duty	rabbit eye		
Skin sensitization	non-sensitizing	Laboratory animals		
Sensitization respiratory system	non-sensitizing	Laboratory animals		

Subacute Toxicity - Carcinogenicity

	Value	Species	Method	Validation
Subchronic Toxicity		Rat		No effects of toxicological significance
	Inhalation			
Mutagenicity				No experimental information on genotoxicity in vitro and in vivo available.
Reproduction-Toxicity				No indications of toxic effects were observed in reproduction studies in animals.
Carcinogenicity				No indications of carcinogenic effects are available from long-term trials.

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Experiences made from practice

Long-term inhaling of separation products may cause pulmonary oedema.

Inhalation causes disordered cardiac rhythm.

Gases have a suffocating effect.

12. Ecological information

Data on elimination (persistence and degradability)

	Elimination rate	Method of analysis	Method	Validation
Physico-chemical degradability	At normal temperature very highly volatile or gaseous product that can be released to atmosphere. Elimination test cannot be employed.			
Biological degradability	3 % (28 d)		OECD 301 D	not readily degradable

Ecotoxicological effects

	Value	Species	Method	Validation
Fish	LC50 450 mg/l (96 h)	Oncorhynchus mykiss		
Daphnia	EC50 980 mg/l (48 h)	Daphnia magna		
Bacteria	EC10 > 730 mg/l (6 h)	growth of Ps. putida		

General regulation

Avoid emission in atmosphere.

ODP: 0

GWP: 1300

! 13. Disposal considerations

Waste code No.

14 06 01*

Name of waste

chlorofluorocarbons, HCFC, HFC

Wastes marked with an asterisk are considered to be hazardous waste pursuant to Directive 91/689/EEC on hazardous waste.

! Recommendations for the product

Dispose of as hazardous waste.

Recommendations for packaging

Transportable pressure equipment (empty, residual pressure): Return to supplier / manufacturer.

14. Transport information

Land and inland navigation transport ADR/RID

UN 3159 REFRIGERANT GAS R 134a (1,1,1,2-TETRAFLUORETHAN), 2.2, (C/E), Classification code: 2A

Marine transport IMDG

UN 3159 REFRIGERANT GAS R 134a (1,1,1,2-TETRAFLUROETHANE), 2.2, no

Air transport ICAO/IATA-DGR

UN 3159 Refrigerant gas R 134a (1,1,1,2-TETRAFLUROETHANE), 2.2

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15. Regulatory information

Additional information

Remark

Contains fluorinated greenhouse gases covered by the Kyoto Protocol.

VOC standard

VOC content $\geq 99\%$ 20 °C 5630 hPa

16. Other information

Recommend uses and restrictions

Use in accordance with regulation (EC) No 842/2006 on certain fluorinated greenhouse gases.
National and local regulations concerning chemicals shall be observed.

Further information

All declarations of safety-data-sheet refer to pure substance.

The information contained herein is based on the state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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