

**Safety Data Sheet according to Regulation (EC)  
No. 1907/2006 (REACH)**

Printed 15.11.2011  
Revision 15.11.2011 (GB) Version 8.0  
**R 417A**  
0062



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

**Product identifier**

**Name of product** R 417A  
Art-Nr.: 0062

**Manufacturer/distributor**

GHC Gerling, Holz & Co. Handels GmbH  
Ruhrstraße 113, D-22761 Hamburg  
Phone +49 (0) 40 853 123-0, Fax +49 (0) 40 853 123-66  
E-Mail msds@ghc.de  
Internet www.ghc.de

**Advice**

Phone +49 (0) 40 853 123-0  
Fax +49 (0) 40 853 123-66

**Emergency advice**

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

**Recommended intended purpose(s)**  
Refrigerant.

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**2. Hazards identification**

**Classification according to 67/548/EEC or 1999/45/EC**

no

**R-phrases**

no

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

Hazard classes and Hazard categories	Hazard Statements	Classification procedure
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<b>Liquef. Gas</b>	<b>H280</b>
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**Hazard statements for physical hazards**

H280	Contains gas under pressure; may explode if heated.
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**Labelling according to 67/548/EEC or 1999/45/EC**

**Remarks for labelling**

Contains fluorinated greenhouse gases covered by the Kyoto Protocol.

**R-phrases**

no

**S-phrases**

24/25	Avoid contact with skin and eyes.
41	In case of fire and/or explosion do not breathe fumes.

**Special rules for supplemental label elements for certain mixtures**

Safety data sheet available for professional user on request.

**! Adverse human health effects and symptoms**

Asphyxiant in high concentrations.

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**! Adverse environmental effects**

Contains fluorinated greenhouse gases covered by the Kyoto Protocol.

**! 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.

Contact with liquid may cause cold burns/frostbite.

**! 3. Composition/information on ingredients**

**! Hazardous ingredients**

CAS No	EC No	Name	[% weight]	Classification according to 67/548/EEC
811-97-2	212-377-0	1,1,1,2-Tetrafluoroethane (R 134a)	49 - 51	
354-33-6	206-557-8	Pentafluoroethane (R 125)	45,5 - 47,7	
106-97-8	203-448-7	butane	3 - 3,5	F+ R12

CAS No	EC No	Name	[% weight]	Classification according to Regulation (EC) No 1272/2008 [CLP/GHS]
811-97-2	212-377-0	1,1,1,2-Tetrafluoroethane (R 134a)	49 - 51	Liq. Gas, H280
354-33-6	206-557-8	Pentafluoroethane (R 125)	45,5 - 47,7	Liq. Gas, H280
106-97-8	203-448-7	butane	3 - 3,5	Flam. Gas 1, H220 / Liq. Gas, H280

**REACH**

CAS No	Name	REACH registration number
811-97-2	1,1,1,2-Tetrafluoroethane (R 134a)	01-2119459374-33

**Additional advice**

Contains fluorinated greenhouse gases covered by the Kyoto Protocol.

**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)**

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

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

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## 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.

Carbon monoxide (CO)

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.

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## 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.

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## 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.

Avoid release to the environment.

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.

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.

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**Requirements for storage rooms and vessels**

Keep in closed original container.  
Ventilate store-rooms thoroughly.  
Only use containers that are approved specifically for the substance/product.  
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 spontaneously flammable materials.  
Do not store together with combustible liquids or combustible solids.  
Do not store together with feedstuff.  
Do not store together with explosives.  
Do not store together with infectious substances.  
Do not store together with radioactive material.  
Do not store together with toxic liquids or toxic solids.  
Do not store together with food.  
Do not store together with oxidizing liquids or oxidizing solids.

**Further information on storage conditions**

Keep container tightly closed.  
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 <sup>3</sup> ]	[ppm]	Remark
106-97-8	Butane	WEL, 8 hours Short-term	1450 1810	600 750	EH40, United Kingdom
811-97-2	1,1,1,2-Tetrafluoroethane (HFC 134a)	WEL, 8 hours	4240	1000	EH40 / 2005, United Kingdom

**Additional advice**

no

**Respiratory protection**

Breathing apparatus in the event of high concentrations.  
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

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**! Skin protection**

Safety shoes with steel toe.  
Body covering work clothing, or chemical resistant suit at increased risk.

**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**

See chapter 7.

**9. Physical and chemical properties**

<b>Form</b>	<b>Colour</b>	<b>Odour</b>
Gaseous / liquefied under pressure.	colourless	ethereal

**Important health, safety and environmental information**

	Value	Temperature	at	Method	Remark
<b>pH value in delivery state</b>	7				
<b>boiling point</b>	-38 - -32,9 °C		1013 hPa		
<b>Flash point</b>	no				
<b>Lower explosion limit</b>	no				
<b>Upper explosion limit</b>	no				
<b>Vapour pressure</b>	9720 hPa	25 °C			
<b>Density</b>	1,2 g/cm <sup>3</sup>	25 °C			liquid phase
<b>Bulk density</b>				not applicable	
<b>Rel. vapour density</b>	3,92	25 °C	1013 hPa		air = 1
<b>Solubility in water</b>	1,2 g/l	25 °C			
<b>Solubility/other</b>			not determined		
<b>Viscosity dynamic</b>	0,163 mPa*s	25 °C			liquid phase

**Oxidizing properties**

no

**Explosive properties**

no

**Additional information**

Vapours are heavier than air.

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**10. Stability and reactivity**

**Conditions to avoid**

Heat sources / heat - risk of bursting.

**Materials to avoid**

Reactions with alkali metals.

Reactions with earth alkali metals.

**Hazardous decomposition products**

Carbon monoxide

Fluorophosgene on contact open flame or glowing objects

Hydrogen fluoride

**Thermal decomposition**

Remark No decomposition if used as directed.

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**! 11. Toxicological information**

**Acute toxicity/Irritability/Sensitization**

	Value/Validation	Species	Method	Remark
<b>LC50 acute inhalation</b>	> 2085 mg/l (4 h)	rat		R-134a
<b>Irritability skin</b>		not determined		
<b>Irritability eye</b>		not determined		
<b>Skin sensitization</b>		not determined		
<b>Sensitization respiratory system</b>		not determined		

**Subacute Toxicity - Carcinogenicity**

	Value	Species	Method	Validation
<b>Mutagenicity</b>				No experimental information on genotoxicity in vivo available.
<b>Reproduction-Toxicity</b>				No indications of toxic effects were observed in reproduction studies in animals.
<b>Carcinogenicity</b>				No indications of carcinogenic effects are available from long-term trials.

**! Experiences made from practice**

Inhalation causes disordered cardiac rhythm.

Inhalation causes shortness of breath.

Gases have a suffocating effect.

Inhalation causes narcotic effect/intoxication.

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**Additional information**

The product has not been tested. The information is derived from the properties of the individual components.

**12. Ecological information**

**Ecotoxicological effects**

	Value	Species	Method	Validation
<b>Fish</b>	LC50 450 mg/l (96 h)	rainbow trout		R-134a
<b>Daphnia</b>	EC50 980 mg/l (48 h)	Daphnia magna		R-134a
<b>Bacteria</b>	EC10 > 730 mg/l (6 h)	Pseudomonas putida		R-134a

**General regulation**

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

Avoid emission in atmosphere.

ODP: 0

GWP: 2235

**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.

Return to manufacturer.

**Recommendations for packaging**

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

**14. Transport information**

**Land and inland navigation transport ADR/RID**

UN 1078 REFRIGERANT GAS, N.O.S. (50% 1,1,1,2-Tetrafluorethan; 46,6% Pentafluorethan; 3,4% Butan), 2.2, (C/E),  
Classification code: 2A

**Marine transport IMDG**

UN 1078 REFRIGERANT GAS, N.O.S. (50% 1,1,1,2-Tetrafluoroethane; 46,6% Pentafluoroethane; 3,4% Butane), 2.2

**Air transport ICAO/IATA-DGR**

UN 1078 Refrigerant gas, n.o.s. (50% 1,1,1,2-Tetrafluoroethane; 46,6% Pentafluoroethane; 3,4% Butane), 2.2

**! 15. Regulatory information**

**Other regulations (EU)**

Regulation (EC) No 842/2006 on certain fluorinated greenhouse gases.

**VOC standard**

**VOC content** >=99 % 25 °C 9720 hPa

**! Chemical Safety Assessment**

Chemical safety assessments for substances in this mixture were not carried out.

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**16. Other information**

**Recommendend 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**

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.

**Wording of the R/H-phrases specified in chapter 3 (not the classification of the mixture!)**

R 12 Extremely flammable.

H220 Extremely flammable gas.

H280 Contains gas under pressure; may explode if heated.