

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

Printed 16.09.2011
Revision 16.09.2011 (GB) Version 3.0
R 422A
0018



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

Product identifier

Name of product R 422A
Art-Nr.: 0018

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
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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.

2. Hazards identification

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

no

R-phrases

no

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

Hazardous ingredients for labeling

1,1,1,2-Tetrafluoroethane (R 134a), isobutane, Pentafluoroethane (R 125)

Special rules for supplemental label elements for certain mixtures

Safety data sheet available for professional user on request.

Information pertaining to special dangers for human and environment

In high concentrations may cause asphyxiation.

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

Contact with liquid may cause cold burns/frostbite.

Receptacle under pressure.

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3. Composition/information on ingredients

Hazardous ingredients

CAS No	EC No	Name	[% weight]	Classification according to 67/548/EEC
75-28-5	200-857-2	isobutane	3,4	F+ R12
811-97-2	212-377-0	1,1,1,2-Tetrafluoroethane (R 134a)	11,5	
354-33-6	206-557-8	Pentafluoroethane (R 125)	85,1	

CAS No	EC No	Name	[% weight]	Classification according to Regulation (EC) No 1272/2008 [CLP/GHS]
75-28-5	200-857-2	isobutane	3,4	Flam. Gas 1, H220 / Press. Gas
811-97-2	212-377-0	1,1,1,2-Tetrafluoroethane (R 134a)	11,5	Liq. Gas, H280
354-33-6	206-557-8	Pentafluoroethane (R 125)	85,1	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

No EC-labelling required.

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

Eye rinsing with water carefully while protecting unhurt eye.
Call for a doctor immediately.

In case of ingestion

Ingestion is not considered a potential route of exposure.

Treatment (Advice to doctor)

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.

Formation of explosive gas mixtures in air.

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.

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).

Suppress gases/vapours/mists with water spray jet

Do not discharge into the subsoil/soil.

Methods for cleaning up

Take up with absorbent material (e.g. sand, sawdust, general-purpose binder, kieselguhr).

Flush away residues with water.

After taking up the material dispose according to regulation.

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.

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.

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.

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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.

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/m3]	[ppm]	Remark
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

insulated gloves

Eye protection

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

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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

See chapter 7.

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					neutral
boiling point	-46,2 - -41,5 °C		1013 hPa		
melting point	not determined				
Flash point	no				
Lower explosion limit	no				
Upper explosion limit	no				
Vapour pressure	12740 hPa	25 °C			
Density	1,157 g/cm ³	25 °C			liquid phase
Bulk density				not applicable	
Rel. vapour density	4				air = 1
Solubility in water	ca. 0,1 Gew-%				
Solubility/other			not determined		
Partition coefficient (log pOW)	2,3	R-125			
Viscosity dynamic	0,143 mPa*s	25 °C			liquid phase
Oxidizing properties	no				

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Explosive properties

no

Additional information

Vapours are heavier than air.

10. Stability and reactivity

Conditions to avoid

Heat sources / heat - risk of bursting.

Materials to avoid

Reactions with strong oxidising agents.

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.

11. Toxicological information

Acute toxicity/Irritability/Sensitization

	Value/Validation	Species	Method	Remark
LC50 acute inhalation	> 2085 mg/l (4 h)	rat	R-134a	
Irritability skin		no		
Irritability eye	low irritant - no labeling duty	rabbit eye		
Skin sensitization		not determined		
Sensitization respiratory system		not determined		

Subacute Toxicity - Carcinogenicity

	Value	Species	Method	Validation
Mutagenicity				No experimental information on genotoxicity in vivo available.
Reproduction-Toxicity				No indications of toxic effects were observed in reproduction studies in animals.

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Value	Species	Method	Validation
Carcinogenicity			No indications of carcinogenic effects are available from long-term trials.
Experiences made from practice May cause frostbite. Gases have a suffocating effect.			

12. Ecological information

Data on elimination (persistence and degradability)

Elimination rate	Method of analysis	Method	Validation
Degradability At normal temperature very highly volatile or gaseous product that can be released to atmosphere. Elimination test cannot be employed.			

Mobility and bioaccumulative potential

The product has not been tested. Because of the product's consistency and low solubility in water bioavailability is not likely.

Ecotoxicological effects

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

General regulation

Use in accordance with regulation (EC) No 842/2006 on certain fluorinated greenhouse gases.
Avoid emission in atmosphere.
ODP: 0
GWP: 3043

13. Disposal considerations

Waste code No.	Name of waste
14 06 01*	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.

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14. Transport information

Land and inland navigation transport ADR/RID

UN 1078 REFRIGERANT GAS, N.O.S. (R 422A), 2.2, (C/E), Classification code: 2A

Marine transport IMDG

UN 1078 REFRIGERANT GAS, N.O.S. (R 422A), 2.2, Marine Pollutant: No

EmS: F-C, S-V

Air transport ICAO/IATA-DGR

UN 1078 Refrigerant gas, n.o.s. (R 422A), 2.2

! 15. Regulatory information

Other regulations (EU)

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

! VOC standard

VOC content >= -99,9 % 25 °C 12740 hPa

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

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.

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.