

Safety Data Sheet according to Regulation (EC)

No. 1907/2006 (REACH)

Printed 03.07.2009
Revision 03.07.2009 (GB) Version 6.0

R 600a
0056



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

Name of product R 600a
Art-Nr.: 0056

Manufacturer/distributor GHC Gerling, Holz & Co. Handels GmbH
Ruhrstraße 113, D-22761 Hamburg
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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

F+; R12

R-phrases

12 Extremely flammable.

Special hazards information for humans and environment

Extremely flammable liquefied gas.

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.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous ingredients

CAS No	EC No	Name	[% weight]	Classification
74-98-6	200-827-9	Propane	< 3	F+ R12
75-28-5	200-857-2	Isobutane	>= 95	F+ R12
106-97-8	203-448-7	Butane	< 5	F+ R12

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.

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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.

Physician's information / possible symptoms

Shortness of breath

Treatment (Advice to doctor)

Monitor circulation.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Dry powder

Carbon dioxide

Extinguishing media which must not be used for safety reasons

no

Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases

In case of fire formation of dangerous gases possible.

Formation of explosive gas mixtures in air.

In the event of fire the following can be released:

Carbon monoxide (CO)

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.

Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur.

Extinguish any other fire.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

See chapter 8.

Keep away sources of ignition.

Environmental precautions

If possible, stop flow of product.

Eliminate ignition sources.

Do not discharge into the drains/surface waters/groundwater.

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.
Take measures against electrostatically charging.
Barrels and installations thoroughly earthing (grounding).
Use antistatic tools.
Treatment only in suitable rooms and 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.

Advice on protection against fire and explosion

The product is combustible.
Because of risk of explosion avoid vapours getting into cellar, sewage system and holes.
Take precautionary measures against static discharges.
Formation of explosive gas mixtures in air.
Use explosion-proof equipment / fittings and non-sparking tools.

Requirements for storage rooms and vessels

Keep in closed original container.
Ventilate store-rooms thoroughly.
Use transportable pressure equipment.
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 together with animal feedstuffs.
Do not store together with food.
Do not store together with oxidizing agents.

Further information on storage conditions

Ensure valve protection device is correctly fitted.
Keep container tightly closed and store at cool and aired place.
Prevent cylinders from falling over.
Keep container in a well-ventilated place
Protect of heat.
Storage temperature may not exceed 50°C (=122°F).

Information on storage stability

At appropriate storage unlimited stability.

Recommendation(s) for intended use

no

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with occupational exposure limits to be monitored

CAS No	Name	Code	[mg/m3]	[ppm]	Spitzenb.	Remark
106-97-8	Butane	WEL, 8 hours Short-term	1450 1810	600 750		EH40, United Kingdom
75-28-5	Isobutane	REL, 8 hours	1900	800		NIOSH, USA
74-98-6	Propane	REL, 8 hours	1800	1000		NIOSH, USA
74-98-6	Propane	PEL, 8 hours	1800	1000		OSHA, USA

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Ingredients with occupational exposure limits to be monitored (fortgesetzt)

CAS No	Name	Code	[mg/m3]	[ppm]	Spitzenb.	Remark
106-97-8	n-Butane	REL, 8 hours	1900	800		NIOSH, USA

Additional advice

no

Respiratory protection

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

chemical-resistant gloves

Leather gloves

Eye protection

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

Skin protection

antistatic boots

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	sweetish

Important health, safety and environmental information

	Value	Temperature	at	Method	Remark
pH value in delivery state	not applicable				
Acid number	not applicable				
boiling point	-11,9 °C		1013 hPa		
melting point	-159,6 °C				
Flash point	-83 °C				
Flammable solid	not applicable				
Ignition temperature	460 °C				

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	Value	Temperature	at	Method	Remark
Lower explosion limit	1,8 Vol-%				
Upper explosion limit	8,4 Vol-%				
Vapour pressure	3010 hPa	20 °C			
Density	0,557 g/cm ³	20 °C			liquid phase
Rel. vapour density	2,11				air = 1
Solubility in water	48,9 mg/l	25 °C			
Solubility/other					soluble in organic solvent
Partition coefficient (log p_{OW})	2,76				
Viscosity 1 dynamic	0,1598 mPa*s	20 °C			liquid phase

Additional information

Vapours are heavier than air.

10. STABILITY AND REACTIVITY**Conditions to avoid**

Formation of explosive gas/air mixtures.

Reactions with oxidising agents.

Heat sources / heat - risk of bursting.

Materials to avoid

Reactions with oxidising agents.

Hazardous decomposition products

Carbon monoxide

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
LC 50 acute inhalation	520000 ppm (2 h)	rat		
Irritability skin		no		

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	Value/Validation	Species	Method	Remark
Irritability eye		no		
Skin sensitization		not determined		
Sensitization respiratory system		not determined		

Subacute Toxicity - Carcinogenicity

	Value	Species	Method	Validation
Mutagenicity				No mutagenity, after different in-vitro studies.
Reproduction-Toxicity				not determined
Carcinogenicity				not determined

Toxicity test (Additional information)

No experimental indication of genotoxicity in vitro (Ames-test negative).

Experiences made from practice

May cause frostbite.

Gases have a suffocating effect.

Inhalation causes narcotic effect/intoxication.

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	not determined			
Biological eliminability	not determined			

Mobility and bioaccumulative potential

Because of the n-octanol/water distribution coefficient (log K o/w) accumulation in organisms is possible.

Ecotoxicological effects

	Value	Species	Method	Validation
Fish	not determined			
Daphnia	not determined			
Algae	not determined			

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	Value	Species	Method	Validation
Bacteria	not determined			

13. DISPOSAL CONSIDERATIONS

Waste code No.

16 05 04*

Name of waste

gases in pressure containers (including halons) containing dangerous substances

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 1969 ISOBUTANE, 2.1, (B1D), Classification code: 2F

Marine transport IMDG

UN 1969 ISOBUTANE, 2.1

Ems: F-D, S-U

Air transport ICAO/IATA-DGR

UN 1969 Isobutane, 2.1

15. REGULATORY INFORMATION

Remarks for classification

EC-labelling

Classification

F+ Extremely flammable

R-phrases

12 Extremely flammable.

S-phrases

16 Keep away from sources of ignition - No smoking.

9 Keep container in a well-ventilated place.

VOC standard

VOC content >=99 % 20 °C 3010 hPa

16. OTHER INFORMATION

Recommend uses and restrictions

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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Wording of the R-phrases specified in chapter 3 (not the classification of the formulation!)

R 12 Extremely flammable.