

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

Printed 14.07.2011
Revision 13.07.2011 (GB) Version 3.2
R 600a - Mini
0082

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

Product identifier

Name of product R 600a - Mini
Art-Nr.: 0082
Name of substance isobutane
Index No 601-004-00-0
EC No 200-857-2
CAS No 75-28-5

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 67/548/EEC or 1999/45/EC

F+; R12

R-phrases

12 Extremely flammable.

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

Hazard classes and Hazard categories	Hazard Statements	Classification procedure
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Flam. Gas 1	H220
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Liquef. Gas	H280
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Hazard statements for physical hazards

H220 Extremely flammable gas.

H280 Contains gas under pressure; may explode if heated.

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



GHS02



GHS04

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Signal word

Danger

Hazard statements for physical hazards

H220 Extremely flammable gas.
H280 Contains gas under pressure; may explode if heated.

Precautionary Statements

Prevention

P210 Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

Response

P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 Eliminate all ignition sources if safe to do so.

Storage

P403 Store in a well-ventilated place.

Hazardous ingredients for labeling

isobutane

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.

3. Composition/information on ingredients

CAS No 75-28-5 isobutane
EC No 200-857-2
Index No 601-004-00-0

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.

Physician's information / possible symptoms

Shortness of breath

Treatment (Advice to doctor)

Monitor circulation.

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! 5. Firefighting measures

Suitable extinguishing media

Dry powder
Carbon dioxide

Extinguishing media which must not be used for safety reasons

no

Special hazards arising from the substance or mixture

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)

Carbon dioxide (CO₂)

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.

! 7. Handling and storage

! Advice on safe handling

Use only in thoroughly ventilated areas.

Transfer and handle only in enclosed systems.

Use antistatic tools.

Treatment only in suitable rooms and systems.

Provide good room ventilation even at ground level (vapours are heavier than air).

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.

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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 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 food.
Do not store together with oxidizing agents.

! Further information on storage conditions

Keep container tightly closed and store at cool and aired 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/m ³]	[ppm]	Remark
75-28-5	Isobutane	REL, 8 hours	1900	800	NIOSH, USA

Respiratory protection

Keep self contained breathing apparatus readily available for emergency use.
Short term: filter apparatus, filter AX
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

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.

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9. Physical and chemical properties

Form Gaseous / liquefied under pressure.	Colour colourless	Odour sweetish
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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	-88 °C				
Flammable solid	not applicable				
Flammability (gas)					Flammable.
Ignition temperature	460 °C				
Lower explosion limit	1,8 Vol-%				
Upper explosion limit	8,4 Vol-%				
Vapour pressure	3010 hPa	20 °C			
Density	0,549 g/cm ³	20 °C			liquid phase
Rel. vapour density	2,05				air = 1
Solubility in water	49 mg/l	20 °C			
Solubility/other					soluble in organic solvent
Partition coefficient (log p_{OW})	2,76				
Viscosity dynamic	0,174 mPa*s	285 K			liquid phase

Additional information

Vapours are heavier than air.

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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 and carbon dioxide.

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
LC50 acute inhalation	658 mg/l (4 h)	rat		
Irritability skin		no		
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.

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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			
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 2037 GAS CARTRIDGES (ISOBUTAN), 2.1, (D), Classification code: 5F

Marine transport IMDG

UN 2037 GAS CARTRIDGES (ISOBUTANE), 2.1, Marine pollutant: no

Ems: F-D, S-U

Air transport ICAO/IATA-DGR

UN 2037 Gas cartridges (ISOBUTANE), 2.1

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! 15. Regulatory information

VOC standard

VOC content $\geq 99\%$ 20 °C 3010 hPa

! Chemical Safety Assessment

For this substance a chemical safety assessment has not been carried out.

16. Other information

Recommendend 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.

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.