

Safety Data Sheet according to Regulation (EC)

No. 1907/2006 (REACH)

Printed 30.11.2010

Revision 30.11.2010 (GB) Version 7.2

Hydrogen

0200 - 0203

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

Product identifier

Name of product Hydrogen
Art-Nr.: 0200 - 0203

Name of substance hydrogen

Index No 001-001-00-9

EC No 215-605-7

CAS No 1333-74-0

Manufacturer/distributor

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Advice

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Emergency advice

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

Recommended intended purpose(s)

Fuel gas.
Basic substance.

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	On basis of test data.
Compr. Gas	H280	On basis of test data.

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

hydrogen

Information pertaining to special dangers for human and environment

In high concentrations may cause asphyxiation.

Can form explosive mixture with air.

3. Composition/information on ingredients

CAS No 1333-74-0

hydrogen

EC No 215-605-7

Index No 001-001-00-9

4. First aid measures

General information

Remove contaminated clothing immediately and dispose it safely.

Adhere to personal protective measures when giving first aid.

Seek medical treatment immediately.

In case of inhalation

Remove the casualty into fresh air, keep warm and allow to rest.

In case of breathing difficulties give oxygen.

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 ingestion

Ingestion is not considered a potential route of exposure.

Treatment (Advice to doctor)

Monitor circulation.

5. Firefighting measures

Suitable extinguishing media

Foam

Carbon dioxide

Water spray jet

Extinguishing media which must not be used for safety reasons

Full water jet

Special hazards arising from the substance or mixture

Formation of explosive gas mixtures in air.

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Special protective equipment for fire-fighters

Use breathing apparatus with independent air supply (isolated).

Additional information

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

Extinguish any other fire.

Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

6. Accidental release measures

Personal precautions

See chapter 8.

Remove persons to safety.

Evacuate area.

Keep away sources of ignition.

Environmental precautions

If possible, stop flow of product.

Methods for cleaning up

Ensure adequate air ventilation.

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

Care for thoroughly room ventilation, if necessary use in well ventilated area with local exhaust ventilation at workplace.

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.

Use only properly specified equipment which is suitable for this product, its supply pressure and temperature.

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 combustible.

Take precautionary measures against static discharges.

Thoroughly inert and earth (ground) plants and apparatus (nitrogen, noble gas).

Formation of explosive gas mixtures in air.

Use explosion-proof equipment / fittings and non-sparking tools.

Requirements for storage rooms and vessels

Use transportable pressure equipment.

Risk of hydrogen embrittlement.

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

Store only in original container at temperature of 50°C maximum (=122°F).

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Keep container in a well-ventilated place

8. Exposure controls/personal protection

Respiratory protection

Breathing apparatus in the event of high concentrations.

Keep self contained breathing apparatus readily available for emergency use.

Hand protection

Leather gloves

Eye protection

safety goggles

Skin protection

protective clothing

Hygiene measures

At work do not eat, drink and smoke.

9. Physical and chemical properties

Form

compressed gas

Colour

colourless

Odour

odourless

Important health, safety and environmental information

	Value	Temperature	at	Method	Remark
boiling point	-252,77 °C				
melting point	-259,14 °C				
Flash point	-240 °C			closed cup	
Ignition temperature	500 °C				
Lower explosion limit	4 Vol-%				
Upper explosion limit	77 Vol-%				
Density	0,0709 g/cm ³	-253 °C			
Rel. vapour density	0,07				air = 1
Solubility in water	1,6 mg/l	20 °C			
Partition coefficient (log p_{OW})	0,45				
Viscosity dynamic	0,00841 mPa*s	20 °C			

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10. Stability and reactivity

Conditions to avoid

Sources of ignition.
Wärmequellen / Hitze.

Materials to avoid

Reactions with oxidising agents.
Reactions with numerous chemical compounds.

Hazardous decomposition products

No hazardous decomposition products known.

Additional information

Stable under normal conditions.

11. Toxicological information

Acute toxicity/Irritability/Sensitization

	Value/Validation	Species	Method	Remark
LC50 acute inhalation	15000 ppm (1 h)	rat		
Irritability skin	non-irritant			
Irritability eye	non-irritant			

Subacute Toxicity - Carcinogenicity

	Value	Species	Method	Validation
Mutagenicity				not determined
Reproduction-Toxicity				not determined
Carcinogenicity				not determined

Experiences made from practice

Gases have a suffocating effect.

12. Ecological information

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 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 1049 HYDROGEN, COMPRESSED, 2.1, (B/D), Classification code: 1F

Marine transport IMDG

UN 1049 HYDROGEN, COMPRESSED, 2.1, Marine pollutant: no

Ems: F-D, S-U

Air transport ICAO/IATA-DGR

UN 1049 Hydrogen, compressed, 2.1

Cargo aircraft only: Package max. 150 kg.

15. Regulatory information

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.

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.