

Safety data sheet Hydrogen, compressed.

Creation date : 27.01.2005
Revision date : 04.01.2011

Version : 2.0

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1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY

Product name

Hydrogen, compressed.
EC No (from EINECS): 215-605-7
CAS No: 1333-74-0
Index-Nr. 001-001-00-9

Chemical formula H₂

REACH Registration number:

Listed in Annex IV/V of Regulation (EC) No 1907/2006 (REACH), exempted from registration.

Known uses

Not known.

Company identification

Linde AG, Linde Gas Division, Seitnerstraße 70, D-82049 Pullach
E-Mail Address Info@de.linde-gas.com
Emergency phone numbers (24h): 089-7446-0

2 HAZARDS IDENTIFICATION

Classification of the substance or mixture

Classification acc. to Regulation (EC) No 1272/2008/EC (CLP/GHS)

Press. Gas (Compressed gas) - Contains gas under pressure; may explode if heated.
Flam. Gas 1 - Extremely flammable gas.

Classification acc. to Directive 67/548/EEC & 1999/45/EC

F+; R12

Extremely flammable.

Risk advice to man and the environment

In high concentrations may cause asphyxiation.

Compressed gas.

Label Elements

- Labelling Pictograms



- Signal word

Danger

- Hazard Statements

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

- Precautionary Statements

Precautionary Statement Prevention

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

Precautionary Statement Reaction

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

Precautionary Statement Storage

P403

Store in a well-ventilated place.

Precautionary Statement Disposal

None.

3 COMPOSITION/INFORMATION ON INGREDIENTS

Substance/Preparation: Substance.

Components/Impurities

Hydrogen, compressed.

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EC No (from EINECS): 215-605-7

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Contains no other components or impurities which will influence the classification of the product.

4 FIRST AID MEASURES

Inhalation

In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

Ingestion

Ingestion is not considered a potential route of exposure.

5 FIRE FIGHTING MEASURES

Specific hazards

Exposure to fire may cause containers to rupture/explode.

Hazardous combustion products

None.

Suitable extinguishing media

All known extinguishants can be used.

Specific methods

If possible, stop flow of product. Move container away or cool with water from a protected position. Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur.

Special protective equipment for fire fighters

In confined space use self-contained breathing apparatus.

6 ACCIDENTAL RELEASE MEASURES

Personal precautions

Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Ensure adequate air ventilation. Eliminate ignition sources.

Environmental precautions

Try to stop release.

Clean up methods

Ventilate area.

7 HANDLING AND STORAGE

Handling

Ensure equipment is adequately earthed. Suck back of water into the container must be prevented. Purge air from system before introducing gas. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt. Keep away from ignition sources (including static discharges). Refer to supplier's handling instructions. This gas is not intended for filling ballons for play and

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advertising purposes because of the danger of explosion. With hydrogen balloons for transportation of human beings sufficient distance to transmitting plant is to be kept.

Storage

Segregate from oxidant gases and other oxidants in store. Keep container below 50°C in a well ventilated place. Observe "Technische Regeln Druckgas (TRG) 280 Ziffer 5"

8 EXPOSURE CONTROLS/PERSONAL PROTECTION**Personal protection**

Ensure adequate ventilation. Do not smoke while handling product.

9 PHYSICAL AND CHEMICAL PROPERTIES**General information**

Appearance/Colour: Colourless gas.

Odour: None.

Important information on environment, health and safety

Molecular weight: 2 g/mol

Melting point: -259 °C

Boiling point: -253 °C

Critical temperature: -240 °C

Autoignition temperature: 560 °C

Flammability range: 4 %(V) - 75 %(V)

Relative density, gas: 0,07

Relative density, liquid: Not applicable.

Solubility mg/l water: 1,6 mg/l

Other data

Burns with a colourless invisible flame.

10 STABILITY AND REACTIVITY**Stability and reactivity**

Can form explosive mixture with air. May react violently with oxidants.

11 TOXICOLOGICAL INFORMATION**General**

No known toxicological effects from this product.

12 ECOLOGICAL INFORMATION**General**

No known ecological damage caused by this product.

13 DISPOSAL CONSIDERATIONS**General**

Do not discharge into areas where there is a risk of forming an explosive mixture with air. Waste gas should be flared through a suitable burner with flash back arrestor. Do not discharge into any place where its accumulation could be dangerous. Contact supplier if guidance is required.

EWC Nr. 16 05 04*

14 TRANSPORT INFORMATION**ADR/RID**

Class 2 Classification Code 1F

UN number and proper shipping name

UN 1049 Hydrogen, compressed

UN 1049 Hydrogen, compressed

Labels 2.1 Hazard number 23

Packing Instruction P200

IMDG

Class 2.1

UN number and proper shipping name

UN 1049 Hydrogen, compressed

Labels 2.1

Packing Instruction P200

EmS FD, SU

IATA

Class 2.1

UN number and proper shipping name

UN 1049 Hydrogen, compressed

Labels 2.1

Packing Instruction P200

Other transport information

Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers ensure that they are firmly secured. Ensure that the cylinder valve is closed and not leaking. Ensure that the valve outlet cap nut or plug (where provided) is correctly fitted. Ensure that the valve protection device (where provided) is correctly fitted. Ensure adequate ventilation. Ensure compliance with applicable regulations.

15 REGULATORY INFORMATION**Further national regulations**

Regulations for the prevention of industrial accidents

Pressure Vessel Regulation

Technische Regeln für Gefahrstoffe (TRGS)

Water pollution class

Not polluting to waters according to VwVwS from 27.07.2005.

16 OTHER INFORMATION

Ensure operators understand the flammability hazard. The hazard of asphyxiation is often overlooked and must be stressed during operator training. Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.

Advice

Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted. Details given in this document are believed to be correct at the time of going to press.

Further information

Hommel: Handbook of dangerous goods

Linde safety advice

No. 3 Oxygen deficiency

No. 7 Safe handling of gas cylinders and cylinder bundles

No. 11 Transport of gas receptacles in vehicles

No. 13 Handling of hydrogen

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