

SAFETY DATA SHEET

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Revised edition no : 1

Date : 7 / 30 / 2010

Supersedes : 7 / 30 / 2010

Hydrogen**SDB 1 3 060**

2.1 : flammable gas.

Danger

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

Product identifier**Trade name**

: Hydrogen

SDS Nr

: SDB 1 3 060

Chemical description

: Hydrogen

CAS No :001333-74-0

EC No :215-605-7

Index No :001-001-00-9

Chemical formula: H₂**Registration-No.**

: Listed in Annex IV / V REACH, exempted from registration.

Use

: Industrial and professional. Perform risk assessment prior to use.

Company identification

: Kraiss & Friz KG

Neckarstrasse 182

70190 Stuttgart GERMANY

Tel : 00 49 711 285 340

Fax : 00 49 711 26 04 77

e-Mail : info@kraissundfriz.de

Emergency telephone number

: 00 49 172 740 2115

2 Hazards identification

Classification of the substance or mixture

Hazard Class and Category Code**Regulation EC 1272/2008 (CLP)****• Physical hazards**

: Flammable gases - Category 1 - Danger (H220)

Gases under pressure - Compressed gas - Warning (H280)

Classification EC 67/548 or EC 1999/45 : F+; R12

Label elements

Labelling Regulation EC 1272/2008 (CLP)**• Hazard pictograms****Kraiss & Friz KG**

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2 Hazards identification (continued)

- Hazard pictograms code
 - Signal word : Danger
 - Hazard statements : 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.
- Labelling EC 67/548 or EC 1999/45
- Symbol(s) : F+ : Extremely flammable
- R Phrase(s) : R12 : Extremely flammable.
- S Phrase(s) : S9 : Keep container in a well-ventilated place.
S16 : Keep away from sources of ignition - No smoking.
S33 : Take precautionary measures against static discharges.

Other hazards

Other hazards : None.

3 Composition/information on ingredients

Substance / Preparation : Substance.

Substance name	Contents	CAS No	EC No	Index No	Registration no	Classification
Hydrogen	100 %	1333-74-0	215-605-7	001-001-00-9	NOTE 1	F+; R12 Flam. Gas 1 (H220) Press. Gas (H280)

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

Note 1: Listed in Annex IV / V REACH, exempted from registration.

Note 2: Registration deadline not expired.

Full text of R-phrases see chapter 16

4 First aid measures

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.
- Extinguishing media
- Suitable extinguishing media : All known extinguishants can be used.
- Specific methods : If possible, stop flow of product.
Move away from the container and cool with water from a protected position.
Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire.

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5 Fire-fighting measures (continued)

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.
Evacuate area.
Ensure adequate air ventilation.
Consider the risk of explosive atmospheres.
Eliminate ignition sources.

Environmental precautions : Try to stop release.

Clean up methods : Ventilate area.

7 Handling and storage

Handling : Take precautionary measures against static discharge.
Purge air from system before introducing gas.
Suck back of water into the container must be prevented.
Do not allow backfeed into the container.
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 container handling instructions.

Storage : Keep container below 50 °C in a well ventilated place.
Segregate from oxidant gases and other oxidants in store.

8 Exposure controls/personal protection

Personal protection : Ensure adequate ventilation.
Do not smoke while handling product.

9 Physical and chemical properties

Physical state at 20 °C : Gas.

Colour : Colourless.

Odour : None.

Molecular weight : 2

Melting point [°C] : -259

Boiling point [°C] : -253

Critical temperature [°C] : -240

Vapour pressure [20 °C] : Not applicable.

Relative density, gas (air=1) : 0.07

Relative density, liquid (water=1) : 0.07

Solubility in water [mg/l] : 1.6

Flammability range [vol% in air] : 4 to 75

Auto-ignition temperature [°C] : 560

Other data : Burns with an invisible flame.

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10 Stability and reactivity

- Hazardous decomposition products** : None.
- Incompatible materials** : Can form explosive mixture with air.
May react violently with oxidants.
Air, Oxidiser.
- Conditions to avoid** : Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

11 Toxicological information

- Toxicity information** : No known toxicological effects from this product.

12 Ecological information

- Ecological effects information** : 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.

14 Transport information

- UN number** : 1049
- Labelling ADR, IMDG, IATA**



- : 2.1 : flammable gas.

Land transport

- ADR/RID**
- H.I. nr** : 23
- UN proper shipping name** : HYDROGEN, COMPRESSED
- Transport hazard class(es)** : 2
- ADR/RID Classification code** : 1 F
- Packing Instruction(s) - General** : P200
- Tunnel Restriction** : B/D Tank carriage: Passage forbidden through tunnels of category B, C, D and E;
Other carriage: Passage forbidden through tunnels of category D and E

Sea transport

- IMO-IMDG code**
- Proper shipping name** : HYDROGEN, COMPRESSED
- Class** : 2.1
- IMO Packing group** : P200
- Emergency Schedule (EmS) - Fire** : F-D
- Emergency Schedule (EmS) - Spillage** : S-U

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14 Transport information (continued)

- Instructions - Packing : P200

Air transport

- ICAO/IATA

- Proper shipping name : HYDROGEN, COMPRESSED

• Class : 2.1

• Passenger and Cargo Aircraft : DO NOT LOAD IN PASSENGER AIRCRAFT.

• Cargo Aircraft only : Allowed.

- Packing instruction : 200

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 containers are firmly secured.
- Ensure cylinder valve is closed and not leaking.
- Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
- Ensure valve protection device (where provided) is correctly fitted.
- Ensure there is adequate ventilation.
- Compliance with applicable regulations.

15 Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture : Ensure all national/local regulations are observed.

Seveso regulation 96/82/EC : Listed

16 Other information

Ensure operators understand the flammability hazard.

The hazard of asphyxiation is often overlooked and must be stressed during operator training.

List of full text of R-phrases in section 3. : R12 : Extremely flammable.

This Safety Data Sheet has been established in accordance with the applicable European Directives and applies to all countries that have translated the Directives in their national laws.

DISCLAIMER OF LIABILITY : Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.
Details given in this document are believed to be correct at the time of going to press. 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.

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