

SAFETY DATA SHEET

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Complying with 1907/2006/EEC Regulation of 18 December 2006 ("REACH Regulation") and REGULATION (EC) No 1272/2008 (CLP)

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

Product name: **Hydrogen**
Chemical name and synonyms: Hydrogen
Chemical formula: H₂
Product type: Compressed gas
CAS number: 1333-74-0
EC number: 215-605-7
Relevant identified use: Industrial
Company: Dor Chemicals Ltd.
Address: P.O.Box 10036, Haifa
Phone: +972- 4-8465000
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SECTION 2: Hazards identification

Classification of the substance or mixture

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

Product name	GHS Classification
Hydrogen	Flam. Gas. 1; H220 Press. Gas

Classification according to Directive 67/548/EEC (DSD) or 1999/45/EC

Product name	EU Classification
Hydrogen	F+; R12 Xn; R20/21/22 Xi; R36

Label elements

Labeling in accordance with Regulation 1272/2008

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(CLP) Hazard pictograms:



Signal word: Danger

Hazard statements:

H220: Extremely flammable gas.

Precautionary Statements:

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

P377: Leaking gas fire – do not extinguish unless leak can be stopped safely.

P381: Eliminate all ignition sources if safe to do so

P403: Store in a well ventilated place.

Other hazard

N/A

SECTION 3: Composition/information on ingredients

Substance:

Product/ Ingredient name	Identifiers	%	EU Classification	GHS Classification
Hydrogen	CAS number: 1333-74-0 EC number: 215-605-7	99.9-100	F+; R12	Flam. Gass 1; H220 Press. Gas

There are no additional ingredients present, which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in section 8.

See section 16 for the full text of the H-statements and R-phrases declared above.



SECTION 4: First aid measures

Eye contact	In case of contact with eyes rinse opened eyes under running water for at least 15 minutes and seek medical advice.
Skin Contact:	In case of contact with skin wash off immediately with mild soap and plenty of water for at least 15 minutes and seek medical advice. Ingestion: Do not induce vomiting. If victim is conscious, wash mouth thoroughly with plenty of water and give water to drink. Get medical attention immediately. Never give anything by mouth to an unconscious person.
Inhalation:	Remove the casualty into fresh air and keep him calm. Apply artificial respiration if necessary and get medical attention immediately
Ingestion:	Rinse mouth with water. Never give anything by mouth to an unconscious person. Get medical attention.

Most important symptoms and effects, both acute and delayed

In confined places may cause suffocation due to oxygen displacement. Possible symptoms: blueness, shortness of breath, unconsciousness and asphyxia. In skin contact can cause severe frostbite

Indication of any immediate medical attention and special treatment needed

Notes to physician: No specific antidote, contact Poisons Information Center. All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

SECTION 5: Fire-Fighting measures

Extinguishing media	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Special hazards	N/A
Advice for fire-fighters	Special protective equipment for fire fighters: Fire fighters should wear full protective clothing and self-contained breathing apparatus in positive pressure mode.

Use water spray to cool unopened containers.



SECTION 6: Accidental release measures

Personal precautions,
protective equipment and emergency procedures

Wear protective clothing. Avoid contact with skin eyes and inhalation of vapors. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel.

Environmental precautions

Do not let this chemical enter the environment. Keep away from drains, surface and ground water.

Methods and materials for containment
and cleaning up

Stop leakage if you can do it without risk. Ventilate area of spill.

References to other sections

See section 1 for emergency contact information

SECTION 7: Handling and storage

Precautions for safe handling

Handling

Avoid inhalation. Handle in accordance with good industrial hygiene and safety practice.

Hygiene Measures

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also section 8 for additional information measures.

Safe storage, including any incompatibilities:

Store in a cool place. Keep container tightly closed in a dry and well-ventilated place. Keep away from acids, bases, oxidizing agents.

Specific end use(s)

N/A

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SECTION 8: Exposure control/personal protection

Control parameters _____

Occupational exposure limit values:

Ingredient name	Occupational exposure limits
Hydrogen	ACGIH-TLV Simple asphyxiant

Engineering Measures

Use process enclosures, local exhaust ventilation, or others engineering controls to keep airborne levels below recommend exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Hand Protection

Wear protective disposable gloves to prevent skin exposure

Skin Protection

Wear appropriate long-sleeved clothing to minimize skin contact.

Eye Protection

Wear protective safety glasses

Respiratory protection:

Suitable respirator. Be sure to use an approved/certified or equivalent equipment. Wear appropriate respirator when ventilation is inadequate

Environmental Exposure Controls

Not Available.



SECTION 9: Physical and chemical properties

Appearance	Compressed colourless gas
Odor	Odorless
Odor threshold	N/A
pH	N/A
Melting/freezing point	-259.2°C
Initial Boiling point	-252.8°C
Flash Point	<-150°C, closed cup
Evaporation Rate	N/A
Flammability of solids and gases	Extremely flammability in the presence of oxidizing materials
Lower explosive limit	4% (V)
Upper explosive limit	74.2% (V)
Vapour pressure	N/A
Vapour density (air=1)	0.08
Relative density	0.801 g/ml at 25°C
Solubility	Soluble in water 0.00196 g/l at 0°C
Partition coefficient: n-octanol/water	N/A
Auto-ignition temperature	500-571°C
Decomposition temperature	N/A
Viscosity	N/A
Explosive properties	N/A
Oxidizing properties	N/A
Molecular weight	2.02 g/mol

SECTION 10: Stability and reactivity

Reactivity	No specific test data related to reactivity available for this product or its ingredients
Chemical stability	The product is stable under normal handling and storage conditions
Possibility of hazardous reactions	No hazardous reactions are foreseeable in normal conditions of use and storage.
Conditions to avoid	Heat, flames and sparks.
Incompatible materials	Oxidizing agents
Hazardous decomposition products	Information not available

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SECTION 11: Toxicological information

Acute Toxicity:	N/A
Skin corrosion/irritation:	N/A
Serious eye damage/irritation:	N/A
Respiratory or skin sensitization:	N/A
Germ cell mutagenicity:	N/A
Carcinogenicity:	N/A
Reproductive toxicity:	N/A
Specific target organ toxicity (single exposure):	N/A
Specific target organ toxicity: (repeated exposure):	N/A
Aspiration hazard:	N/A

SECTION 12: Ecological information

Toxicity	N/A
Persistence and Degradability:	N/A
Bioaccumulative potential:	N/A
Mobility in soil	N/A
Results of PBT and vPvB assessment	N/A
Other adverse effects	N/A

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SECTION 13: Disposal Considerations

Waste treatment methods Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Hazardous waste N/A

SECTION 14: Transport information

International transport regulations

UN Number: ADR/RID:1049; IMDG: 1049; IATA: 1049

Proper shipping name: ADR/RID: Hydrogen Compressed; IMDG: Hydrogen Compressed; IATA: Hydrogen Compressed

Transport hazard Class: ADR/RID:2.1 ; IMDG: 2.1; IATA: 2.1

Packing group: ADR/RID:- ; IMDG: -; IATA: -

Environmental hazard: ADR/RID:-; IMDG -; IATA: -

Special precautions for user: N/A

Additional information ADR/RID:-; IMDG -; IATA: -

Transport to bulk according
to Annex II of MARPOL
and the IBC Code N/A

SECTION 15: Regulatory information

Safety, health and environmental regulations /legislation specific for the substance or mixture:

EU Directives 67/548/EEC and 1999/45/EC (including amendments) EU Regulation(EC) No.1907/2006 (REACH), No 1272/2008 (CLP)

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Chemical safety assessment:

Data not Available

SECTION 16: Other information

Full text of R-phrases referred to in section 3:

R12: Extremely flammable

Safety phrases:

S09: Keep container in a well-ventilated place.

S16: Keep away from sources of ignition - No smoking.

S33: Take precautionary measures against static discharges.

Full text of Hazards Statements referred to in section 3:

H220: Extremely flammable gas.

Precautionary Statements:

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

P377: Leaking gas fire – do not extinguish unless leak can be stopped safely.

P381 Eliminate all ignition sources if safe to do so.

P403: Store in a well ventilated place.

Training advice: Before using/handling the product one must read carefully present MSDS.

Recommended restriction: N/A

Key Legend Information:

ACGIH- American Conference of Governmental Industrial Hygienists OSHA- Occupational Safety and Health Administration

NTP- National Toxicology program

IARC- International Agency for Research on Cancer

ND- Not Determined

N/A- Not available

R-phrases- Risk phrases

S-phrases- Safety phrases

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Version	Date	Prepared by
1	11/06/20	Dorit Plat, PhD Information Specialist