


 al kout industrial projects الكوت للمشاريع الصناعية	AL KOUT INDUSTRIAL PROJECTS	Document No:	C-SM-XX-D-08
		Issue No:	1
	Rev no:	4	
	Safety Data Sheet HYDROGEN	Date revision	21.11.2018
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1.0 Chemical Identity		
1.1	Product Name	Hydrogen
	Synonyms	Hydrogen
	Formula	H ₂
1.2	Recommended Use and Restrictions	
	Use of substance	Industrial use. Use as directed.
1.3	Company Information	
		Name: Al Kout Industrial Projects , Kuwait Plant: Salt & Chlorine Plant, Shuaiba, Kuwait Company's Post Box No.: 10277, Shuaiba-65453, Kuwait Tel No.: 00-(965)-22283726 Intercom: 3726, 3725 Fax No.: 00-(965)- 22284043 Company's Emergency Phone No: 00-(965)-, 23261029, 97216020, 99794511
1.4	Emergency Telephone Number	00-(965)-, 23261029, 97216020
2.0 Hazards Identification		
2.1	Classification of the Substance or Mixture	
GHS US Classification		
	Flame Gas1	H220
	Compressed Gas	H280
2.2	Label Elements	
GHS US Labeling		
Hazard Pictograms (GHS – US) : <div style="display: flex; justify-content: space-around; align-items: center;">   </div>		
Single Word (GHS-US) : Danger Hazard Statements (GHS-US) : H220 - EXTREMELY FLAMMABLE GAS H280 - CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED OSHA-H01 - MAY DISPLACE OXYGEN AND CAUSE RAPID SUFFOCATION CGA-HG04 - MAY FORM EXPLOSIVE MIXTURES WITH AIR CGA-HG08 - BURNS WITH INVISIBLE FLAME Precautionary Statements (GHS – US) : P202 - Do not handle until all safety precautions have been read and understood P210 - Keep away from Heat, Open flames, Sparks, Hot surfaces. - No smoking P271+P403 - Use and store only outdoors or in a well-ventilated place P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely P381 - Eliminate all ignition sources if safe to do so CGA-PG05 - Use a back flow preventive device in the piping CGA-PG10 - Use only with equipment rated for cylinder pressure CGA-PG12 - Do not open valve until connected to equipment prepared for use CGA-PG06 - Close valve after each use and when empty CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C (125°F)		
2.3	Other Hazards	
No additional information available		
2.4	Unknown acute toxicity (GHS US)	
Not Applicable		


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3.0 Composition/ Information on ingredients			
3.1	Substances		
Name : Hydrogen, Compressed CAS No : 1333-74-0 EINECS number : 215-605-7 Finished Product Specification : Hydrogen			
Chemical Analysis			
No	Component	Unit of measurement	Value
	Hydrogen	Vol %	≥ 99.99
	Oxygen	Vol %	≤ 0.007
	Moisture as H ₂ O	Vol %	≤ 0.003

4.0 First Aid Measures		
4.1	Inhalation	In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. In low concentrations may cause narcotic effects. Symptoms may include dizziness, headache, nausea and lack of co-ordination. Remove victim to uncontaminated area wearing self-contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing has stopped.
4/2	Skin / Eye contact	In case of cold burns, flush copiously with water and obtain medical attention.
4.4	Ingestion	Ingestion is not considered a potential route of exposure

5.0 Fire Fighting Measures		
5.1	Fire and Explosion hazards	Extremely flammable gas. Hydrogen is very light and may collect in the upper portions of storage areas. It burns with an almost invisible flame.
5.2	Suitable Extinguishing Media	Water, Dry chemical, Carbon dioxide can be used.
5.3	Specific Hazards	Exposure to fire may cause containers to rupture/explode.
5.4	Specific Methods	If safe to do so, close cylinder valve. Move container away or cool with water from a protected position. Do not extinguish a leaking gas flame unless absolutely necessary, spontaneous re-ignition may occur. Extinguish any other fires in area.
5.5	Special Protective Equipment for Fire Fighters	In confined spaces use self-contained breathing apparatus

6.0 Accidental Release Measures		
	Emergency Overview	Do not attempt to extinguish a gas fire unless leak source can be isolated and shut off. Hydrogen burns with an invisible to pale blue flame that is often difficult to see. Use massive quantities of water to cool fire-exposed containers. Immediately withdraw in case of fire and tank venting or heat discoloration of a tank. Gas may travel to source of ignition and flash back. Excessive amounts of gas in an enclosed space can displace the available oxygen and cause asphyxiation.

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6.1	Personal Precautions	Evacuate area. Ensure adequate air ventilation. Eliminate ignition sources. Wear self-contained breathing apparatus when entering area unless atmosphere is proved be safe.
6.2	Clean Up Methods	Ventilate area.

7.0 Handling and Storage

7.1	Handling	Earth-ground and bond all lines and equipments associated with the Hydrogen system. Electrical equipment should be non-sparking and explosion proof. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.
7.2	Storage	Store out of doors or in a well ventilated storeroom. Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Segregate from oxidant gases or other flammable materials in store. Keep away from ignition sources including static discharges. Keep container below 50°C in a well-ventilated place. Do not subject cylinder to shock. Post "No Smoking/No Open Flames" signs in storage and use areas. There must be no sources of ignition.

8.0 Exposure Controls/Personal Protection

8.1	Engg controls	Provide natural or explosion proof ventilation adequate to ensure that hydrogen do not reach its LEL concentration of 4 %.
8.2	Respiratory protection	
8.2.1	General use	None
8.2.2	Emergency use	Air supplied respirators are required in Oxygen-deficient atmospheres. Before entering the area, you must check for flammable or oxygen deficient atmospheres.
8.3	Other PPE	Protective Gloves, Safety glasses are required when handling Hydrogen cylinders

9.0 Physical and Chemical Properties

9.1	Appearance/ Colour	Colourless gas
9.2	Odour	Odourless
9.3	Molecular Weight	2
9.4	Melting Point	-259°C
9.5	Boiling Point	-253°C
9.6	Critical Temperature	-240°C
9.7	Relative Density (Gas) (air = 1)	0.07
9.8	Vapour Pressure @ 20°C	Not applicable
9.9	Solubility (water)	1.6 mg/l
9.10	Auto Ignition Temperature	570°C
9.11	Flammability Range	4 – 75 vol. % in air

10.0 Stability and Reactivity


10.1	Can form explosive mixture with air. May react violently with oxidants.
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11.0 Toxicological Information

11.1	No known toxicological effects from this product
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12.0 Ecological Information


12.1	No known ecological effects from this product
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13.0 Disposal Considerations

13.1	Do not discharge into areas where there is a risk of forming an explosive mixture with air, or where its accumulation could be dangerous. Waste gas should be flared through a suitable burner with flash back arrestor.
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14.0 Transport Information

14.1	UN No	1049
14.2	IMCO Class	2.1 
14.3	ADR/RID classification code	1F
14.4	Packaging	In carbon steel cylinders.

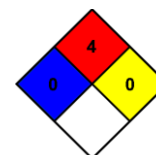
15.0 Regulatory Information

15.1	Kuwait EPA(Environmental Public Authority)
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16.0 Other Information

16.1	Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).
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NFPA health hazard	: 0 - Exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials.
NFPA fire hazard	: 4 - Will rapidly or completely vaporize at normal pressure and temperature, or is readily dispersed in air and will burn readily.
NFPA reactivity	: 0 - Material that in themselves are normally stable, even under fire conditions.
Hazard Rating	
Health	: 0 Minimal Hazard - No significant risk to health
Flammability	: 4 Severe Hazard
Physical	: 3 Serious Hazard



This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.