

MATERIAL SAFETY DATA SHEET



SECTION I : MATERIAL IDENTIFICATION : HYDROGEN - Used in Hydrogenation, Welding, Cutting, refining in Petroleum industries.

Material

Name/Identifier - HYDROGEN / H_2 , COLOURLESS, ODOURLESS GAS

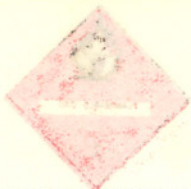
Manufacturer's Name:	CENTURY CHEMICALS	Supplier's	CENTURY CHEMICALS
Street Address	MURBAD ROAD	Street Address	MURBAD ROAD.
City	SHAHAD	City	SHAHAD
State	MAHARASHTRA	State	MAHARASHTRA
Postal Code	421 103	Postal Code	421 103
Emergency Tel No.	0251-2733670-79	Emergency Tel No.	0251-2733670-79 Ulhasnagar
Chemical Name	HYDROGEN	Chemical Identity	COMPRESSED GAS
Trade Name & Synonyms	HYDROGEN	Product Use	Hydrogenation of oils Refining in Petroleum Industry, Cutting, Welding

SECTION II : HAZADOUS INGREDIENTS OF MATERIAL

Hazardous Ingredients	Approximate Conc. %	CAS or UN Number	LD 50 (Specify Species & Route)	LC 50 (Specify Species & Route)
Hydrogen Gas	99.5% min	1049 UN Number		

SECTION III - PHYSICAL DATA FOR MATERIAL

Physical State Gas/Liquid/Solid GAS	Odour & Appearance Odourless, colourless	Odour Threshold (ppm)
Specific Gravit,	Vapour Pressure (mm)	Vapour Density (Air-1) 0.069
Evaporation Rate :-	Boiling Point (°C) -252.8°C	Freezing Poine (°C)
Solubility in Water (20°C) - Slightly in Water	PH	Density (g/ml) 0.0899 g/ml
Coefficient of Water/oil distribution	Auto ignition temp 585°C	Molecular weitht: 2.016 Melting Point:-259.18°C



SECTION IV : FIRE AND EXPLOSION HAZARD OF MATERIAL

Flammability - Yes/No Yes - LEL 4.1% UEL 74.2%	Means of Extinction By Closing Valve	Special Procedures Fire brigade should be made aware of cylinders, equpt & storing hydrogen.
Flash Point (°C) and method :-	Upper Explosive Limit 74.2% by volv in air	Lower Explosive Limit 4.1% by volv in air
Auto-ignition temp (°C) 585°C	TDG flammability Class 2	Hazardous combustion Product.
Explosion data - Sensitivity to Chemical impact	- -	Sensivity to static dis- Charge -

SECTION V : REACTIVITY DATA

Chemical Stability Yes/No. If No., under what condition	No. Extremely flammable in air. Forms flammable mixtures with hydrogen.
Incompatibility with other substances - Yes/No If Yes, which ones	With oxygen it forms explosive
Reactivity and under what conditions	Hydrogenation of oils under pressure
Hazardous decomposition Products	Nil
Material Name/Identifier	HYDROGEN COMPRESSED GAS

SECTION VI : TOXICOLOGICAL PROPERTIES OF MATERIAL (route of entry)

Skin Contact -	Skin Absorption -	Eye Contact -
Inhalation acute Causes choking in throat	Inhalation chronic Asphyxia	Ingestion -

EFFECTS OF ACUTE EXPOSURE TO MATERIAL

Asphyxia will need administering of oxygen.

Effects of Chronic exposure to material	Exposure limit (s)	Irritancy of material
Choking in throat	LEL 4.1% UEL 74.2%	-

SENSITIZATION TO MATERIAL (Carcinogenically, Reproductive Effects, Tetratogenic-ally, Mutagenicity)

High concentration of hydrogen causes choking sensation in the throat and causes asphyxia and unconsciousness.

Synergistic materials : Same as above

SECTION VII : PREVENTIVE MEASURES

- 1 Provide good ventilation
- 2 Store in cool, fire proof ventilated place seperated from other cylinders.
- 3 Open space is suitable for storage (but must have shade from direct sunlight)
- 4 Ventilate gas at highest Point
- 5 Flame proof lights required
- 6 provide all fire fighting arrangements
- 7 Provide effective earthing to pipelines for removal of static electricity
- 8 Leak tight joints for pipe flanges, valve glands etc

PERSONAL PROTECTIVE EQUIPMENT

Glove (Specify)	
Respiratory (Specify)	
Eyes (Specify)	
Footwear (Specify)	Footwear sole should not have iron nails to avoid sparks
Clothing (Specify)	Asbestos suit for fire fighting, Cotton is preferred. synthetic material generate static charges, hence to be avoided.
Others (Specify)	

ENGINEERING CONTROLS (e.g., Ventilation, Enclosed Process etc) Pls. specify

<u>Leak & Spill Procedures</u> Gas test with explosive meter Suitable for hydrogen. Care required to secure leak-tight joints.	<u>Waste Disposal</u>
<u>Handling Procedure & Equipment</u> In Cylinders and Pipelines, earthing is to done to avoid fire	<u>Storage requirements</u> Good ventilated place. Storing in cylinders in small quantity. Provide fire fighting arrangement.

Special Shipping Information

UN No 1049 - HAZCHEM symbol = 2 S E
 S = Fire and Explosive Hazard, E - Consider Evacuation
 Class 2, Gases, Compressed, liquified, dissolved under pressure or deeply refrigerated. Symbol Inflammable gases, Symbol (flames, black - white - Background RED.

SECTION VIII : FIRST AID MEASURESFIRST AID MEASURES

Burns to be treated. Pour water on burns for half an hour and do not apply ointment. Transport Victim to hospital and administer oxygen.

SOURCES USED

TDG - UN Nations - New York 1984
 Fire Safety Data Sheet - LPA
 Safety Chemical Information Sheet - Publisher ICMA - Bombay
 IS 9570-1980 classification of flammable gases.

ADDITIONAL INFORMATION

- 1 Non sparking tools such as spanners, hammers to be used to avoid sparks.
- 2 All pipelines equipments to be earthed to avoid static electricity
- 3 Fire fighting equipments etc to be kept ready at all times
- 4 Gas to be vented at high level in air
- 5 Gases to be stored in flame proof area separated from other gas cylinders.
- 6 Reacts vigorously with oxidising agents.
- 7 Static electricity prevention by providing rigid earth connection to pipelines
- 8 Persons entering hydrogen production area must touch earthing strips (Specially provided) to remove any static electrical charge on their bodies.

SECTION IX : DATE OF PREPARATION OF MATERIAL SAFETY DATA SHEET

Prepared by Safety Dept., CENTURY RAYON, Tel No

Ulhasnagar

0251-2733670-79

18.6.90

NOTES

- 1 CAS or UN Number - Chemical Abstract Service or United Nations (UN) Number
- 2 LD 50 - Lethal dose 50 (LD 50 - specify species and route)
- 3 LC 50 - Lethal concentration 50% (LC 50 Specify species and route)
- 4 TDG flammability - Transport of Dangerous Goods flammability classification by United Nations.
