

# Hydrogen

1	Name	HYDROGEN
2	Formula	H <sub>2</sub>
3	CAS Number	1333-74-0
4	Molecular Weight	2.016
5	Melting point	13.95 K , -259.2 C , -434.56 F
6	Boiling point @ 101.325 kPa (1 atm)	20.39 K , -252.76 C , -422.97 F
7	Critical Temperature	33.18 K , -239.97 C , -399.95 F
8	Critical Pressure	13.13 bar , 12.96 atm , 190.43 psia
9	Critical Volume	64.15 cm <sup>3</sup> /mol
10	Critical Density	0.0314 g/cm <sup>3</sup>
11	Critical Compressibility Factor	0.305
12	Acentric Factor	-0.220
13	Density of Liquid @ -250 C	0.067 g/cm <sup>3</sup>
14	Coefficient of thermal Expansion of Liquid @ 25 C	0.0209 1/C
15	Surface Tension @ -259 C	2.99 dynes/cm
16	Density of Gas @ 1 atm and 70 F (21.1 C)	0.083 kg/m <sup>3</sup> , 0.0052 lb/ft <sup>3</sup>
17	Relative Density of Gas @ 1 atm and 70 F (Air =1)	0.07
18	Enthalpy of Vaporization @ Boiling Point	228.17 kJ/kg , 98.11 BTU/lb
19	Enthalpy of Fusion @ Melting Point	58.04 kJ/kg , 24.96 BTU/lb
20	Heat Capacity of Gas @ 25 C , Constant Pressure (CP)	14.268 kJ/(kg K) , 3.41 BTU/(lb R)
21	Heat Capacity of Gas @ 25 C , Constant Volume (CV)	10.144 kJ/(kg K) , 2.424 BTU/(lb R)
22	Ratio of Heat Capacities for Gas , CP/CV	1.407
23	Heat capacity of Liquid @ -253 C	9.457 kJ/(kg K) , 2.26 BTU/(lb R)
24	Heat capacity of Solid @ -260 C	2.842 kJ/(kg K) , 0.679 BTU/(lb R)
25	Entropy of Gas @ 25 C	130.57 J/(mol K)
26	Entropy of Formation of Gas @ 25 C	0 J/(mol K)
27	Enthalpy of Formation of Gas @ 25 C	0 kJ/mol
28	Gibbs Energy of Formation of Gas @ 25 C	0 kJ/mol
29	Solubility Parameter	6.648 (J/cm <sup>3</sup> ) <sup>0.5</sup>
30	Liquid Volume	28.604 cm <sup>3</sup> /mol
31	Solubility in Water @ 25 C	1.53 parts per million (wt)
32	Octanol-Water Partition Coefficient , log K <sub>OW</sub>	-
33	Henry's Law Constant for Compound in Water @ 25 C	70832.1 atm/mol fraction
34	Viscosity of Gas @ 25 C	88.05 micropoise
35	Viscosity of Liquid @ -250 C	0.011 centipoise
36	Thermal Conductivity of Gas @ 25 C	0.17064 watts/(m K)
37	Thermal Conductivity of Liquid @ -250 C	0.1314 watts/(m K)
38	Lower Explosion Limit in Air	4 vol %
39	Upper Explosion Limit in Air	75 vol %
40	Flash Point Temperature	-
41	Autoignition Temperature	400 C , 752 F
42	Enthalpy of Combustion @ 25 C (77 F)	119950.4 kJ/kg , 51578.7 BTU/lb
43	Threshold Limit Value (ACGIH)	-
44	Permissible Exposure Limit (OSHA)	-
45	Recommended Exposure Limit (NIOSH)	-