

Properties of Hydrogen

Hydrogen, a colorless, odorless, and tasteless gas, is the most plentiful element in the Universe and one of the most flammable. It makes up 75% of the mass of the visible matter in all the stars & galaxies. It is also the simplest and the lightest element. It consists of a diatomic molecule, each atom with a nucleus with 1 unit of positive charge orbited by 1 electron. It's three isotopes include Protium, mass 1, which makes up 99.985% of the element's natural occurrences, Deuterium, mass 2, 0.015%, and Tritium, mass 3, a negligibly small percentage. Hydrogen was discovered by Henry Cavendish in 1766.

Bill Chase - 2/24/08

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Atomic number	1
Atomic mass	1.007825 grams/mole
Molecular weight	2.01594g.
Density at 32 degrees F	0.005611 lbs/cubic ft.
Specific gravity (Air =1)	0.06998
Specific heat	3.425 BTU/lb Degree F
Melting temp.	-259.2 Degrees C
Boiling temp.	-423.2 Degrees F
Latent heat of vaporization	191.7 BTU/lb
Auto ignition temp.	1085 Degrees F
Flame temp. in air	3713 Degrees F
Ignition energy	1.9 E-8 BTU
Max. flame velocity	9.28 ft/sec
Flamability range in air	4.0 - 75.0 % by vol.

Fuel Energy Comparison	Hydrogen (kg)	Natural Gas (million cu ft)	Crude Oil (barrels)	Gasoline (gallons)	Diesel (gallons)
Hydrogen, 1 kg	1.0	0.000117	0.0211	0.992	0.896
Natural Gas, 1 million cubic ft.	8538	1.0	180.5	8468	7653
Crude Oil, 1 barrel	47.30	0.00554	1.0	46.91	42.40
Gasoline, 1 gallon	1.008	0.000118	0.0213	1.0	0.904
Diesel, 1 gallon	1.116	0.000131	0.0236	1.106	1.0
1 kg = 2.2046 lb					
1 barrel = 42 gallons					
Source: U.S.D.O.E. Hydrogen Analysis Resource Center					