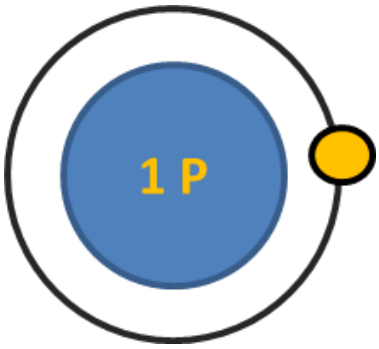
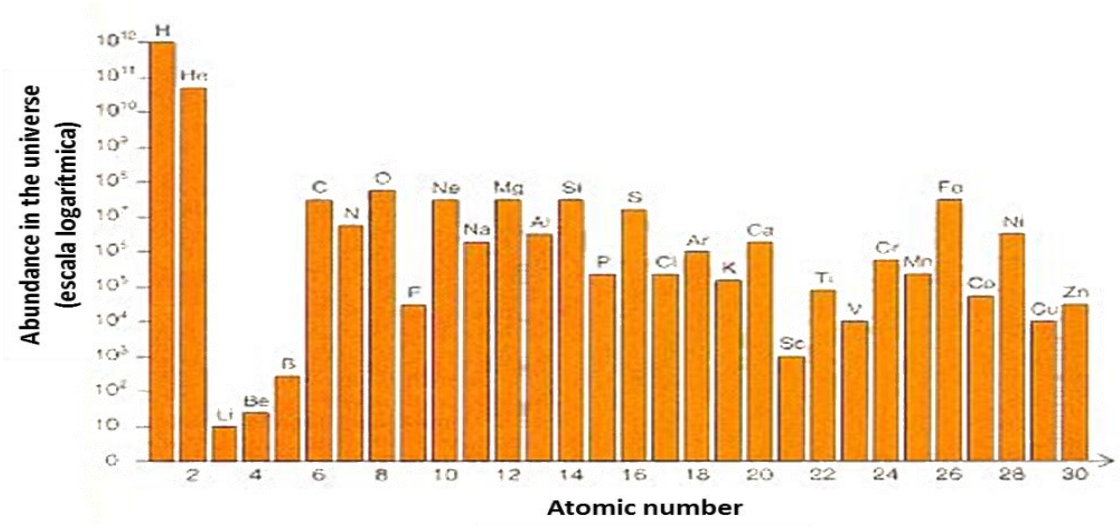
HYDROGEN



Hydrogen is a chemical element with symbol “H” and atomic number 1. Hydrogen plays an important role in acid-base chemistry, for many chemical reactions exchanging protons between soluble molecules.

Hydrogen is the lightest element and in its monoatomic H1 is the most abundant chemical substance constituting 75% of the baryonic mass of the universe and 90% of the atoms in the universe by number.



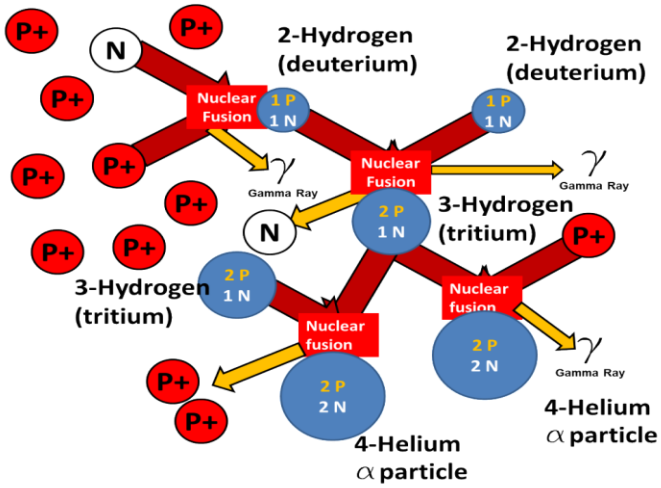
Hydrogen is found in great abundance in stars like the sun and gigantic planets in the plasma state and gaseous state resulting in very high electrical conductivity and electric emission strongly influenced by magnetic and electric fields. Molecular clouds of H2 are associated with a star formation. The remnant stars are composed primarily of hydrogen in its plasma state.

Hydrogen has 3 natural isotopes, known as 1-H, 2-H and 3-H. The most common isotope of hydrogen is 1-H (99.98%), known as “protium” with a simple proton and no neutrons.

The 2-H is deuterium is not radioactive, contains one proton and one neutron in its nucleus, and was mainly produced in the Big Bang. The 3-H is “tritium” and contains one proton and two neutrons in its nucleus, being radioactive and decaying to 3-Helium with an average life of 12.32 years.

It is estimated that 75% of the hydrogen atoms were formed during the “primordial nucleosynthesis” just moments after the start of the universe at temperatures of 100 billion°K between hundredths of a second up to 225 seconds of existence of the universe when the temperature had fallen to 1 Billion ° K and the temperature allowing the formation of nuclei of 2-Hydrogen deuterium.

At 35 minutes old of the universe, the temperature was 300 million°K, so the material consisted only of ionized protons and no nuclear fusions are performed. Because the temperature is so high, the material as electrons, positrons, protons and neutrinos will not be attached to protons until the universe was 700,000 years old when the temperature drops to several thousand ° K forming the first hydrogen atoms.

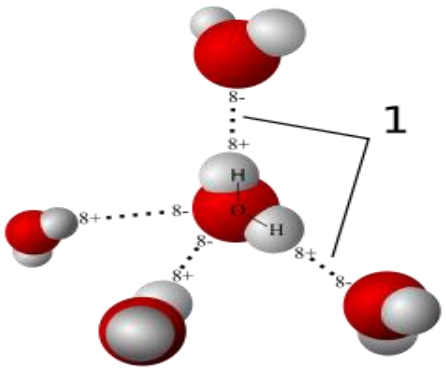


Under conditions of standard temperature and pressure of the Earth, hydrogen is colorless, odorless, tasteless, non-toxic, and forms a highly combustible gas with H2 formula.

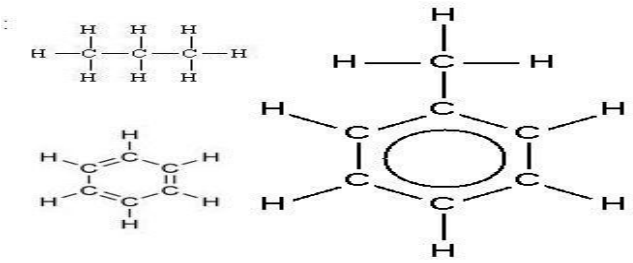
However, hydrogen can make spontaneous ignition in air at 500 ° C, emitting ultraviolet light which is nearly invisible to the human eye. The enthalpy of combustion for hydrogen is -286 kJ / mol, 2 H2 (g) + O2 (g) → 2H 2 O (l) + 572 kJ (286 kJ / mol).

In combination with air, at concentrations of 4-74% and with chlorine between 5% and 95% hydrogen can be an explosive.

Because the hydrogen form covalent compounds quickly with nonmetallic elements, it is rarely found naturally in the Earth, being present in the molecule of water and in most organic compounds.

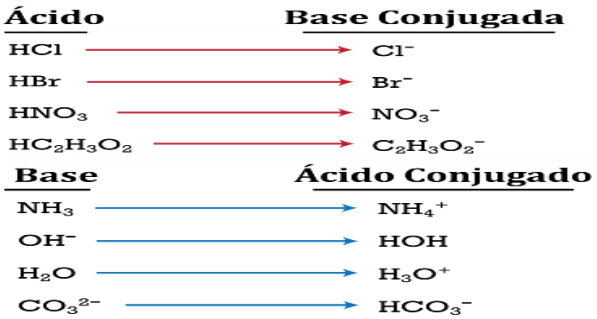


Without being very reactive under standard conditions it will form compounds with elements more electronegative such as halogens, oxygen or metals and metalloids forming “hydrides”. When hydrogen forms compounds with carbon, it will form “hydrocarbons” and “organics” in complex forms.



Hydrogen oxidation removes its electron and provides the H+, that does not contain electrons and its core is composed of one proton.

An acidic substance is a proton donor, while bases are proton acceptors, so that a substance (unless it is in the plasma state) cannot find a lost proton.



Source: http://www.artinaid.com/2013/04/hydrogen-2/