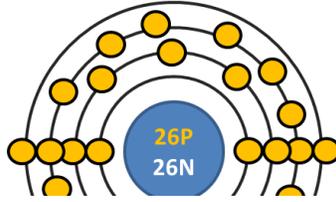


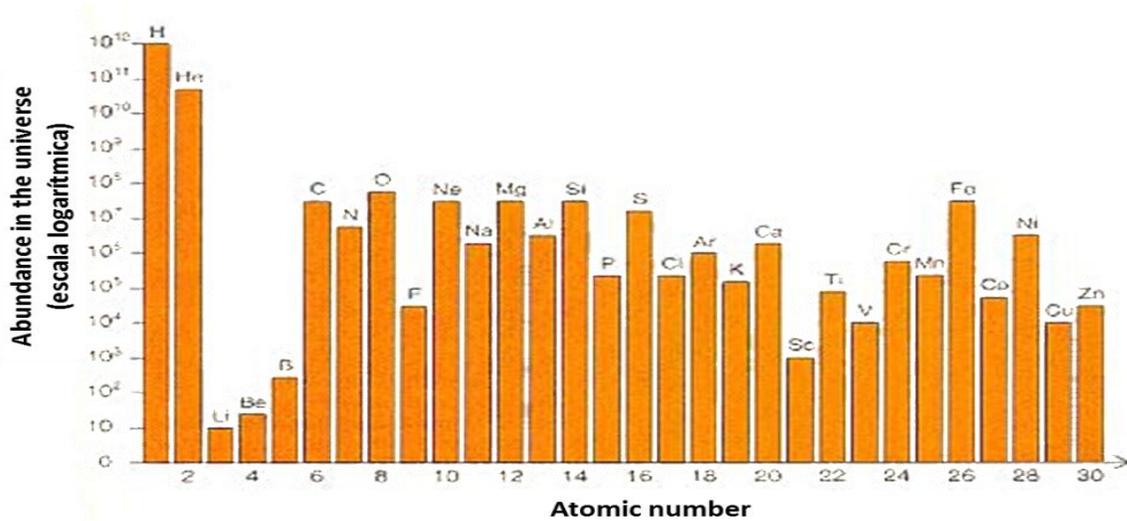
IRON



Iron is a chemical element with atomic number 26. Iron is a lustrous, ductile, malleable, silver-gray metal (group VIII of the periodic table)

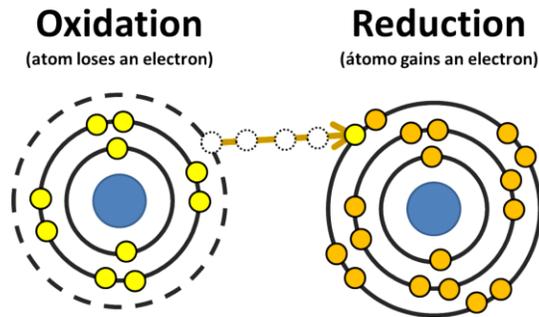


Iron is believed to be the tenth most abundant element in the universe.

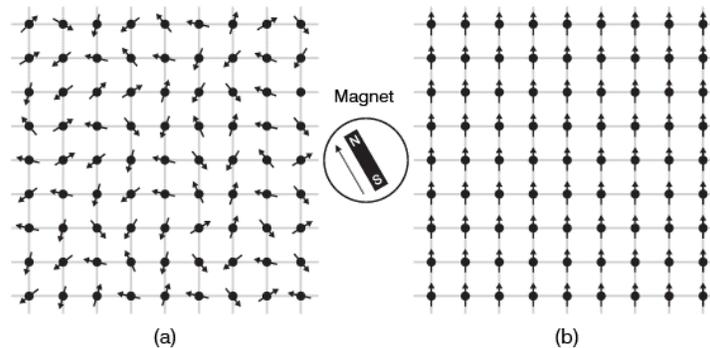


Iron has a density of 7.87 tons/m³, a melting point of 1538 ° C and boils at 2750 °

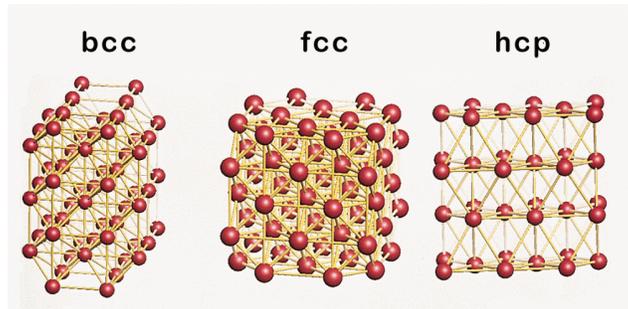
C. Its mainly oxidation state of +3 and +2, being a good reducing agent.



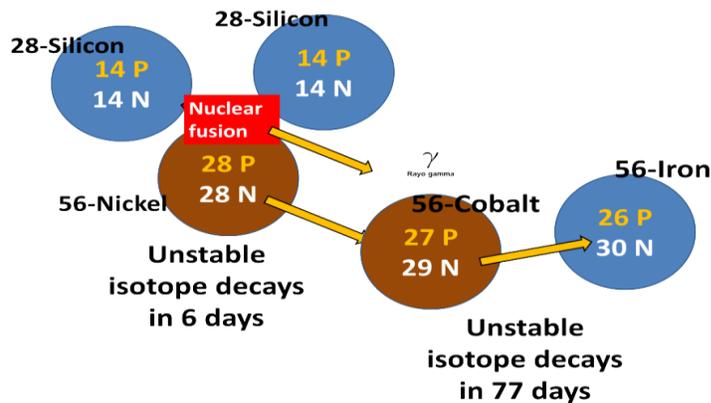
At 770 ° C the iron becomes magnetic. In the magnetized iron, all electrons revolve with a domain aligned in the same direction, while in a non-magnetized iron, are in different directions so that their fields are canceled.



The four stable isotopes have masses of 54, 56, 57 and 58, the 56-Iron is the most abundant representing 92% of Iron in the universe. Its crystal structure is cubic body centered at 911 ° C, but is dependent on temperature and pressure.



Iron is the heaviest metal that can be produced by exothermic nuclear fusion in massive stars (the nickel-56 isotope is heavier but decays rapidly in the isotope 56-iron), while the heavier elements than iron are only produced in supernovae fissions.

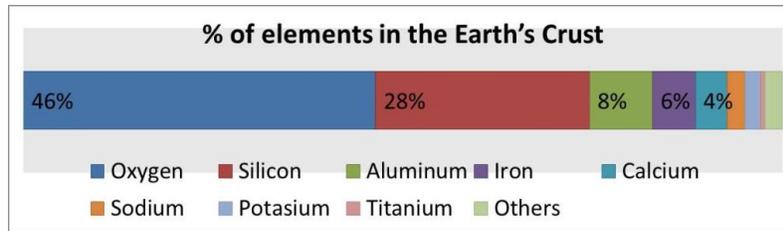


In nature it is found as part of many minerals, including oxides and rarely found in native form. The two major mineral where iron is found are hematite and limonite Fe_2O_3 ($\text{FeO}(\text{OH})$), but it can also be found in the siderite (FeCO_3), pyrite FeS_2 and chromite $\text{Fe}(\text{CrO}_2)_2$.

Iron oxides are formed when this element comes in contact with oxygen. The best known are the “iron oxide-2” (FeO) and the “iron oxide-3” (Fe_2O_3). Iron oxides have various applications: paints, iron obtention, magnetite (Fe_3O_4) and iron oxide (III) (Fe_2O_3) in magnetic applications, etc. Iron hydroxide (III) ($\text{Fe}(\text{OH})_3$) is used to concentrate the actinides radiochemical by co-precipitation.



Iron is the most abundant (by mass, 34.6%) element making up the Earth because the earth's core is believed to consist largely of a metallic iron-nickel alloy. Iron is the 4th most abundant element in the earth's crust and is the main metal that makes up the core of the Earth by up to 70%. Iron is the hard metal most widely used, accounting for 95% of the total weight of the world production of metals.



Iron is known to exist in four distinct crystalline forms. Iron rusts in damp air, but not in dry air. It dissolves readily in dilute acids. Iron is chemically active and forms two major series of chemical compounds, the bivalent iron (II), or ferrous, compounds and the trivalent iron (III), or ferric, compounds.

Thanks to the combination of low cost and high strength it is indispensable. Its applications go from food containers to family cars, from screwdrivers to washing machines, from cargo ships to paper staples.

Steel is the best known alloy of iron, and some of the forms that iron takes include: pig iron, cast iron, carbon steel, wrought iron, alloy steels, iron oxides.

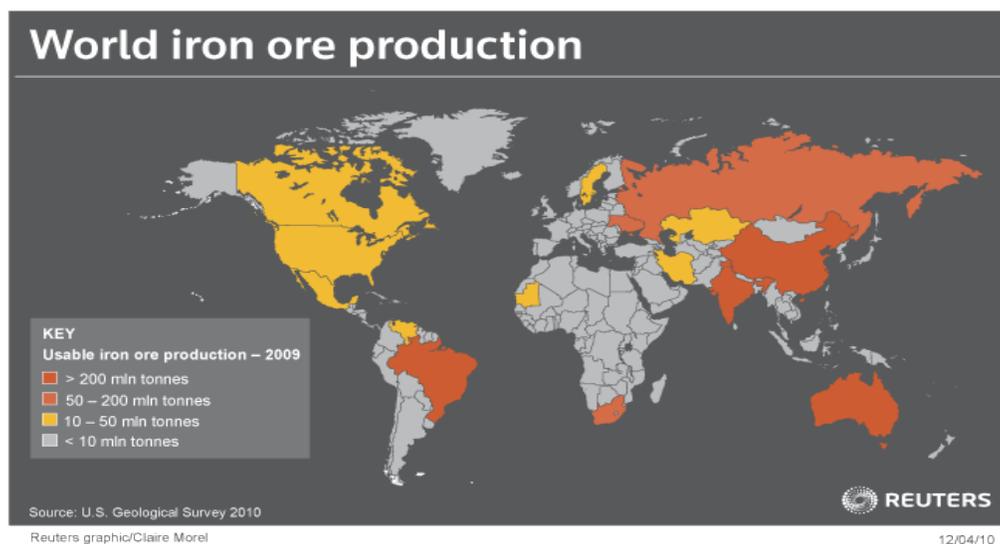
Most of this iron is found in various iron oxides, such as the minerals hematite, magnetite, and taconite.

Iron is essential to almost living things, from micro-organisms to humans. A more common problem for humans is iron deficiency, which leads to anaemia.

A man needs an average daily intake of 7 mg of iron and a woman 11 mg; a normal diet will generally provide all that is needed.



World production of new iron is over 500 million tonnes a year, and recycled iron adds another 300 million tonnes. The 5 major producers of iron in the world are China, Brazil, Australia, Russia and India, with 70% of world production.



Source: <http://www.artinaid.com/2013/04/iron/>