ELEMENTS

Elements are substances which cannot be split into simpler units by ordinary chemical process.

Elements constitute the building units of other substances. Those substances that are built up of elements are known as compounds.

Elements can be grouped in the form of a periodic table. There are six types of elements: the reactive metals, transition metals, lanthanide and actinides, pure metals, non-metals, and noble gases. More commonly, elements are grouped as metals, semimetals, or metalloids and non-metals.

Classification of Elements

Elements are classified as metals, metalloids, and non-metals.

Metals are those elements, which ionize by electron loss. Examples are calcium, magnesium, iron, etc.

$$Mg \rightarrow Mg^{2+} + 2e$$

Non-metals are those elements which ionize by electron gain. Examples are chlorine, oxygen, iodine, etc.

$$Cl + e \rightarrow Cl^{-}$$

Metals are malleable, ductile or sonorous. They have great tensile strength. Metals are lustrous. They are good conductors of heat and electricity. Metals have high melting point and boiling point. Metals have relatively high densities.

Non-metals, on the other hand are neither malleable, ductile nor sonorous. They are brittle or soft (or not hard). Non-metals are non-lustrous and generally are non-conductors or poor conductors, except graphite. They, except carbon have low malign point and boiling point. They have low densities.

Metals are reducing agents or they have tendency to ionize electrons to form cat-ions. They form basic oxides with oxygen. They generally tend to form ionic compounds. Some reactive metals can displace hydrogen from acids.

Non-metals are oxidizing agents. They tend to ionize by gaining electrons to form anions. They form acidic oxides with oxygen. Non-metals cannot displace hydrogen from acids. Generally they tend to form covalent compounds.