

## NON-METALS

Some of the examples of non-metals are carbon, sulphur, iodine, oxygen, hydrogen, etc. The non-metals are either solids or gases except bromine which is a liquid.

## PHYSICAL PROPERTIES

- (i) **Hardness:** Non-metals are not hard rather they are generally soft. But diamond is exception; it is most hard naturally occurring substance.
- (ii) **State:** Non-metals may be solid, liquid or gas.
- (iii) **Lustre:** Non-metals have dull appearance. Diamond and iodine are exceptions.
- (iv) **Sonority:** Non-metals are not sonorous, i.e. they do not produce a typical sound no being hit.
- (v) **Conduction:** Non-metals are bad conductor of heat and electricity. Graphite which is allotrope of carbon is good conductor of electricity, and is an exception.
- (vi) **Malleability and ductility:** Non-metals are brittle.
- (vii) **Melting and boiling point:** Non-metals have generally low melting and boiling points.
- (viii) **Density:** Most of the non-metals have low density.
- (ix) **Color:** Non-metals are of many colors.

## CHEMICAL PROPERTIES

## (i) Reaction with oxygen

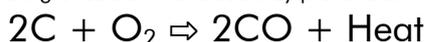
Non-metals form respective oxide when react with oxygen.

Non-metal + Oxygen  $\Rightarrow$  Non-metal oxide

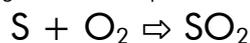
- a) When carbon reacts with oxygen, carbon dioxide is formed along with production of heat.



- b) When carbon is burnt in insufficient supply of air, it forms carbon monoxide. Carbon monoxide is a toxic substance. Inhaling of carbon monoxide may prove fatal.



- c) Sulphur gives sulphur dioxide when react with oxygen. Sulphur caught fire when exposed to air.



- d) When hydrogen reacts with oxygen it gives water.



## (ii) Non-metal oxide:

Non-metal oxides are acidic in nature. Solution of non-metal oxides turns blue litmus red.

- a) Carbon dioxide gives carbonic acid when dissolved in water.



- b) Sulphur dioxide gives sulphurous acid when dissolved in water.



- c) Sulphur dioxide gives sulphur trioxide when it reacts with oxygen.



- d) Sulphur trioxide gives sulphuric acid when dissolved in water.



## (iii) Reaction of non-metal with chlorine:

Non metals give respective chloride when they react with chlorine gas.

Non-metal + Chlorine  $\Rightarrow$  Non-metal chloride

Hydrogen gives hydrogen chloride and phosphorous gives phosphorous trichloride when react with chlorine.

