

11/11/2024
Monday.

METALS AND NON - METALS

PHYSICAL PROPERTIES:

METALS: (Eg: Copper, iron, aluminium, magnesium ... etc).

- Lustre \Rightarrow shining surface of metals.
- Hardness \Rightarrow metals are generally hard.
- Malleable \Rightarrow metals can be beaten into thin sheets.
- Ductile \Rightarrow metals drawn into thin wires.
 \rightarrow Gold is the most ductile metal.
- Metals are good conductors of heat and have high melting points.
(Best: silver and copper).
(Poor: Lead and Mercury).
- Sonority \Rightarrow the sound which metals make when hit with some force.

NON - METALS: (Eg: Carbon, Sulphur, Iodine, Oxygen, Hydrogen ... etc).

Opposites of metals with some exceptions.

- (2)
- We cannot group elements only on the bases of physical properties, as there are many exceptions:

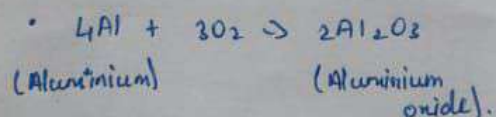
- Mercury is a metal which is in the form of liquid at room temperature.
- Iodine is a non-metal but lustrous.
- Carbon is a non-metal, it can exist in different forms. Each form is called allotope.
 - ↳ Diamond is the most hardest natural substance and is an allotope.
- Graphite is a conductor of electricity.
- Alkali metals (sodium, potassium) can be cut by knife.

Metals and Non-Metals can be classified more clearly from their chemical properties:

CHEMICAL PROPERTIES OF METALS:

- Metal reacts with air:

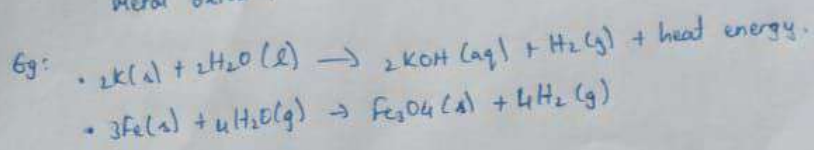
Metal + Oxygen \rightarrow Metal Oxide



Notes: Anodizing is a process of forming a thick oxide layer of aluminium.

- Metal reacts with water:

Metal + Water \rightarrow Metal oxide + Hydrogen
Metal oxide + Water \rightarrow Metal hydroxide.



- Metal reacts with acid:

Metal + Dilute acid \rightarrow Salt + Hydrogen.

- Metals reacts with solutions of other metal salts:

Metal A + Salt soln B \rightarrow Salt soln A + Metal B.

THE REACTIVITY SERIES:

K	Potassium	Most reactive
Na	Sodium	
Ca	Calcium	
Mg	Magnesium	
Al	Aluminium	
Zn	Zinc	Reactivity decreases
Fe	Iron	
Pb	Lead	
[H]	[Hydrogen]	
Cu	Copper	
Hg	Mercury	Least reactive.
Ag	Silver	
Au	Gold	