

Chapter - 4 Metal and Non Metal

Physical Properties of Metals :-

Physical Properties :- Characteristic of substances that can be observed without changing the substances into another substances.

Lustre - Shining

Malleable - substance can roll into flat sheets

ductile - A substance can be pulled out into a long wire.

Conduct electricity & heat.

Magnetic - Fe, Co, Ni

Most are solid - Hg is metal which is liquid.

Sonorous - Things made of metal produce ringing sound when struck hard. - Bells and musical instruments.

High Density
Example - iron, Gold, Silver, Zinc, Aluminium, Mg, Nickel, lead, Chromium, Mercury.

Non Metal

An element that lacks most of the properties of a metal.

→ Solid non metal are dull

→ They are brittle

- Poor conductor of electricity

Solid Non Metal - C, I, S

Liquid -

gas -

gas -

gas -

gas -

gas -

gas -

gas -

gas -

gas -

gas -

gas -

gas -

gas -

gas -

gas -

Noble gases - Do not form ordinarily compound.

low Density -

Example of nobles - Helium (He) Neon (Ne) Argon (Ar) Krypton and Xenon (Xe) Rn.

Colours - Sulphur (yellow) Chlorine gas - green-yellow

Phosphorus - Red-White

- They have not lustre.

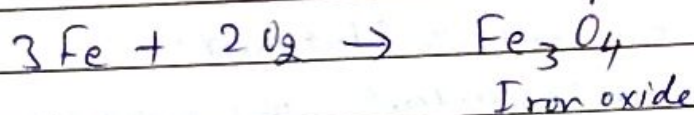
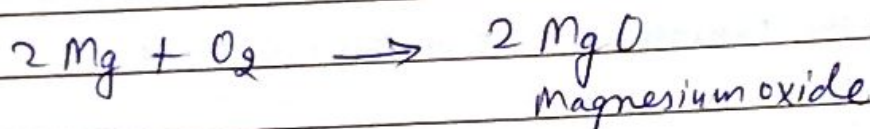
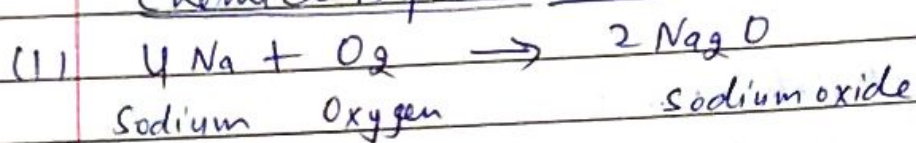
- Hardness - They are soft, brittle

- Diamond - Very hard.

- They are not sonorous

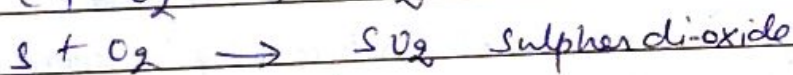
Chemical Properties of Metal -

metal oxide are basic in nature.

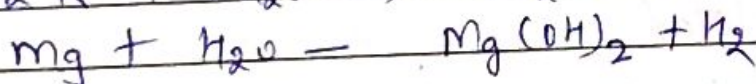
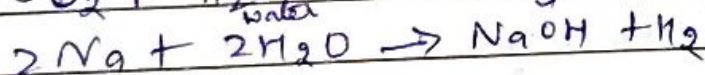
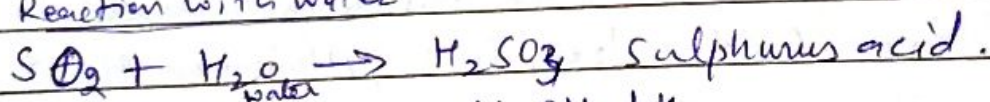


Non-metal

Non metal form acidic oxides



Reaction with water



Sodium metal stored in kerosene - Sodium metal is highly reactive.

It reacts vigorously with oxygen and water and produces sodium hydroxide and hydrogen gas. Hydrogen gas catches fire.

To protect sodium from reaction of air it is stored under kerosene.

Phosphorus stored in water - It catches fire if exposed to air.

To prevent contact of phosphorus with atmospheric oxygen it is stored in water.

Non metal with Acid



Use of metal

- (1) Zinc metal is used for galvanizing iron in making anti-corrosion material in medical fields and in alloy.
- (2) Iron is construction material and steel as utensil.
- (3) Tin - soldering, foils, panel lighting.

- 4- Lead - water pipes, pigments, batteries, in alloys.
- 5- Mercury - Used in thermometers.
- Copper - electric wire and cables.
- Aluminium - electric wire and, Foil.
- Radioactive metal - Plutonium, Uranium - Used in nuclear power.

Uses of Non Metal :-

- 1) Sulphur - sulphadrag - Viral diseases, gun powder, more.
- sulphur + Rubber - Hard used for tyres.
- 2 Boron - borax powder, skin ointment.
- 3 Phosphorus - crackers.
4. Oxygen - Oxygen cylinder.
- 5 Chlorine - Bleaching powder - antibacterial - purification of water.
- 6 Carbon - fuel, electrode, graphite - reducing in metallurgy.
- 7 Hydrogen - To make ammonium gas, fertilizer, Non polluting fuel.
- 8 Building block of life - C, O, H, N (Cell, H_2O)
Protein
9. Iodine - Antiseptic.

Precious metal - Gold Au, Silver Ag, Platinum, Bronze.
Pure gold - 24 carrote.

Jewellery gold - 22 carrote or below.

Alloy :- Metal mix with metal or Non metal and form alloys.
Stainless steel - Fe iron + Chromium + Nickel.

Brass - Zinc + Copper.

Bronze - Tin + copper.

Graphite is good conductor of electricity :-

Graphite contains delocalised electrons which are free to move through the structure of graphite.

Graphite is soft and slippery :- Because there are only weak intermolecular forces between its layers.

Lemonade not kept in iron pot :-