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Metallurgy

Amalgam : An alloy in which one of the component metals is mercury, is called amalgam.

In alloys, the chemical properties of the component elements are retained but certain physical properties are improved.

Compounds of metal and non-metal and their uses :

- 1. Ferrous oxide (FeO)** : In green glass, Ferrous salt.
- 2. Ferric oxide (Fe₃O₄)** : In electroplating of ornaments and formation of ferric slat
- 3. Ferrous sulphate (FeSO₄ · 7H₂O)** : In dye industry, and Mohr's salt
- 4. Ferric hydroxide [(Fe(OH)₃)]** : In laboratory reagent and in making medicines.
- 5. Iodine (I₂)** : (i) As antiseptic, (ii) In making tincture of iodine.
- 6. Bromine (Br₂)** : (i) In dye industry (ii) As laboratory reagent
- 7. Chlorine (Cl₂)** : In the formation of (i) Mustard gas (ii) Bleaching powder
- 8. Hydrochloric acid (HCl)** : In the formation of aquaregia (3 HCl : 1 HNO₃) and dyes
- 9. Sulphuric acid (H₂SO₄)** : (i) As a reagent (ii) In purification of petroleum (iii) In lead storage battery.
- 10. Sulphur dioxide (SO₂)** : (i) As oxidants & reductants (ii) As bleaching agent
- 11. Hydrogen Sulphides (H₂S)** : In qualitative analysis of basic radical (group separation)
- 12. Sulphur (S)** : Antiseptics, vulcanization of rubber, gun powder, medicine.
- 13. Ammonia (NH₃)** : As reagent in ice factory.
- 14. Phosphorous** : (i) Red (P₄) refrigerent, in match industry etc. (ii) White (P₄) – Rat killing Medicine.

15. **Producer gas (CO + N₂)** : (i) In heating furnace (ii) Cheap fuel (iii) In Extraction of metal
16. **Water gas (CO + H₂)** : (i) As fuel (ii) Welding work
17. **Coal gas** : (i) As fuel (ii) Inert atmosphere
18. **Nitrous oxide (N₂O)** : Laughing gas, Surgery.
19. **Carbondioxide (CO₂)** : Sodawater, Fire extinguisher.
20. **Carbon monoxide (CO)** : In phosgene gas (COCl₂).
21. **Graphite** : As electrodes.
22. **Diamond** : Ornaments, Glass cutting, Rock drilling.
23. **Alum [K₂SO₄ Al₂ (SO₄)₃ · 24 H₂O]** : (i) Purification of water (ii) Leather industry.
24. **Aluminium sulphate [Al₂(SO₄)₃ · 18H₂O]** : In paper industry/fire extinguisher.
25. **Anhydrous aluminium chloride (AlCl₃)** : Cracking of petroleum.
26. **Mercuric Chloride (HgCl₂)** : Calomel, Insecticides (Corrosive sublimate)
27. **Mercuric oxide (HgO)** : Ointment, poison.
28. **Mercury (Hg)** : Thermometer vermilion, amalgum.
29. **Zinc Sulphide (ZnS)** : White pigment.
30. **Zinc Sulphate (White vitriol) (ZnSO₄ · 7H₂O)** : Lithopone, Eye ointment.
31. **Zinc Chloride (ZnCl₂)** : Textile industry.
32. **Zinc oxide (ZnO)** : Ointment.
33. **Zinc (Zn)** : In battery.
34. **Calcium carbide (CaC₂)** : Calcium cyanide & acetylene gas.
35. **Bleaching powder [Ca(OCl) Cl]** : Insecticides, Bleaching actions.

36. **Plaster of paris** $[(\text{CaSO}_4)_2 \cdot 2\text{H}_2\text{O} / \text{CaSO}_4 \cdot \frac{1}{2} \text{H}_2\text{O}]$: Statue, Surgery.
37. **Calcium sulphate** $(\text{CaSO}_4 \cdot 2\text{H}_2\text{O})$: Cement industry.
38. **Calcium carbonate** (CaCO_3) : Lime & toothpaste.
39. **Copper sulphate** $(\text{CuSO}_4 \cdot 5\text{H}_2\text{O})$: Insecticides, Electric cells.
40. **Cupric oxide** (CuO) : Blue & green glass, purification of petroleum
41. **Cuprous Oxide** (Cu_2O) : Red glass, pesticides.
42. **Copper** (Cu) : Electrical wire.
43. **Sodium nitrate** (NaNO_3) : Fertilizer.
44. **Sodium Sulphate (Glauber salt)** $(\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O})$: Medicine, cheap glass
45. **Sodium bicarbonate (Baking soda)** (NaHCO_3) : Fire extinguisher, bakery, reagent.
46. **Sodium Carbonate (Washing soda)** : (i) Glass industry (ii) Paper industry (iii) Removal of permanent hardness of water (iv) washing
47. **Hydrogen peroxide** (H_2O_2) : Oxidants & reductants, Insecticides.
48. **Heavy water** (D_2O) : Nuclear reactor.
49. **Liquid hydrogen** : Rocket fuel.