

Chemistry- X- Unit -4. Class - 22

Production of metals

Extraction of metals from concentrated ore

It has usually two stages

- a) Conversion of the concentrated ore into its oxide.
- b) Reduction of the oxide.

a) Conversion of concentrated ore into its oxide

Calcination

Calcination is the process of heating the concentrated ore in the absence of air at a temperature below its melting point.

Eg: Carbonates and hydroxides of metals decompose to form their oxides.

Roasting

Roasting is the process of heating the concentrated ore in a current of air at a temperature below its melting point.

Eg: Cu_2S ore is converted to Cu_2O by roasting.

b. Reduction of the oxide

The process of extraction of metal from the oxide is reduction . Suitable reducing agents can be used for this purpose.

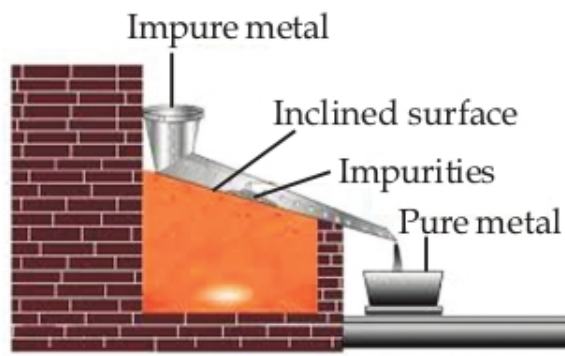
Electricity is used as the reducing agent to extract highly reactive metals like sodium, potassium and calcium from their ores.

Refining of metals

Refining of metals is the process of removal of the impurities to get the pure metal.

Different methods are used for the refining of metals.

a. Liquation



On heating low melting metals on the inclined surface of a furnace, the pure metal melts and flows down leaving the impurities behind. This process is termed liquation .

Eg : Tin , Lead

Distillation

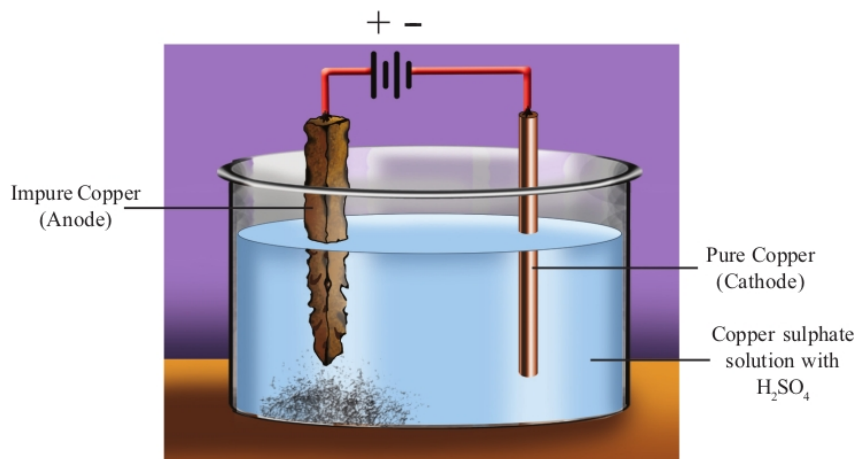
When the impure metals with low boiling points are heated in a retort, the pure metal alone vapourises . The vapours are condensed to get the pure metal. This method is termed distillation.

Eg : zinc, cadmium and mercury

Electrolytic refining

Electrolytic refining is the process of refining a metal by the electrolysis of a solution of the salt of the metal, using a small piece of pure metal as the negative electrode and the impure metal as the positive electrode.

Eg: Refining of copper



Questions

1. Name the metal which is refined by distillation ?
(Tin, Lead, Mercury. Cadmium)
2. Give an example for roasting process .
3. Name the reducing agents that can be used during The process of extraction of metal from the oxide ?
4. Metals like copper, silver are refined by using electrolytic method . Identify the anode ,cathode and electrolyte used in refining of copper ?
