

STD 10 CHEMISTRY CHAPTER 4 PRODUCTION OF METALS

FIRST BELL CLASS 22 NOTES

Extraction of metal 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 the concentrated ore into its oxide.

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

e.g. **Carbonates and hydroxides** of metals during calcination decomposes to their oxides.

2. **Roasting** – Roasting is the process of heating the concentrated ore in a current of air at a temperature below its melting point. During roasting, moisture present in ore are removed as vapour and volatile impurities are removed in their gaseous form.

e.g. **Sulphide ore**. 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.

Carbon, carbon monoxide, electricity etc are used as reducing agents.

Electricity is used as the reducing agent to extract highly reactive metals like **Na, K, Ca, Al** from their ores.

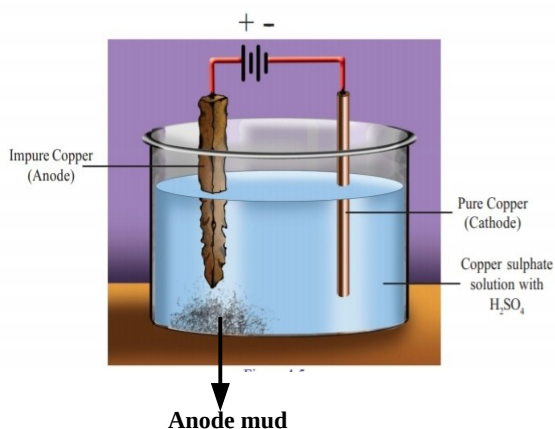
[To see liquation video click here](#)

[To see Distillation video click here](#)

Refining of metals		
Liquation	Distillation	Electrolytic refining
Metals with low melting point are heated on the inclined surface, the pure metal melts and flows down leaving the impurities behind.	Metals with low boiling point are heated in a retort, the metal alone vapourises and condensed to pure metal	Refining a metal by the electrolysis of a solution of the salt of the metal, using pure metal as the cathode and the impure metal as anode.
e.g. Lead(Pb), Tin(Sn)	e.g. Zinc(Zn), Cadmium(Cd), Mercury(Hg)	e.g. Refining of Copper

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Refining of Copper



Equation of reaction at anode



Equation of reaction at cathode



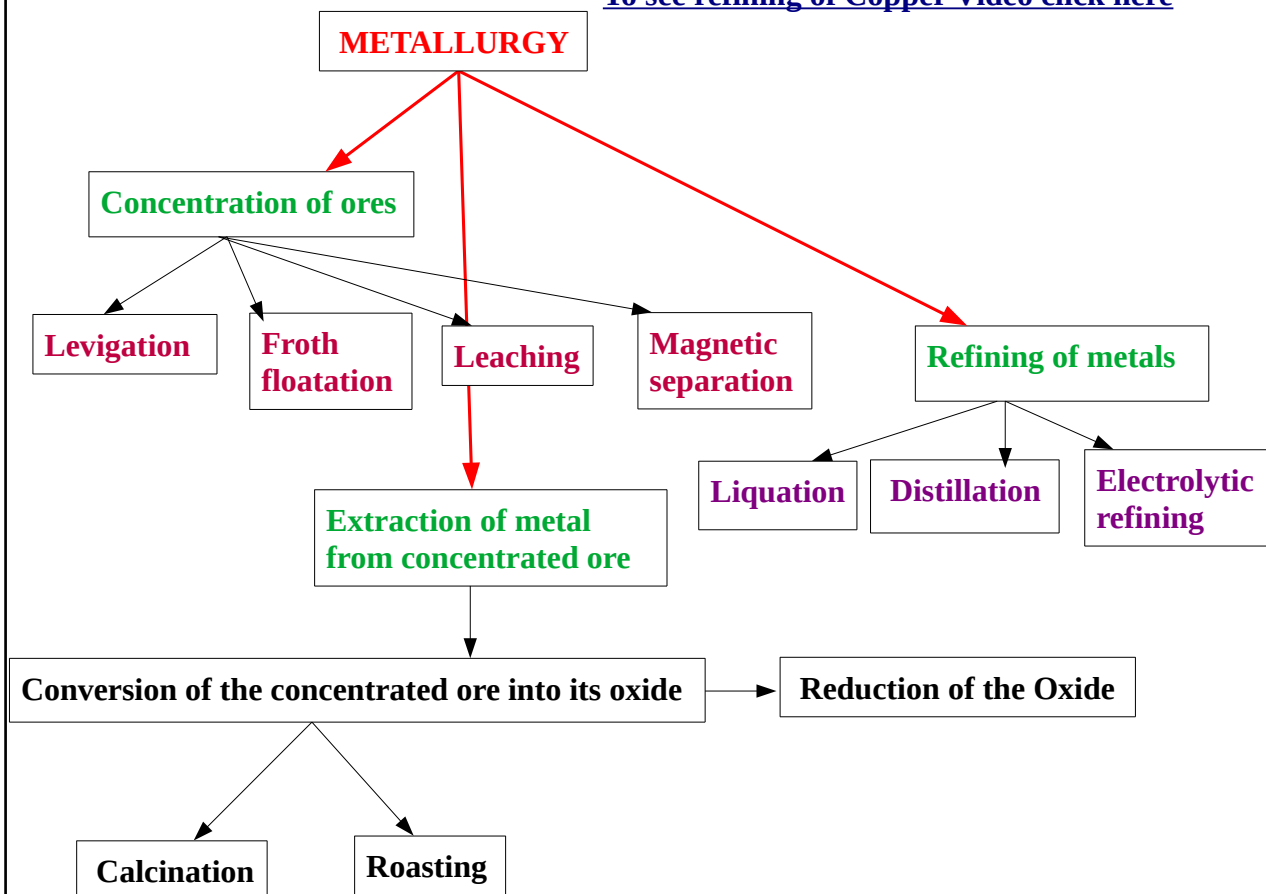
Electrolytic refining

Anode – Impure metal

Cathode – Pure metal

Electrolyte – Salt solution of metal

[To see refining of Copper Video click here](#)



WORKSHEET

1. What is the difference between roasting and calcination ?
2. Which are the metals extracted by using electricity as reducing agent ?
3. Tin and lead are refined by liquation. What is the reason?
4. Which are the metals refined by distillation?Why?

5. Complete the table by analysing refining of Copper.

Anode	
Cathode	
Electrolyte	
Equation of chemical reaction at anode (Oxidation)	
Equation of chemical reaction at cathode (Reduction)	

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