

# CHEMISTRY STUDY MATERIALS FOR CLASS 10

GANESH KUMAR

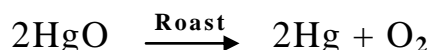
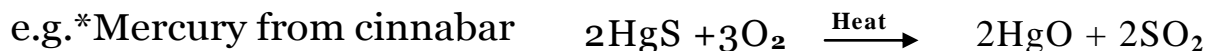
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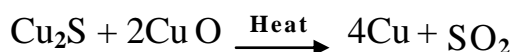
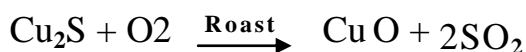
## Chapter- 3 (Metals and Non-metals- Revision Notes)

### Extracting Metals Low in the Activity Series:

By heating the ores in air at high temperature. (Roasting)



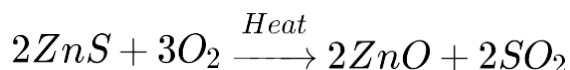
e.g. \*Copper from copper sulphide



### Extracting Metals in the Middle of Activity Series:

\*Metals are easier to obtain from oxide ores, thus, sulphide and carbonate ores are converted into oxides. \*Metal ore heated strongly in excess of air

(Roasting) e.g..

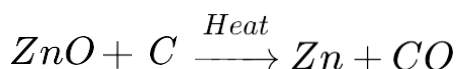


Metal ore heated strongly in limited or no supply of air (Calcination)



Reduction of Metal Oxide:

USING COKE: Coke as a reducing agent.



USING DISPLACEMENT REACTION:

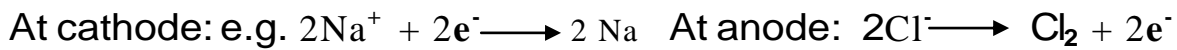
Highly reactive metals like Na, Ca and Al are used to displace metals of lower reactivity from their compounds. These displacement reactions are highly exothermic.

Thermite Reaction: Reduction of a metal oxide to form metal by using Al powder as a reducing agent. This process is used to join broken pieces of

heavy iron objects or welding. Extracting Metals at the Top of Activity Series

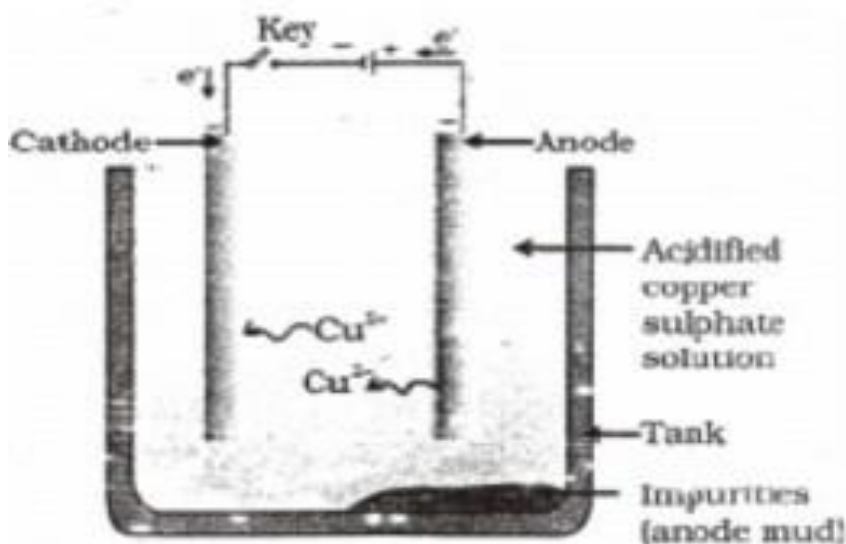
- These metals have more affinity for oxygen than carbon so they cannot be obtained from their compounds by reducing with carbon.
- So are obtained by electrolytic reduction. e.g. Sodium is obtained by electrolysis of its molten chloride  $\text{NaCl} \longrightarrow \text{Na}^+ + \text{Cl}^-$

As electricity is passed through the solution metal gets deposited at cathode and non-metal at anode.



Refining of Metals Impurities present in the obtained metal can be removed by electrolytic refining.

Copper is obtained using this method. Following are present inside the electrolytic tank. Anode – slab of *impure* copper Cathode– slab of **pure** copper  
Solution – aqueous solution of copper sulphate with some dilute sulphuric acid  
From anode copper ions are released in the solution and equivalent amount of copper from solution is deposited at cathode. Insoluble impurities containing silver and gold get deposited at the bottom of anode as anode mud.



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