

10. Electrolysis of copper – refining copper

Electrodes: metallic copper

Electrolyte: copper sulfate solution

Ions Present: Cu^{2+} , SO_4^{2-} , OH^- , H^+

Half equations:

In the Cathode: $\text{Cu}^{2+} + 2e^- \rightarrow \text{Cu}$

In the Anode: $\text{Cu} \rightarrow \text{Cu}^{2+} + 2e^-$

Overall Equation: $\text{Cu}^{2+} + \text{Cu} \rightarrow \text{Cu} + \text{Cu}^{2+}$

Observations:

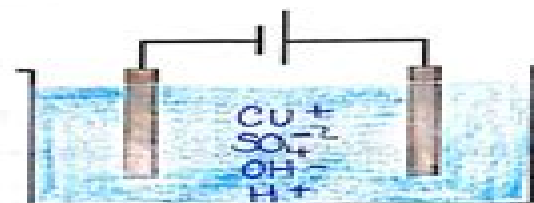
Cathode: Dark solid deposit (pure copper)

Anode: Disintegration of anode and yellow deposit below

Uses of copper: electrical wiring, copper plating

Why is it necessary to purify Copper? In this way, it will have more conductivity

What are the elements present in the slag? Ag, Au, Pt



(show in the graph how it will look like)

11. Electroplating with Copper

Electrodes:

Cathode: Spoon (metal more reactive than Cu)

Anode: Pure copper

Electrolyte: Copper Sulfate or Nitrate

Ions Present: Cu^{2+} , SO_4^{2-} , OH^- , H^+

Half equations:

In the Cathode: $\text{Cu}^{2+} + 2e^- \rightarrow \text{Cu}$

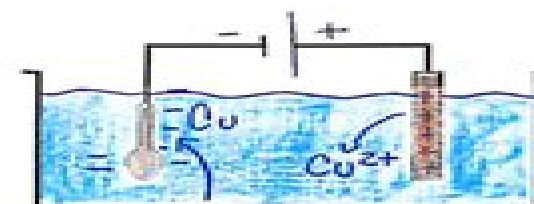
In the Anode: $\text{Cu} \rightarrow \text{Cu}^{2+} + 2e^-$

Overall Equation: $\text{Cu}^{2+} + 2e^- + \text{Cu} \rightarrow \text{Cu} + \text{Cu}^{2+}$

Observations:

Cathode: the color of the spoon becomes darker

Anode: Disintegrate Copper



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