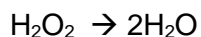


**Electrochemical Cell****Reduction at the cathode:**

This is a reduction reaction as the oxidation number of O changes from 0 in  $\text{H}_2\text{O}_2$  to -2 in  $\text{H}_2\text{O}$

①

**Oxidation at the anode:**

This is an oxidation reaction as the oxidation number of Fe increases from +2 in  $\text{Fe}^{2+}$  to +3 in  $\text{Fe}^{3+}$ . An increase in oxidation number corresponds to oxidation.

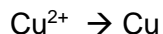
Each  $\text{Fe}^{2+}$  loses 1 electron.

 **$E^\circ$** 

$E^\circ$  for  $\text{H}_2\text{O}_2$  is the most positive so it will be reduced. This reaction creates electrical energy.

**Electrolytic cell**

From observations: The electrolysis of molten copper oxide produces bubbles of a colourless gas at one electrode and an orange solid is deposited at the other electrode. Colourless gas is oxygen at the positive anode. Orange solid is copper and it is deposited at the negative cathode.

**Reduction at the cathode (negative electrode)**

The oxidation number of Cu goes from +2 in  $\text{Cu}^{2+}$  to 0 in Cu.

**Oxidation at the anode (positive electrode)**

The bubbles of colourless gas are oxygen.

Each  $\text{O}^{2-}$  loses 2 electrons.