Electrolysis

Electrolysis →

The substance which Decomposed when an Electric current is passed through are called Electrolysis.

→ Electrolysis may be solid / like caustic soda. or Silver, iodide But there generally liquids

Electroplasing

The precessor of Depositing a metal on the surface of sum other metal by Electrolysis is also cused as Electroplasing

Need of Electroplasing

The Electroplasing are also used as

1. The protect the metal against to corrosion
2. To give shining Appearance to the Article.
3. To giving Reflecting properties to the ~~Ref~~ Reflection
4. To Replaced worn out material from Casting
5. To Repair Damaged from casting.

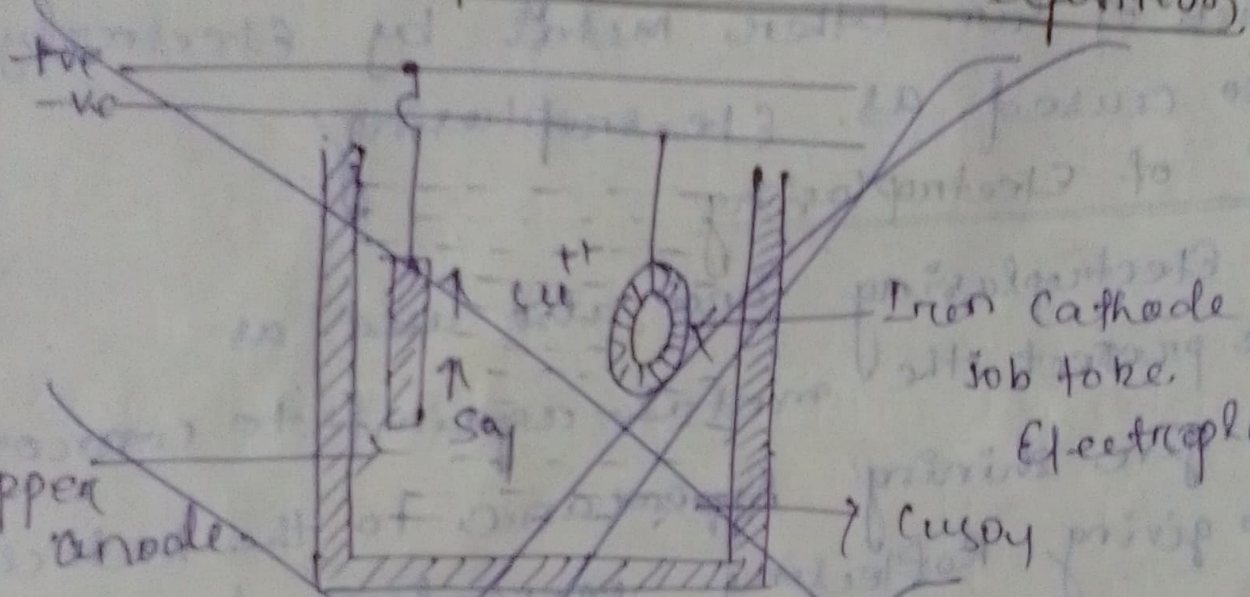
Electrolyte

→ The solution of a salt

→ When we can used to a also as Electrolysis process.

Electrodes

The plate on Rode Emerged in Electrolyte and Suply to a Rode in Dc Suply are called on Electrode.



Chemical Equivalent weight

→ chemical Equivalent weight we can also defined as atomic weight is total divided by valance.

→ when we can derived to a mathmatically

chemical Equivalent weight ⇒ $\frac{\text{Atomic weight}}{\text{Valance}}$

→ Electro-chemical weight

Ions

When a direct is passed through an electrolyte an electrolyte, it ge its chemically decomp sed into two parts known as positive & negative ions.

Cations

These are +vely charged ions & they moves towards the cathode

Anions - These are -vely charged ions & they moves towards the anode.

Chemical equivalent weight

Chemical equivalent weight of a substance may be defined as the ratio of its atomic weight & valency

$$\text{Chemical equivalent} = \frac{\text{Atomic Weight}}{\text{Valency}}$$

Electro chemical equivalent (ECE)

Electro chemical equivalent of a substance is the amount deposited on passing a steady electric current of 1 amp for 1 sec through its solution

Valency

The valency of an atom or a group of atom is the number of hydrogen atoms with which it will react chemically valency is always an integer of 1, 2, 3 ...

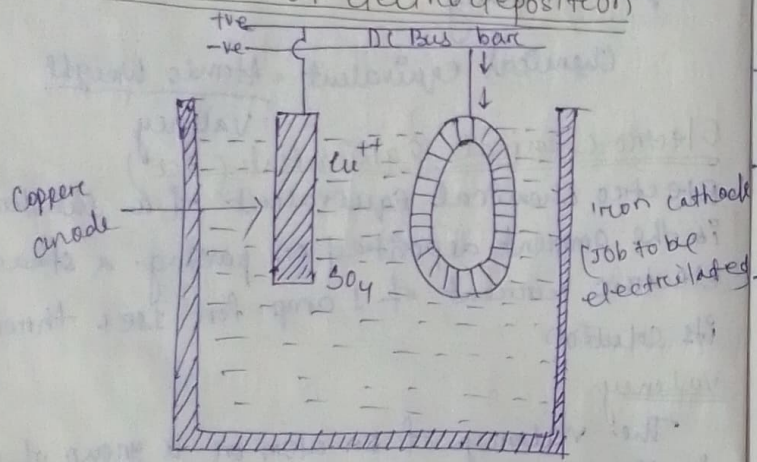
Atomic Weight - Atomic weight is the ratio of the weight of an atom of the element of the weight of an atom of hydrogen.

Application of Electrolysis

Application of Electrolysis are :-

(a) Extraction of metal from their ores
(b) Extraction of zinc
(c) Extraction of aluminium
(d) Refining of metals
(e) production of chemicals.
(f) Separating metal from their compound
(g) Electro deposition
(h) Electro forming
(i) Electro cleaning
(j) Electro typing.

Basic principle of Electrodeposition



→ Let us consider a ring of iron to be given a copper coating
→ The arrangement is shown in the figure
→ The electrolyte used in the tank is a sol^n of copper sulphate ($CuSO_4$)
→ The sulphate solution breaks into two ions which are defiity in two electrons per ions & SO_4^{--} -ve ions having two surplus electrons per ion.
→ when the two electrons get dc supply from the bus pass the -ve ions move towards the anode made of copper.
→ Each SO_4^{--} ion after transfer of two electrons to the anode becomes SO_4 radicant.
→ If attacks the copper of anode to log $CuSO_4$ molecule which desolves once again to maintain the electrolyte density at original level
→ The +ve copper ion rich the -ve electrode i.e cathode and receive two electrons in from the supply circuit to before copper atoms
→ These get deposited on the cathode surface on the cathode surface.
→ The cathode is the jug on article to be copper plated.
→ The copper deposited on the cathod surface is practically having the same mass at ~~least~~ lost by the anode in maintaning the electrolyte strength.
→ In the electrolyte the ions move from one electrodes but on the outside circuit electrons flow from cathode to anode.
→ The whole process is called electrolysis & the phenomenon of deposition of metalic coating on the surface of some other metal.

→ Through the process of electrolysis is electroplating or electro deposition.

(1) Extraction of metal from their ores

There are two methods of extraction of metal from their ores.

(a) The ore is treated with a strong acid to obtain a salt and the soln of salt is electrolized to liberate the metal.

(b) When the ore in molten state it's electrolyte in the furnesh.

2. Extraction of zink :-

The zink ore is treated with concentrated with sulphuric acid and pass through various chemical process by precipitation.

3. Extraction of Aluminium

The ores of aluminium is treated chemically and reduced to alluminium oxide and then dissolved and electrolyte

4. Refining of Metals

The metal extracted from its ore is not much pure which would be used for electrical applications.

→ The purety is obtained from its ore abo 98%.

5. production of chemicals

Many chemecals like, costic soda, Chrolin gas ammonia salphate, hydrogen, oxygen are produced by electrolysis.

6. Separating metals from their compounds

Metal are separated by suitable treatment and obtained by electrolytic pross.

Electro typing :-

In this process wood cut are reproduce in cupper by the process of electroplating

Electro therming :-

The production or reproduction of an article by electro deposition is known as electro Therming.

Electro deposition :-

Electro deposition is the process of depositing a metal over another metal or non-metal by electrolysis.

Electro cleaning :-

The articles before an electroploting should hand surface free from this oil etc. and their are clean by electro cleaning method.