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T.D.C. Part-I (Hons)

 **Extraction of Beryllium**

ANS : 1.Electrolytic process: [Beryl into BeF2]

Firstly beryl is converted into BeF2 and then BeF2 Is electrolysed to get Be.

Na2SiF6 $→$ 2NaF + SiF4

2BeO + SiF4 = SiO2 + 2BeF2

2Al2O3 + 3SiF4 = 4 AlF3 + 3 SiO2

AlF3 + 3NaF = NaAlF6

Electrolysis of BeF2:

BeF2 → Be2+ + 2F-

Be+2 + 2e $→$ Be

2. BeO TO Be:

Finally powdered BeO and coke are fed into arc electric are furnace .It consists of carbon crucible enclosed in fire bricks.It has the tap hole at the bottom.It also serves as one of the electrode .The other electrode sipped in the charge from the top.On striking the are BeO is reduced to Be.

BeO + C =Be + CO

PROPERTIES:

1.It is silver white metal.

2. It does not rects with water or steam .

3. Reaction with HCl:

 Be + 2HCl = BeCl2 + H2

4. Reaction with H2SO4 :

Be + H2SO4 = BeSO4 + H2

5. Reaction with HNO3:

Be +2 HNO3 = Be(NO3)2 + H2

USES:

1. It is used for making X-ray tube windows.

2. It is used as a deoxidizer in metallurgical operations.

  **Extraction of Li**

Ans: The important ores of lithium may be given as below.

1.Lepidoite or Lithiamica

2.Spodumene

3.Petalite

4. Triphylite

**1.From silicate ore’s**: The powdered ore is fused with a mixture of BaCO3,BaSO4 and K2SO4. The fused mass is divided into two layers. The top layer is dissolved in water and then treated with BaCl2 to ppt out BaSO4 and filtered.The filtrate is evaporated to dryness and the residue is extracted with pyridine in which only LiCl dissolved . It is now filtered and the filtrate is distilled to get LiCl.

**From phosphatic ore’s:** The powdered ore is digested with conc HCl and the phosphate formed is removal as ferric phosphate. It is filtered and the filtrate free from phosphate is evaporated. The residue is extracted with water and treated with BaS to remove Mn as sulphide. It is filtered and the filtrate is evaporated with oxalic acid .lithium oxalate thus formed in ignited to get Li2CO3.It is treated with HCl to form LiCl which is extracted with pyridine as below. The metal is obtained at cathode by the electrolysis of anhydrous LiCl and KCl mixture at 400$℃$ .

Physical Properties:

1. It is a very soft silver metal.
2. Its density is 0.534 gram per cubic centimeter

Chemical Properties:

1.Reaction with H2: Lithium reacts with H2 at 873K and then gives Lithium hydride.

2Li + H2 $→$ 2 LiH

1. Reaction with O2: Lithium reacts with O2 and then gives Li2O.

4Li + O2 → 2 Li2O

1. Reaction with N2: Lithium reacts with N2 and then gives Li3N.

6Li + N2 → 2Li3N

1. Reaction with C: Lithium reacts with C and then gives Li2C2.

2Li + 2C → Li2C2

1. Reaction with Cl2: Lithium reacts with Cl2 and then gives LiCl.

2Li + Cl2 →2LiCl

**Uses:**

Lithium citrate and salicylate are used in the treatment of gout.LiCl is used in air-condition.Lithium aluminium hydrude is used as reducing agents.Li deoxidizer in the purification of Cu and Ni.