

## **PHYSICAL PROPERTIES OF CHLORINE:**

Chlorine exists in all three physical states. At NTP it is a greenish yellow pungent, poisonous gas, which can be liquefied to a mobile yellow liquid. Solid chlorine forms pale yellow rhombic crystals. Some of the important physical properties of chlorine are listed below:

<b>PROPERTIES</b>	
Atomic Number (Z)	17
Atomic Mass (A)	35.453 g
Stable isotope mass	35, 37 g
Melting Point (mp)	172.17 ° K
Boiling Point (bp)	239.10° K
Critical temperature (T <sub>c</sub> )	417.15° K
Critical Pressure (P <sub>c</sub> )	7.71 x 10 <sup>5</sup> N/m <sup>2</sup>
Critical density (ρ <sub>c</sub> )	565 Kg / m <sup>3</sup>
Density at 0°C	3.213 Kg / m <sup>3</sup>
Density relative to air	2.48 Kg / m <sup>3</sup>
Enthalpy of fusion ΔH <sub>f</sub>	90.33 KJ/Kg
Enthalpy of vaporization ΔH <sub>v</sub>	287.1 KJ/Kg
Standard Electrode Potential E <sup>0</sup>	1.359 V
Enthalpy of dissociation ΔH <sub>d</sub>	239.44 KJ/ Kmol
Electron affinity	364.25 KJ/Kmol
Enthalpy of hydration	405.7 KJ/ Kmol

## **USES OF CHLORINE:**

During the span of chlorine industry in the world, the largest single use has been in the manufacture of pulp and paper. In the early period of the industry, the second largest use was in sanitation for sewage treatment and purification of water.

Later on the demand increased because of the invention of new compounds. Some of the major uses of chlorine are listed below:

1. Benzene hexachloride: Manufacture of insecticides
2. Carbon tetrachloride: Manufacture of fluorocarbons for refrigerants and propellants.
3. Chloral: insecticides manufacture
4. Chloro paraffins: lubricant additives and paints
5. Dichlorobenzene: organic solvents
6. Chloroform: manufacture of fluorocarbons
7. Ethyl Chloride: antiknock compounds
8. Ethylene oxide and glycol: antifreeze fluids and synthetic fibres
9. Methyl chloride: silicones manufacture; solvent and catalyst carrier.
10. Methylene chloride: paint remover, propellants and general solvent
11. Monochloroacetic acid: herbicides, detergents
12. Perchloroethylene: dry cleaning
13. Tri chloroethylene: metal degreasing
14. Vinyl chloride: plastic and resin products