

## **PROCESS DESCRIPTION :-**

- Ethylene vapors then enter a dryer that removes traces of water molecules.
- After drying, the vapors enter a pyrolysis furnace operated at 4 atm and 500°C. The furnace is similar to a shell and tube arrangement with the gases entering the tube side and hot flue gas goes past the tubes in the shell side.
- The product vapors eventually enter a quenching tower in which cold ethylene dichloride is used to quench the product gases and cool them.
- The gases from the quench tower then enter a partial condenser which produces HCl as a gas and the liquid stream consisting of vinyl chloride, unreacted ethylene dichloride and polychlorides.
- The liquid stream from the quench tower as well as the condenser is fed to the vinyl still which produces the vinyl chloride product. The product is stabilized using a stabilizer as vinyl chloride is highly reactive without stabilizer.
- The bottom product from the vinyl still is fed to a distillation column which separates the ethylene dichloride from the polychlorides. The ethylene dichloride vapors are recycled back to the cracking furnace and the ethylene dichloride liquid is sent to the quenching tower to serve as the quenching liquid.

## **REACTION :-**

1.  $\text{C}_2\text{H}_4\text{Cl}_2 \rightarrow \text{CH}_2\text{CHCl} + \text{HCl}$
2. Charcoal is used as the catalyst
3. The reaction is a reversible gas phase reaction