Brainbox learn easy

CHAPTER 12

General Organic Chemistry

Estimation of halogen:

Carius method:

A known weight of the organic compound is heated with excess of fuming HNO_3 & few crystals of $AgNO_3$ in a sealed tube is carius tube. So, silver halides are formed.

Percentage of chlorine

$$= \frac{35.5}{143.5} \times \frac{Weight\ of\ AgCl}{Weight\ of\ organic\ compound} \times 100$$

Percentage of Bromine $= \frac{80}{188} \times \frac{W_{AgBr}}{W_{OC}} \times 100$

Percentage of Iodine $= \frac{W_{AgI}}{W_{OC}} \times \frac{127}{235} \times 100$

Estimation of sulphur:

A known weight of organic compound is heated fuming HNO_3 in a carius tube where sulphur acid thus formed is precipitated as $BaSO_4$ by adding excess of $BaCl_2$ solution.

Percentage of sulphur

$$= \frac{Weight\ of\ BaSO_4}{Weight\ of\ organic\ compound} \times \frac{32}{233} \times 100$$

Estimation of phosphorous:

- A known weight of the organic compound is heated with fuming HNO_3 in a carius tube phosphorus present in the organic compound is oxidised to H_3PO_4.
- H_3PO_4 is precipitated as ammonium phosphomalybdate $\left[(NH_4)_3\ PO_4.12MoO_3\right]$ by adding ammonia and ammonium molybdate.

Percentage of phosphorous:

$$= \frac{31}{1877} \times \frac{\text{Wght. of ammonium phosphomolybdate}}{\text{Wght. of organic compound}} \times$$

Estimation of oxygen:

- A known weight of organic compound is decomposed by heating in a steam of nitrogen gas.
- The mixture of gaseous products including oxygen thus formed is passed over red hot coke when all the oxygen is converted into carbonmonooxide.
- This mixture is then passed through warm iodine pentoxide (I_2O_5), carbon monoxide is oxidised to carbon dioxide & liberates iodine.

Compound $\xrightarrow{\Delta} O_2 +$ other gaseous products

$$2C + O_2 \xrightarrow{\Delta} 2CO$$

$$I_2O_5 + 5CO \rightarrow I_2 + 5CO_2$$

Percentage oxygen

$$= \frac{Weight\ of\ CO_2}{Weight\ of\ organic\ compound} \times \frac{16}{44} \times 100$$