

# General Organic Chemistry

## Methods of purification of organic compounds:

- Purification is an essential process when an organic compound is extracted from a natural source (or) synthesized in the laboratory.
- The common techniques used for purification are,

(i) Sublimation

(ii) Crystallisation

(iii) Distillation

(iv) Differential extraction

(v) Chromatography

### 1. Sublimation:

Certain solid substances can change from solid to vapour state directly. Those substances are called sublimable compounds.

Sublimation is used to separate sublimable compounds from non sublimable compounds.

### 2. Crystallisation:

This technique is based on the difference in the solubilities of compound and the impurities in a suitable solvent.

The saturated solution is made by dissolving impure compound in a suitable solvent at high temperature. The solution is then filtered to remove impurities. The clear solution is cooled to allow crystallisation.

### 3. Distillation:

Impure substance is converted into vapours and are condensed back to give pure form of original liquid is called distillation.

Distillation is of different types.

1. Simple distillation
2. Fractional distillation
3. Vacuum distillation
4. Steam distillation

**Simple distillation:**

- It is applied only for liquids which boil without decomposition at atm pressure & contain non – volatile impurities.
- It also be used for separation & purification of mixture of two or more miscible organic liquids provided their boiling point differ by above  $40^{\circ}\text{C}$ .

**Fractional distillation:**

- This method is used for the separation & purification of organic liquid from non – volatile impurities.
- In this process, the distillate is collected in fractions under different temperatures.

**Vacuum distillation:**

- This method is used to purify liquids having very high boiling points and these which decompose at below their boiling points.
- Distillation under reduced pressure is more useful for the separation of compounds, which decompose below their boiling points.

**Steam distillation:**

- This technique is applied to separate substances, which are steam volatile & are immiscible with water.

Ex. Aniline, Nitrobenzene