EXPERIMENT-4

DETERMINATION OF BOILING POINT OF AN ORGANIC COMPOUND:

AIM:

Determination of boiling point of a liquid organic compound.

THEORY:

The boiling point of a liquid is the temperature at which vapour pressure of the liquid becomes equal to the atmospheric pressure, which the surface of the liquid experiences. At 1.013 bar atmospheric pressure the boiling point of the liquid is termed as normal boiling point. Different liquids have different boiling point. The difference in the boiling points of liquids is essentially due to the difference in the intermolecular forces operating between the molecules of the liquid.

MATERIAL REQUIRED:

- Thiele's tube/Kjeldahl's flask : One
- Thermometer 110°C or 360°C : One
- Iron stand with clamp : One
- Ignition tube : One
- Capillary tube : One

- Organic liquid : 1 mL
- Liquid paraffin/ Conc. H_2SO_4 : As per need

PROCEDURE:

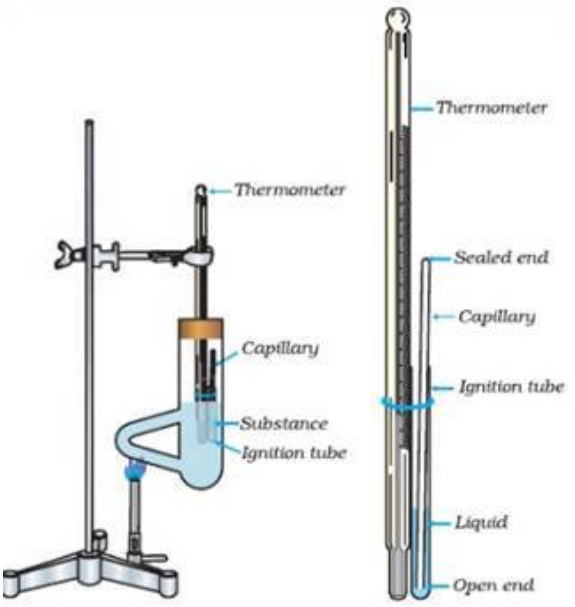

Fig. 3.2: Determination of boiling point

(i) Fill Thiele's tube with the liquid paraffin so that it crosses the bent portion of the Thiele's tube.

(ii) Take 1-2 drops of the given liquid in an ignition tube and tie the ignition tube with the thermometer with a rubber band as shown in Fig. 3.2. Note that the lower end of the ignition tube and the thermometer bulb are at the same level.

(iii) Seal one end of the capillary tube of approximately 8 cm length by heating in the flame.

(iv) Place the capillary tube with its open end dipped in the liquid present in the ignition tube.

(v) Heat the side arm of Thiele's tube with a low flame.

(vi) Observe the escape of bubbles at the lower end of the capillary dipped in the liquid organic compound. Note the temperature at which bubbles start coming briskly and continuously. This temperature is the boiling point of the liquid.

PRECAUTIONS:

(a) Record the temperature as the boiling point at which brisk and continuous evolution of the bubbles starts from the lower end of the capillary dipped in the liquid organic compound.

(b) Keep the lower end of the ignition tube and the thermometer bulb at the same level.

(c) Heat the side arm of the Thiele's tube gently.

(d) Boiling point of the liquid filled in Thiele's tube should be 50-60 °C higher than that of the liquid, of which boiling point is to be determined.