# Determination of Boiling Point (B.P):

**Aim :-** To determine the boiling point of an organic compound (liquid)

**Apparatus :-** Thiele's tube , capillary tube , Stand ,thread, Bunsen burner.

**Chemicals :-** Pure given organic compound, liquid paraffin.

**Theory :-** The boiling point of a liquid compound is the temperature at which the vapour pressure of the liquid becomes equal to the atmospheric pressure. The presence of impurities raises its B.P. The B.P. of the given organic liquid is generally determined by using Thiele's tube or open oil bath.

**Procedure :-**

1) Take a small tube (usually sodium fusion tube) and fill it by pure organic liquid whose boiling point is to be determined.

2) Seal a capillary tube at one end and place it in the liquid with the sealed end above the surface of the liquid.

3) Fasten the glass tube to the thermometer using a thread or a rubber band.

4) Immerse partly the thermometer in the paraffin liquid taken in a small beaker or Thiele's tube taking care to see that thread is above the level of the liquid bath i.e. it is not coming in contact with liquid bath.

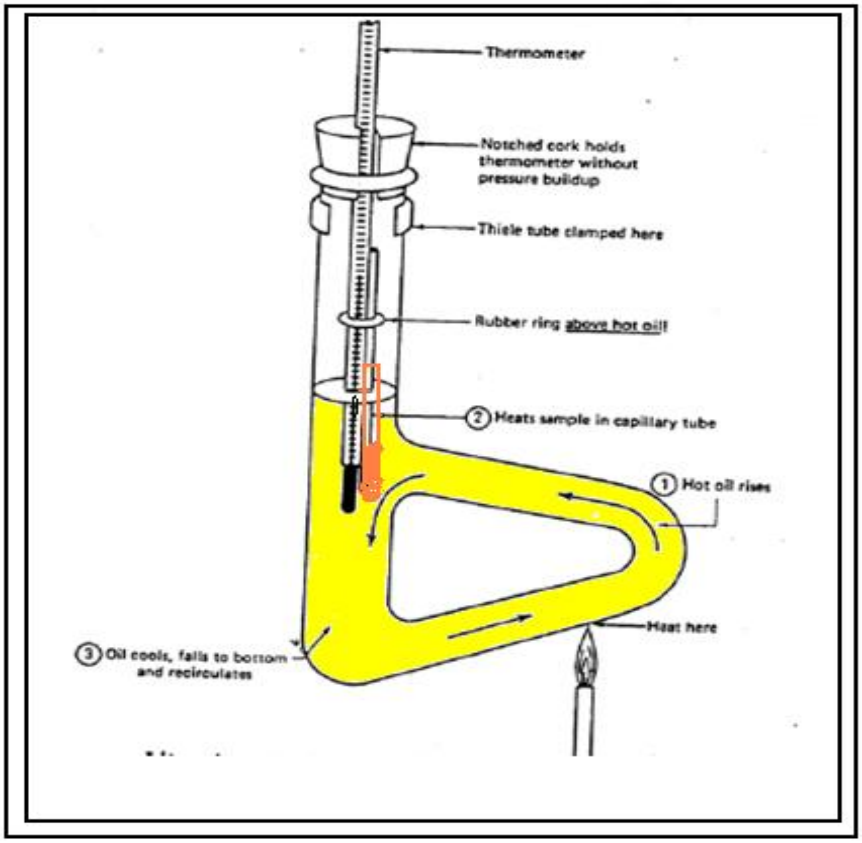
5) Heat the Thiele's tube gently at the lower bent arm and no stirring is required as convection currents maintain uniform temperature. As rapid and continuous stream of air bubbles start coming out from the lower end of the capillary tube, remove the burner but continue stirring note down the temperature at which the air bubble stop and the liquid rushes into the capillary tube. This is the boiling point of the liquid.

**Result:-** l) The Boiling point of given organic Liquid _____is _____ $^0$C

2) The Boiling point of given Unknown organic Liquid is _____ $^0$C

**3) The Unknown organic liquid is_____**

## Diagram




## Observation Table

| Sr.No | Name of the compound | Boiling point in Degree Celsius | Boiling point in Kelvin |
|---|---|---|---|
| 1 | Acetic acid | 118 | |
| 2 | Unknown compound | | |

**Boiling point of some common organic compounds**

| Sr.No | Name of the compound | Boiling point in Degree Celsius | Boiling point in Kelvin |
|---|---|---|---|
| 1 | Nitrobenzene | 210 | |
| 2 | Benzene | 80 | |
| 3 | Benzaldehyde | 179 | |
| 4 | Acetone | 56 | |

# Determination of Melting Point (M.P):

**Aim :-** To determine the Melting point of an organic compound (Solid)

**Apparatus :-** Thiele's tube , capillary tube , sodium fusion tube ,Stand ,thread, Bunsen burner.

**Chemicals :-** Pure given organic compound, liquid paraffin.

**Theory :-** The Melting point of a compound is the temperature at which the solid state of a compound changes into liquid state. It is defined as the temperature at which solid phase is in equilibrium with the liquid phase at a given temperature. The presence of impurities lowers its M.P.

**Procedure :-**

1) Take a capillary tube and seal it from one end.

2) Fill the capillary tube with given finely powered organic solid from the non sealed end whose Melting point is to be determined.

3) Fasten this capillary tube to the thermometer using a thread or a rubber band.

4) Immerse partly the thermometer in the paraffin liquid taken in a Thiele's tube taking care to see that thread is above the level of the liquid bath i.e. it is not coming in contact with liquid bath.

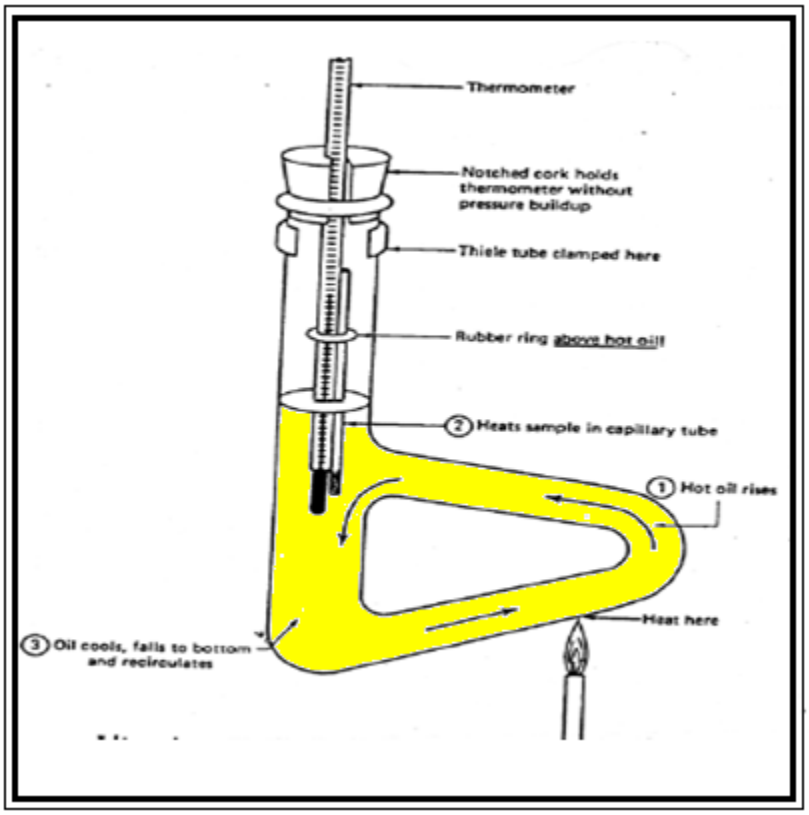
5) Heat the Thiele's tube gently at the lower bent arm and no stirring is required as convection currents maintain uniform temperature. As you see the solid changing in to liquid from the lower end of the capillary tube, that is when you see partly powered compound changed to liquid and still some in the solid state. Note down this temperature, this is the Melting point of the solid.

**Result:-** l) The Melting point of given organic compound _____is _____ $^0$C

2) The Melting point of given Unknown organic compound is ____ $^0$C

**3) The Unknown organic** compound **is_____**

## Diagram




## Observation Table

| Sr.No | Name of the compound | Melting point in Degree Celsius | Melting point in Kelvin |
|---|---|---|---|
| 1 | Naphthalene | 80 | |
| 2 | Unknown | | |

**Melting point of some common organic compounds**

| Sr.No | Name of the compound | Melting point in Degree Celsius | Melting point in Kelvin |
|---|---|---|---|
| 1 | Oxalic acid | 101 | |
| 2 | Urea | 132 | |
| 3 | Benzoic acid | 121 | |
| 4 | m-Dinitrobenzene | 90 | |