Boiling point

Purpose of experimental

1) To determine boiling point of unknown compounds.
2) To identify a liquid unknown.
3) To determine the purity of organic compound.

Theory part of experimental

Boiling points are also useful physical properties for indicating the purity of an organic compound. Boiling point is the temperature at which the vapor pressure of a liquid equals atmospheric pressure or some other applied pressure. A boiling point is commonly measured during a distillation, in which a liquid is heated to form vapor, and then the vapor is condensed and collected in another container. The boiling temperature is measured as distillation vapor covers the bulb of a thermometer suspended above the boiling liquid. Typically, the most accurate boiling point measurement is the relatively constant temperature achieved during a distillation.

Factors affecting the boiling point

1. The nature of the organic compound
2. Molecular weight organic compound
3. External pressure
4. Composite purity
5. Geometric shape of the organic compound (branched chain or straight chain)

Experimental No. (2) Boiling Point

Chemical and Apparatus

Capillary tubes, boiling tube, thermometer(-10 - 110° C) , rubber band, glass rod, stand and clamp, burner, 250 cm^3 beaker, food oil or paraffin oil , chemical compound (liquid).

Procedure of Experimental

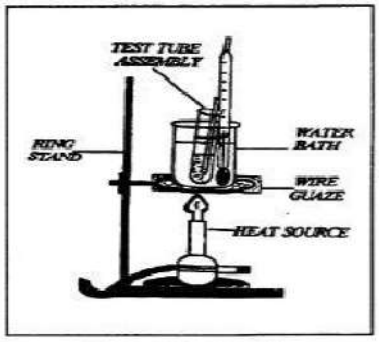
1) Obtain a liquid unknown from your instructor. Record the sample number.

2) Attach a clean and empty test tube to a thermometer with sewing thread. Put an empty capillary tube in the test tube so that the open end of capillary is down. Set up the apparatus as in

3) Ensure that the temperature of the paraffin oil is below 50 °C. Place 2-3 mL of sample in the test tube.

4) Turn on the hot plate and use a clean glass rod to stir the paraffin oil to ensure a uniform heat distribution.

5) Record the temperature when rapid air bubbles come out from the capillary. At this stage, the vapor pressure of the unknown inside the capillary is higher than the atmospheric pressure.



Heating Assembly↑