

12. Properties of Substances

Exercises

1. Question

Define.

- (a) Melting point
- (b) Boiling point
- (c) Distillation.

Answer

(a) **Melting Point:-** The temperature at which the state of a substance changes from solid to liquid is called a melting point of the substance.

For example:- The melting point of ice is 0°C while that of iron is 1535°C .

(b) **Boiling Point:-** The temperature at which the liquid boils is called the boiling point of the substance.

For example:- The boiling point of water is 100°C and that of iron is 2750°C .

(c) **Distillation:-** It is a process in which a liquid is first heated up to its boiling point and then, its vapor is cooled to obtain the liquid again.

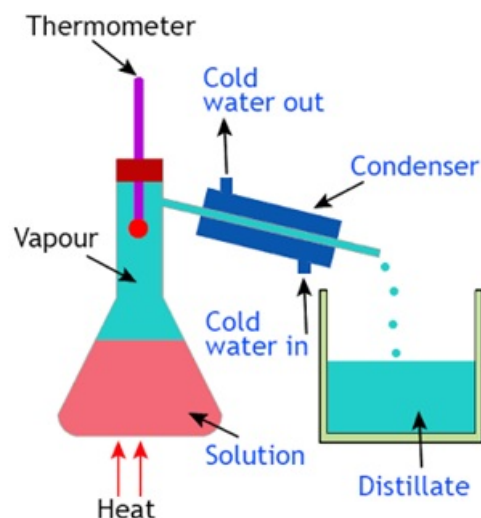
2. Question

Draw a labelled diagram showing the process of distillation.

Answer

Distillation is a process of purifying a liquid by a process of heating and cooling.

The diagram of distillation is given below:



(i) It is a chemical process where a mixture which is made up of two or more components with different boiling points is separated.

(ii) The mixture is heated until one of the components boils (turns to a vapor).

(iii) The vapor is then fed into a condenser, which cools the vapor and changes it back into a liquid that is called distillate.

(iv) What remains in the original container is called the "residue"

3. Question

Give scientific reasons.

- (a) A condenser has two taps.

(b) At dawn, in winter, we see dewdrops on leaves of trees.

Answer

(a) The condenser has two taps, one is for the inlet of water whereas the other is for the outlet of water.

(b) Some amount of water is present in the environment in the form of water vapours and at the time of dawn, temperature falls Down and water vapour gets cooled and is converted in the form of water droplets and gets collected on leaves.

4. Question

Match the following.

'A'	'B'
(a) Melting point	1. Separating common salt and water from their mixture.
(b) Boiling point	2. Obtaining diesel from crude oil.
(c) Fractional distillation	3. Change of state of a liquid into a gas.
(d) Distillation	4. Change of state from solid to liquid.

Answer

(a)-(4)

The melting point is a temperature in which a substance changes its state from solid to liquid.

(b)-(3)

The boiling point is a Temperature in which the substance changes it's stated from liquid to gas.

(c)-(2)

Separation of the various components of crude oil is possible because of the difference in their boiling points which is necessary for fractional distillation.

(d)-(1)

Distillation is mainly done for separating salt and water from the mixture.

5. Question

Answer the following questions.

(a) What will you do to find out the boiling point of water?

(b) What changes do you see in the appearance of a candle after you have lit it?

(c) Can a solid and a solvent be separated from their solution by distillation?

Answer

(a) The boiling point of water can be found by boiling the water. When the water is boiling, the temperature increases rapidly but after some time the increase in temperature stops. Now the thermometer can be placed to see the boiling point. The boiling point of water is 100°C.

(b) When we lit the candle it starts melting as it has a low melting point. The heat of candle melts the nearby wax. The liquid wax starts dripping and the height of the candle starts decreasing.

(c) No the solid and a solvent cannot be separated by distillation. It can be separated by the process called sedimentation and decantation or loading or solvent extraction method.

Activities

1. Question

Find out how stars are made.

Answer

Ittars are an oil derived from botanical sources. These oils are extracted via hydro or steam distillation. The oils are generally distilled into a wood base such as a sandalwood and then aged.