

Fig. 3.5 Evaporation

This method is used to separate the components of a homogeneous solid-liquid mixture, like salt from sea water. Sea water is collected in shallow beds and allowed to evaporate in the sun. When all the water is evaporated, salt is left behind. By this method, we get only the solid, whereas the liquid escapes in the form of vapours. For separating a solid from its solution, we usually evaporate it until whole of the liquid escapes in its vapour form.

Crystallisation : It is a process in which slow evaporation of a solution containing more of the solid component is done.

Note : Crystals are the solid particles with definite shape and size. They are lustrous too. *Example :* Sugar particles are cubical and they shine.

Example : Pure sugar is obtained from its solution in water by the process of crystallisation.

At first the sugar solution is heated to evaporate water at a faster speed. When very less of water is left, the solution is cooled. On cooling sugar dissolved in it starts separating out in the form of **crystals**.

Distillation : Distillation is the method of getting a pure liquid from a solution by evaporating and then condensing the vapours.

When the solution is heated, the liquid component of the mixture evaporates in the form of vapours. These vapours are then condensed back into the liquid form which is very pure and is called as **distillate**.

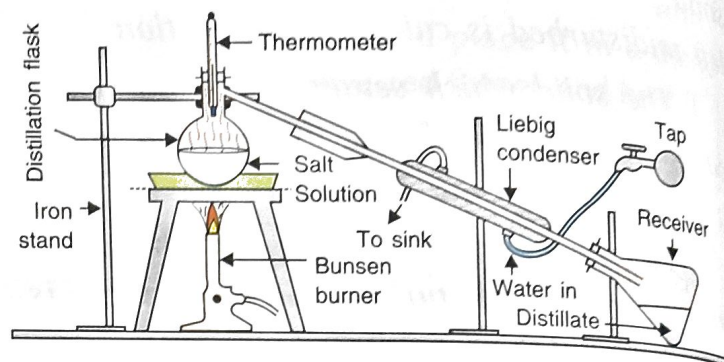


Fig. 3.6 Distillation

Tap water, which is a mixture containing dissolved salts, is purified by *distillation*. The pure water so obtained is called *distilled water*. It is used by doctors for preparing medicines, by chemists for making solutions and in industries for various purposes.

The advantage of this process is that both the components of the solid-liquid mixture are obtained.

Centrifugation : Centrifugation is the method of separating solids from liquids where the mixture is homogeneous. This is also called *churning*.

The process is used to separate the components of a mixture which differ in their density.

An apparatus called centrifuge is used for this purpose. The mixture is placed in the centrifuge tube and rotated at a high speed, due to which the heavier solid particles (high density particles) settle at the bottom and the light solid particles (low density particles) float on the liquid.

Cream is separated from milk by this method. At home, we use mixers or traditional churners to separate cream from milk. This process is used even now in dairies. In washing machines, this principle is used to squeeze out water from wet clothes.

(C) Separation of liquid-liquid mixtures

Note : (1) Homogeneous liquid-liquid mixtures : Liquids which dissolve in each other completely in all proportions are called miscible liquids. *Example* – alcohol is miscible with water.

(2) Heterogeneous liquid-liquid mixtures : Liquids which do not dissolve in each other are called immiscible liquids. *Example* – oils are immiscible with water.

By separating funnel : It is a simple device used to separate the components of a liquid-liquid heterogeneous mixture.

Example : Kerosene oil and water. The mixture is placed in a separating funnel and allowed to stand for sometime. The components form two clear layers. Water being heavier forms the lower layer and oil being lighter forms the upper layer. When the stopper of the

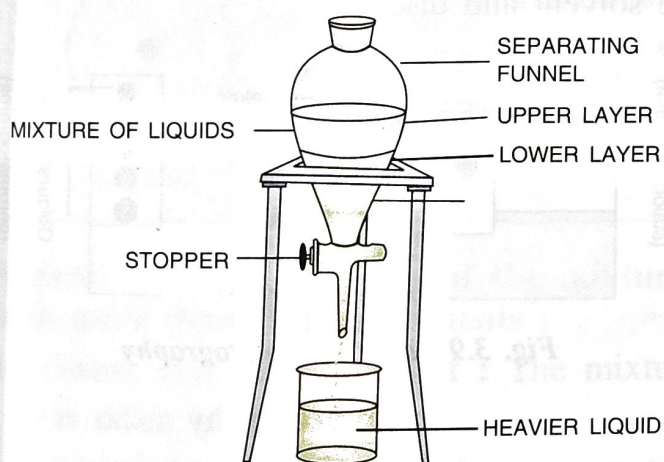


Fig. 3.7 Separation of immiscible liquids using separating funnel

funnel is opened, the heavier liquid trickles out slowly and is collected in a vessel. The stopper is closed when the bottom layer is entirely removed from the funnel. In this way, the two liquids are separated.

Fractional distillation : The process of distillation used to separate the components of a homogeneous liquid-liquid mixture on the basis of the difference in their boiling points is called fractional distillation. The difference in their boiling points must be 25°C or more.

Example : A mixture of water and alcohol. Alcohol boils at a lower temperature than water. The vapours of alcohol are collected and cooled while water is left behind in the flask.

For the separation of components, a fractionating column is fixed over the distilling flask, so that if water vapours move up along with alcohol, it should condense and come back to the flask.

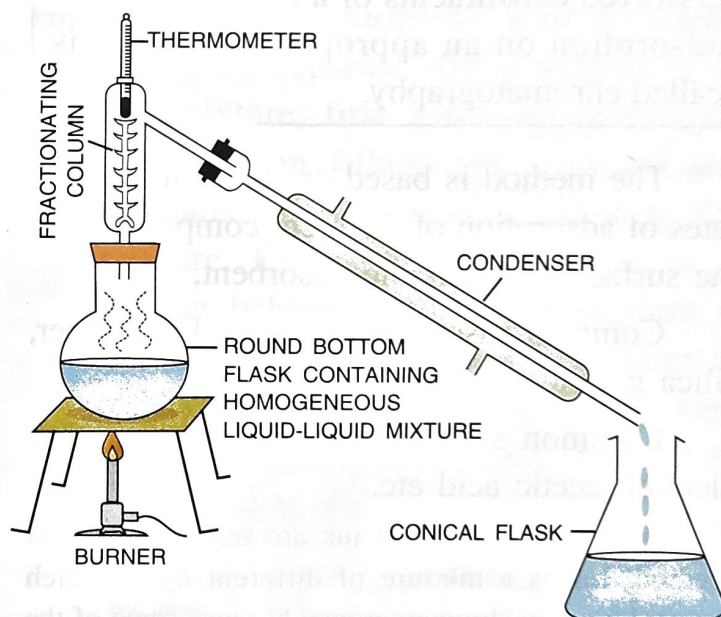


Fig. 3.8 Fractional distillation of petroleum

Petrol, kerosene, diesel, etc., are obtained from crude petroleum oil in a similar way.

Wk	M	T	W	T	F	S	S
36		1	2	3	4	5	6
37	7	8	9	10	11	12	13
38	14	15	16	17	18	19	20
39	21	22	23	24	25	26	27
40	28	29	30				

APPOINTMENT / MEETING

Class VII

Subject - Chemistry

8

Chapter - 3 Elements, Compound, mixture
part - 5

Date - 16.6.20

9

① What is Centrifugation?

10

② How can you use the Centrifuge?

11

③ Give the use of centrifugation.

12

④ What is miscible and immiscible liquid? Give eg.

1

⑤ What is separating funnel?

⑥ How can you use separating funnel?

4

⑦ What is fractional distillation?

5

⑧ Give one eg. of fractional distillation.

6

⑨ How can you separate water and alcohol by fractional distillation method?

NOTES

10 October 2020							
Wk	M	T	W	T	F	S	S
40				1	2	3	4
41	5	6	7	8	9	10	11
42	12	13	14	15	16	17	18
43	19	20	21	22	23	24	25
44	26	27	28	29	30	31	

SEPTEMBER 2020

DAY 248-118 WEEK 36

FRIDAY

04

APPOINTMENT / MEETING

(10) How can you separate gas-liquid mixture? Give an eg.

P. S. L
16.6.20

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10

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