Chapter 1 - Matter in Our Surroundings

1. When we dissolve a certain amount of salt/sugar in a given volume of water, we observe no change in the volume of water. Which characteristic of matter is illustrated by this observation?

Answer:

The given observation describes the following characteristics of matter:

(i) Matter is made up of very, very small particles.

(ii) Particles of matter have spaces between them.

Thus, when we dissolve salt or sugar in water, its particles get into the spaces between particles of water. Due to this the volume of water remains the same.

2. Which physical state of matter is identified with the following characteristics:

- **It cannot be compressed**
- **It has no fixed shape**

Answer:

Liquid is the state of matter that cannot be compressed. It has no fixed shape. It takes the shape of the container in which it is kept.

3. Sponge though being a solid can be compressed with hands. How is it possible?

Answer:

A sponge has minute holes, in which air is trapped, when we press it, the air is expelled out and we are able to compress it.

4. Why do solids exhibit a definite shape?

Answer:

The intermolecular forces between the particles of a solid are very strong due to which they remain settled at fixed positions giving the solid a definite shape.

5. Gases can be easily compressed but not liquids. Why?

Answer:

Gases have large spaces between their particles due to which they can be easily compressed. On the other hand, there is very little space between the particles of liquids. Therefore, liquids are not compressible.

6. Rubber band is solid but it changes its shape when stretched. Give reason for the statement.

Answer:

A rubber band changes shape under force and regains the same shape when the force is removed. Therefore, it is considered as a solid. It even breaks on applying excessive force.

7. Sugar when kept in different jars takes the shape of the jar. Is it solid?

Answer:

The shape of each individual sugar crystal remains fixed, whether we take it in our hand, put it in a plate or in a jar. Due to this property, we consider it as a solid.

8. Why is solid CO_2 also named as dry ice?

Answer:

Solid carbon dioxide (CO_2) is stored under high pressure. It gets converted directly to gaseous state on decreasing the pressure to 1 atmosphere without coming into liquid state. This is the reason that solid carbon dioxide is also known as dry ice.

9. Why do the wet clothes dry faster on a sunny day than on a cloudy day?

Answer:

The temperature on a sunny day is higher than on a cloudy day. Now, as the rate of evaporation increases with the increase in temperature, wet clothes dry faster on a sunny day than on a cloudy day.

10. How does the rate of evaporation changes with:

(i) Increase of surface area

(ii) Increase in temperature

(iii) Increase in humidity

(iv) Increase in wind speed

Answer:

The rate of evaporation increases with an increase in surface area.

The rate of evaporation increases with an increase in temperature.

The rate of evaporation decreases with an increase in humidity.

The rate of evaporation increases with an increase in wind speed.