

**Diffusion:**

- The spreading out and mixing of a substance with another substance due to the motion of its particles is called diffusion.
- The diffusion of one substance into another substance goes on until a uniform mixture is formed. For example: diffusion of bromine vapors in air.
- Diffusion is the property of matter which is based on the motion of its particles. Diffusion occurs in gases, liquids and solids.
- Diffusion is fastest in gases and slowest in solids.
- The rate of diffusion increases on increasing the temperature of the diffusing substance.

**Diffusion in Gases:**

- Diffusion in gases is very fast. This is because the particles in gases move very quickly in all directions.
- The rate of diffusion of a gas, however, depends on its density. Light gases diffuse faster than heavy gases.
- Example: When we light an incense stick (agarbatti) in a corner of our room, its fragrance spreads in the whole room very quickly due to the diffusion of its smoke into the air.

**Diffusion in liquids:**

- Diffusion in liquids is slower than that in gases. This is because the particles in liquids move slowly as compared to the particles in gases.
- Example: The spreading of purple colour of potassium permanganate into water, on its own, is due to the diffusion of potassium permanganate particles into water.
- **Note:** The gases like carbon dioxide and oxygen are essential for the survival of aquatic plants and animals. The carbon dioxide and oxygen gas present in air diffuse into water, and dissolve in it. The aquatic plants use the dissolved carbon dioxide for preparing food by photosynthesis and aquatic animals use the dissolved oxygen of water for breathing. This is an example of diffusion of gases into a liquid.

**Diffusion in solids:**

- Diffusion can also take place in solids. Diffusion in solids is very, very slow process.
- Example: If we write something on a blackboard and leave it uncleaned for a considerable period of time, we will find that it becomes quite difficult to clean the blackboard afterwards. This is due to the fact that some of the particles of chalk have diffused into the surface of blackboard.

**The Common Unit of Temperature and SI Unit of Temperature:**

- The common unit of measuring temperatures (like melting points, boiling points etc.) is '**degrees Celsius**' which is written in short form as °C.
- Laboratory thermometers and clinical thermometer are calibrated on Celsius scale of temperature.
- There is another scale of temperature called Kelvin scale of temperature which is used by the scientists mainly for research work. The SI unit of measuring temperature is Kelvin, which is denoted by the symbol K.
- The relation between Kelvin scale and Celsius scale of temperature can be written as:

$$\text{Temp. on Kelvin scale} = \text{Temp. on Celsius scale} + 273$$

1. To convert a temperature on Celsius scale to Kelvin scale, we have to add 273 to the Celsius temperature.
2. And to convert a temperature on Kelvin scale to the Celsius scale, we have to subtract 273 from the Kelvin temperature

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