

Class: IX	Topic: Matter in our surrounding
Subject: Chemistry	Date -06/04/2022

1. Define Matter:

- Anything that occupies space and has mass is called matter.
- It exists in the form of five basic elements, the Panch tatva – air, earth, fire, sky and water.
- For example: Chair, bed, river, mountain, dog, tree, building, etc.

2. Write the characteristics of matter:

- Matter is made up of small particles called atoms.
- These particles are too small to be observed with naked eye.
- These particles are constantly moving.
- These particles have spaces between them.
- Particles of matter attract each other because of the force of attraction.

3. Write an activity that demonstrates particles of matter are very very small:

2. The particles of matter are very tiny

Activity - Dissolve 2 – 3 crystals of potassium permanganate in 100ml of water in a beaker. Take 10ml of this solution and dissolve in 100ml of water. Take 10ml of this solution and dissolve in 100ml of water. Repeat this process 5 – 6 times. This shows that a few crystals of potassium permanganate can color a large volume of water because there are millions of tiny particles in each crystal.

4. Write an activity that demonstrates particles of matter have space

between them

3. The particles of matter have space between them

Activity :- Take some water in a beaker and note its level. Dissolve some salt or sugar in it with the help of a glass rod. The salt dissolves in the water but the level of water does not change. This is because the particles of salt get into the space between the particles of water.



5. What is diffusion? Write the factors that affect the rate of diffusion.

Particles of matter intermix on their own with each other. They do so by getting into the spaces between the particles. This intermixing of particles of two different types of matter on their own is called diffusion. Examples

Mixing of two gases:

- Fragrance of an incense stick (agarbatti) lightened in one corner of a room, spreads in the whole room quickly.
- The particles of gases (or vapours) produced by burning the incense stick move rapidly in all directions and mix with the moving particles of air in the room

Factors affecting the rate of diffusion-

1. Temperature-As the temperature increases rate of diffusion increases

Activity that demonstrated rate of diffusion increases with temperature-

We take two beakers, in one we add hot water and another we add cold water.

In both the beakers equal amount of potassium permanganate is added.

Observation –The particles of potassium permanganate ($KMnO_4$) more rapidly diffuses in hot water containing beaker as compared to cold water containing beaker

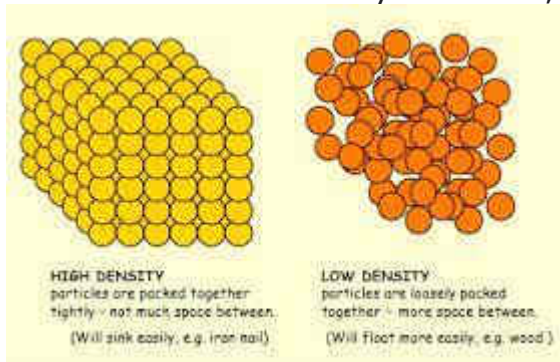
Thus it is concluded that rate of diffusion increases with temperature.



2.State of matter-Rate of diffusion is maximum in gases ,moderate in liquids and minimum in solids.

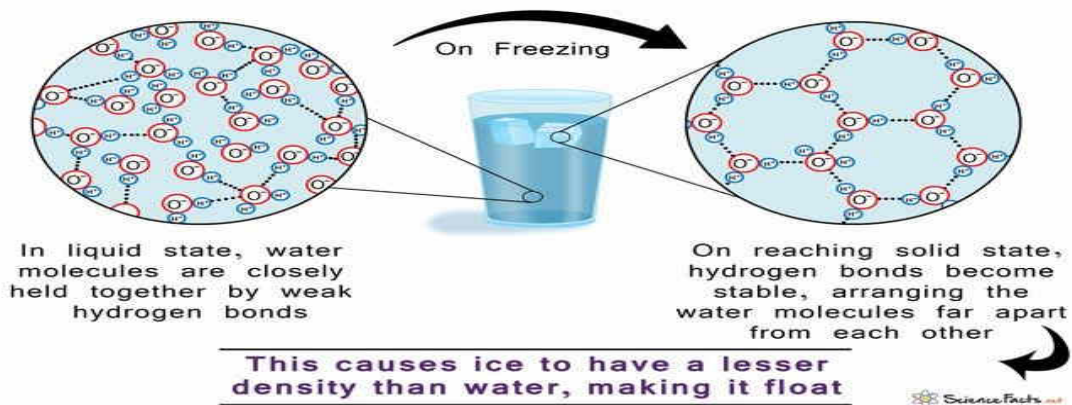
- **6. Define density.**

- The **density** of a substance is the relationship between the mass of the substance and how much space it takes up (volume). The mass of atoms, their size, and how they are arranged determine the **density** of a substance. **Density** equals the mass of the substance divided by its volume; $D = m/v$.



- The SI unit of density is kg/m^3

WHY DOES ICE FLOAT ON WATER



- As given in above picture in ice has cage like structure and has lot of vacant space the number of these space are comparatively less in water, therefore water is denser as compared to ice and ice floats on water.

Three States of Matter



7. Differentiate the three state of matter

Solid	Liquid	Gas
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Constituent particles are very closely packed.	Constituent particles are less closely packed.	Constituent particles are far apart from each other.
Force of attraction between particles is very strong.	Force of attraction between particles is less strong.	Force of attraction between particles is negligible.
Kinetic energy between particles is minimum	Kinetic energy between particles is more than that in solids.	Particles have maximum kinetic energy.
Have definite shape and volume. Rigid	Do not have definite shape but definite volume. Non-rigid	Neither have definite shape nor definite volume. Non-rigid
Have high density and can not diffuse.	Density is lower than solids and can diffuse.	Density is least and can easily diffuse.
Incompressible.	Almost incompressible.	Highly compressible.
Do not flow	Have tendency to flow(fluids)	Have maximum tendency to flow(fluids)
Do not fill the container	Do not fill the container	Have tendency to fill the container