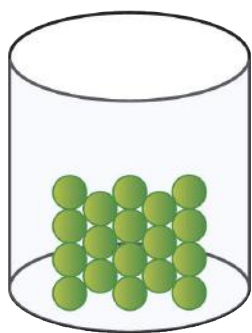
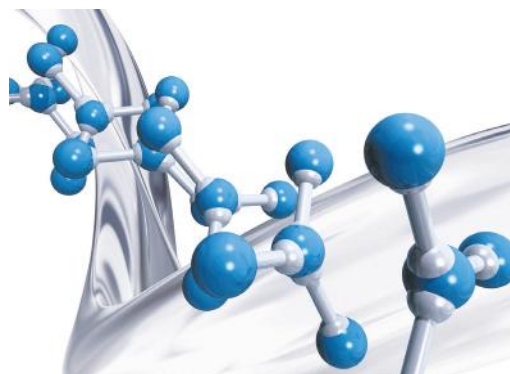




Anything that has mass and occupies space is called matter. Solid, liquid and gas are the three states of matter. Books, chairs and fans are solids. Water, ink and oil are liquids. Oxygen and carbon dioxide are gases.

Matter exists in three states: Solid, liquid and gas.



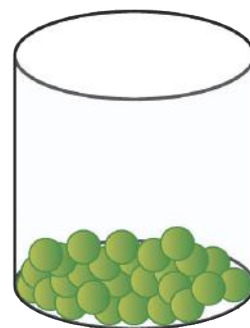
Solid

Solids

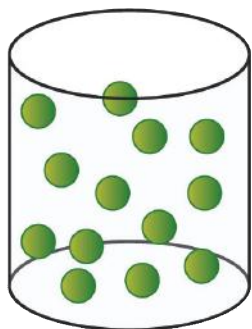
In solids, the molecules are compact. They are closely packed together because there is a greater attraction between them. Therefore, a solid is hard and has a definite shape and volume. They cannot move around. The space which a solid occupies does not change. For example, salt, table, etc.

Liquids

In liquids, the molecules are not very compact. They move freely and take some more space. That is why liquids flow. They take the shape of the container into which they are poured. They always flow from higher level to lower level.



Liquid



Gas

Gases

In gases, the molecules are loosely packed. The molecules are far apart, have empty spaces between them and thus move freely. Therefore, a gas has no fixed shape or volume. The gases do not have a fixed shape or volume. They can flow easily and fill up the entire space available to them.

SOLUBILITY

Solubility of a substance is its property to dissolve in some other substance to form a mixture of uniform nature.

When two substances are combined together in such a way that they evenly spread and mix with each other, it is called solution. The substance that gets dissolved in a solution is called the solute. The substance that dissolves the solute particles into it to make a solution is called the solvent. A solute and a solvent together form a solution.

Solution	Solute	Solvent
Sugar solution	Sugar	Water
Salt solution	Salt	Water

Solubility of Solids in Water

Salt and sugar are the common examples of solids that dissolve in water. But all the solids do not dissolve in water. Solids like sand, chalk powder, etc., do not dissolve and settle down at the bottom of the container.



Sugar in water

Solubility of Liquids in Water

Most of the liquids dissolve in water. We can observe this by performing a simple activity.



Milk in water



Kerosene oil in water

Take a beaker of water and add a mug of milk in it and stir well. The two liquids mix together and appear as one liquid. We can say that these two liquids have dissolved in each other. They are said to be miscible in water. Liquids like kerosene, petrol, oil, etc cannot be dissolved in water and are called immiscible in water.

Solubility of Gases

Gases like oxygen, carbon dioxide, etc., dissolve in water. Fishes breathe in the oxygen dissolved in water and hence are able to survive under the water. Carbon dioxide is dissolved in drinks to make them fizzy. The gas dissolved in it comes up immediately. Such drinks are called aerated drinks. Carbon dioxide is dissolved in water under great pressure. Solid carbon dioxide is called dry ice.

CHANGE OF STATE OF MATTER

Matter changes from one form to another when heated or cooled. In normal temperature, water is in the liquid form. When freezed, water becomes ice and when it is heated, it changes into water vapour. We can also get back the matter in its original position. If we

keep ice in a normal temperature, it melts and becomes water. When the steam cools, it changes into water.



Evaporation : The change of water into water vapour is called evaporation. It takes place when water is heated. On heating the loosely-packed, vibrating molecules of water begin to vibrate even faster. Finally, they break freely and escape into air as water vapour. So, we can say that heating increases the vibrating movement of molecules in a substance.



Evaporation



Condensation

Condensation : The change of water vapour into water is called condensation. Actually what happens is that cooling slows down the movement of molecules in a substance. This reduces the space between the particles and a change of state takes place. The gas changes into a liquid.

Melting : The change of ice into water on heating is called melting. Again the closely packed molecules of ice begin to move faster when placed in a warm place. Finally, they gain enough speed to slide over one another. At this point the ice melts and flows as water.



Melting



Freezing

Freezing : The change of a liquid into solid on cooling is called freezing. We already know that cooling slows down the movement of molecules and brings them closer. At one point the space between the molecules reduces to such an extent that the liquid turns into a solid.

EXPANSION AND CONTRACTION

Matter increases in size on heating. It is called expansion. On heating, the molecules of a matter start moving rapidly. So, they take up more space. This results in an increase in size.

Matter decreases in size on cooling. It is called contraction. On cooling, the molecules of a matter slow down. So, they take up less space. This results in decrease in size of the matter.

PHYSICAL AND CHEMICAL CHANGES

Changes take place all around us all the time. The changes can be grouped into two ways :

Physical change : The change in which no new substance is produced is called a physical change. In this change, the substance only changes its shape, size, colour or state. When an ice cube melts, it changes into water. This is a physical change as only a change of state has taken place and no new substance is produced.



Change of milk into cheese



Melting of ice

Chemical change : The change in which one or more new substances are produced and we cannot get back the original substance, it is called a chemical change. For example, when milk changes into cheese, we cannot get back the milk again. Cheese and milk are different substances. Hence, this is a chemical change.



Know the Keywords :

Matter	: Anything that occupies space and has weight
Solute	: The substance that gets dissolved in a solution
Solvent	: The substance that dissolves the solute particles into it to make a solution
Physical change	: A change that does not produce a new substance
Chemical change	: A change that produces new substances

Point to Remember

- Anything that occupies space and has mass is called matter.
- Matter exists in three states: Solid, liquid and gas.
- Liquids have a definite volume but does not have a definite shape.

- A gas has neither a definite shape nor a definite volume.
- Solubility of a substance is its property to dissolve in some other substance to form a mixture of uniform nature.
- Salt and sugar are the common examples of solids that dissolve in water.
- Fishes breathe in oxygen dissolved in water and hence are able to survive under the water.
- The change of water vapour into water is called condensation.

EXERCISE TIME

A. Multiple Choice Questions (MCQs).

Tick (✓) the correct word :

- _____ have fixed volume but no definite shape.

a. Solids	<input type="radio"/>	b. Liquids	<input type="radio"/>	c. Gases	<input type="radio"/>
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- The change of water into ice in refrigerator is :

a. freezing	<input type="radio"/>	b. melting	<input type="radio"/>	c. boiling	<input type="radio"/>
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- Soft drinks are made fizzy and tasty by using :

a. oxygen	<input type="radio"/>	b. carbon dioxide	<input type="radio"/>	c. nitrogen	<input type="radio"/>
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- The change of milk into cheese is a :

a. chemical change	<input type="radio"/>	b. physical change	<input type="radio"/>	c. None of these	<input type="radio"/>
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B. Write 'T' for true and 'F' for false :

- Matter exists only in one state and that is solid.
- Liquids can flow from a lower level to a higher level.
- The substance that is dissolved is called the solute.
- Carbon dioxide is dissolved in water under great pressure.

C. Fill in the blanks :

- Matter occupies _____ and has weight. (mass/ space)
- _____ have definite shape and volume. (Solids/ Liquids)
- The molecules in gases are very _____ packed. (tightly/ loosely)
- We cannot get back the original substance in a _____ change. (physical/ chemical)

D. Answer the following questions :

1. What is matter? Name the three states of matter.
2. Why do solids have a fixed shape and size?
3. What is the difference between evaporation and condensation?
4. What do you mean by expansion and contraction?
5. Differentiate between physical change and chemical change.



Creative Work

- Paste the pictures of various household items in your scrapbook and classify them into solids, liquids and gases. Also, draw respective particle arrangements of solids, liquids and gases.