

CLASS 6
SCIENCE
CHAPTER 4
SORTING OF MATERIAL

The things which we all use in our daily life are made up of different types of materials. All these materials have mass, shape and are classified based on many criteria, including their physical states, properties of materials, etc.

Properties of Materials

Based on the different properties, materials can be differentiated into their respective groups. Listed below are the properties of materials. At first, the materials can be sorted into their groups based on the 3 states of matter- Solids, liquids and gases.

The second criteria used to sort the materials are based on their appearance. The appearance of materials varies in colour, texture, hard, soft and lustre.

The third criteria used to sort the materials are based on their solubility. The solubility depends on soluble and insoluble of materials in water. For example,- Salt and sugar are soluble in water. Chalk and sand are insoluble in water.

The fourth criteria used to sort the materials is based on the metal and nonmetals. Iron, copper, gold are examples of metals and coal, chalk, rubber are examples of nonmetals.

The fifth criteria used to sort the materials is based on the light transmission through objects which includes Opaque, Translucent and Transpare

Classification

Materials can be classified based on several properties:

Transparency

Hardness

Soluble and Insoluble

Float and Sink

How are materials classified?

Materials are classified based on similarities in their properties such as appearance, hardness, transparency, solubility or density.

Classification based on appearance

Materials can be differentiated from each other based on their looks.

Some like diamond and gold are shiny and is termed as lustrous materials. Some other materials like graphite and wood do not appear shiny and are generally known as non-lustrous materials.

Hardness

The property of material to withstand stress without breaking is termed as hardness.

Classified based on the hardness

Materials that can be compressed or deformed easily are referred to as soft substances. Whereas materials that are difficult to bend or compress and are termed as hard substances.

Solubility

Classification based on solubility

Some substances completely disappear or dissolve in water. These substances are soluble in water. Other substances do not mix with water and do not disappear even after we stir for a long time. These substances are insoluble in water.

Materials can be classified based on the sinking or floating in water:

A leaf floats on water. A metal spoon will sink in water

Density

Density is defined as mass per volume. You can think of it as the amount of particles of a substance are packed into a certain amount of space. If the particles are packed tightly together, the density would be greater than if they are loosely packed with a lot of empty space around them. This is taken as mass per unit volume of a given object. The SI unit is kg/m^3 . Density is the reason some objects sink and other objects float.

Transparency

Materials can be grouped into three main categories based on their ability to transmit light.

Classification based on transparency

An object which allows visible light to pass through it is called a transparent object. We can clearly see through a transparent object. E.g.: - glass, fish tank.

An object which allows partial passage to light is called a translucent object. E.g.: -plastic bottle, paper cup. An object which does not allow passage to light is called an opaque object. We cannot see through an opaque object. E.g.: -wood, metals etc.

1. Questions and answers

1. Name five objects which can be made from wood.

Answer.

2. Select those objects from the following which shine:

Glass bowl, plastic toy, steel spoon, cotton shirt

Answer.

3. State whether the statements given below are 'true' or 'false'.

(i) Stone is transparent, while glass is opaque.

(ii) A notebook has lustre while eraser does not

(iii) Chalk dissolves in water.

(iv) A piece of wood floats on water.

(v) Sugar does not dissolve in water.

(vi) Oil mixes with water.

(vii) Sand settles down in water.

(viii) Vinegar dissolves in water.