

Matter and Materials

SPECIFIC OBJECTIVES

The students learn about

- matter, its three states
- change of one state of matter into another
- solution and solutions of three states of matter in liquids

TEACHING AIDS

Pictures/charts/models of different types of molecules of same and different atoms (as given in the chapter); Molecules arranged in solid, liquid and gaseous states (as given in chapter); **Picture/animation** on the process of freezing, melting, evaporation and condensation of water; The process of dissolution of a solid in a liquid; **Samples** of some soluble and insoluble solids in a water, some miscible and immiscible liquids; Soda

LESSON PLAN

- Teacher will start the chapter with 'Warm Up' section by asking some simple questions to students on different types of materials based on their previous knowledge. The teacher will help the students to fill in the blank.
- Now before defining the term matter, teacher will introduce the terms 'volume' and 'weight', and explain that anything that takes space and has weight is called matter.
- With the help of teaching aids, teacher will explain about atoms that all matter is made of tiny particles called atoms.
- With the help of teaching aids, teacher will explain about molecules that atoms of a matter unite to form molecules.
- Now showing pictures/charts/models of arrangement of molecules in solids, liquids and gases, teacher will explain the three states of matter (as given in chapter):
 - In **solids**, molecules of matter lie very close to each other, matter has definite shape and occupies definite amount of space.
 - In **liquids**, molecules of matter have more space between them than that of solids, matter does not have a definite shape but occupies definite amount of space.
 - In **gases**, molecules lie far apart to each other, matter neither has a definite shape nor does it occupy a definite amount of space.
- With the help of teaching aids, teacher will explain the process of freezing, melting, evaporation and condensation of water and also tell that some substances such as water can exist in more than one states.

- Now to evaluate the learning of students about the chapter, teacher will ask them to solve 'Checkpoint 1'.
- With the help of teaching aids, teacher will define the terms solute, solvent and solution and explain the process of dissolution of a solid in a liquid (as in chapter).
- Teacher will explain the type of solutions, i.e.,
 - solids dissolve in liquids
 - liquids dissolve in liquids
 - gases dissolve in liquids
- Teacher will give examples of each type and explain the terms miscible and immiscible liquids.
- Now, teacher will ask students to solve 'Checkpoint 2'.
- At last, the teacher will sum up the chapter by going through the points given under the head 'At One Go' and make students revise new terms given under the head 'Remember These Terms'.
- Teacher will help students to answer the questions given under the head 'Check Your Study'.

BOOST UP

- To define the term volume, teacher should display a cuboidal or rectangular solid and explain that amount of space occupied by it is called its volume.
- Teacher should demonstrate the process of freezing, melting, evaporation and condensation of water while teaching change in the state of matter.
- Teacher should demonstrate the process of dissolution of a solid in a liquid while teaching the terms solute, solvent and solution.
- Teacher should show the mixing of two immiscible liquids (oil in water) and two miscible liquids (milk in water) while teaching solution type 'liquids dissolve in liquids'.
- While teaching liquid state of matter, teacher should demonstrate, by pouring same amount of a liquid in two different containers, that liquids do not have a definite shape.

EXPECTED LEARNING OUTCOMES

The students understand

- matter and know its three states.
- that a matter can change its one state into other.
- differences between atoms and molecules.
- the process of dissolution of one substance in other.
- the solutions of three states of matter, i.e., solid, liquid and gas in liquid.

EVALUATIVE QUESTIONS

The teacher may ask the following questions for evaluating learning and understanding of students:

1. What is volume of an object?
2. What are three states of matter?
3. How are molecules arranged in three states of matter?
4. What is freezing and melting of a substance?
5. What are immiscible and miscible liquids?