



**G.D.GOENKA PUBLIC SCHOOL**

**Subject: Science (6<sup>th</sup>)**

**Aspect: Home- Assignment**

**Thursday 7-10-21**

**Topic: Separation of Substances**

**This material is not to be printed.**

### **LEARNING OBJECTIVE:**

- To learn how soluble solids can be separated from liquids.

Skill in focus:

- To be well versed with the terminology.
- **To know how filtration can be useful to separate soluble solids.**

**Filtration:** The process by which two substances (an insoluble solid and a liquid) are separated by passing the mixture through a filtering device is called filtration.

Filtration is commonly used in our homes. For example, after preparing tea, we filter out the tea leaves using a strainer. Filtration is also done to remove pulp from fresh fruit juice. Water may also contain solid impurities, which can be removed by filtration.

During filtration, the insoluble solid is retained in the filtering device whereas the liquid passes through it. It is important that the particles of the insoluble solid are bigger than the holes in the filtering device for them to be retained in it. A filter paper is a filtering device that has very fine pores in it.

## Evaporation

The process in which a liquid changes into a gas is called **evaporation**. In this method, the mixture is heated. The liquid part of the mixture evaporates leaving the solid part behind. For example, a mixture of common salt and water can be separated by evaporation. In fact, evaporating seawater is one of the oldest ways of obtaining salt (Fig. 3.6).



After purification, salt is ready for consumption.



Seawater has salt dissolved in it.



To obtain salt, seawater is collected in shallow pits and allowed to stand.



Sun's heat evaporates the water. Salt, which is left behind, is collected.



Fig. 3.6 Obtaining salt from seawater

## Condensation:

The process in which gas changes into liquid is called condensation. Condensation is the opposite of evaporation. In nature, water vapour in the air condenses to form its liquid form, the dew. Condensation takes place only when water vapour hits a cold surface.

## Solution And Solubility:

When some salt is added to water and stirred, the salt disappears. This is because the salt has dissolved in the water.



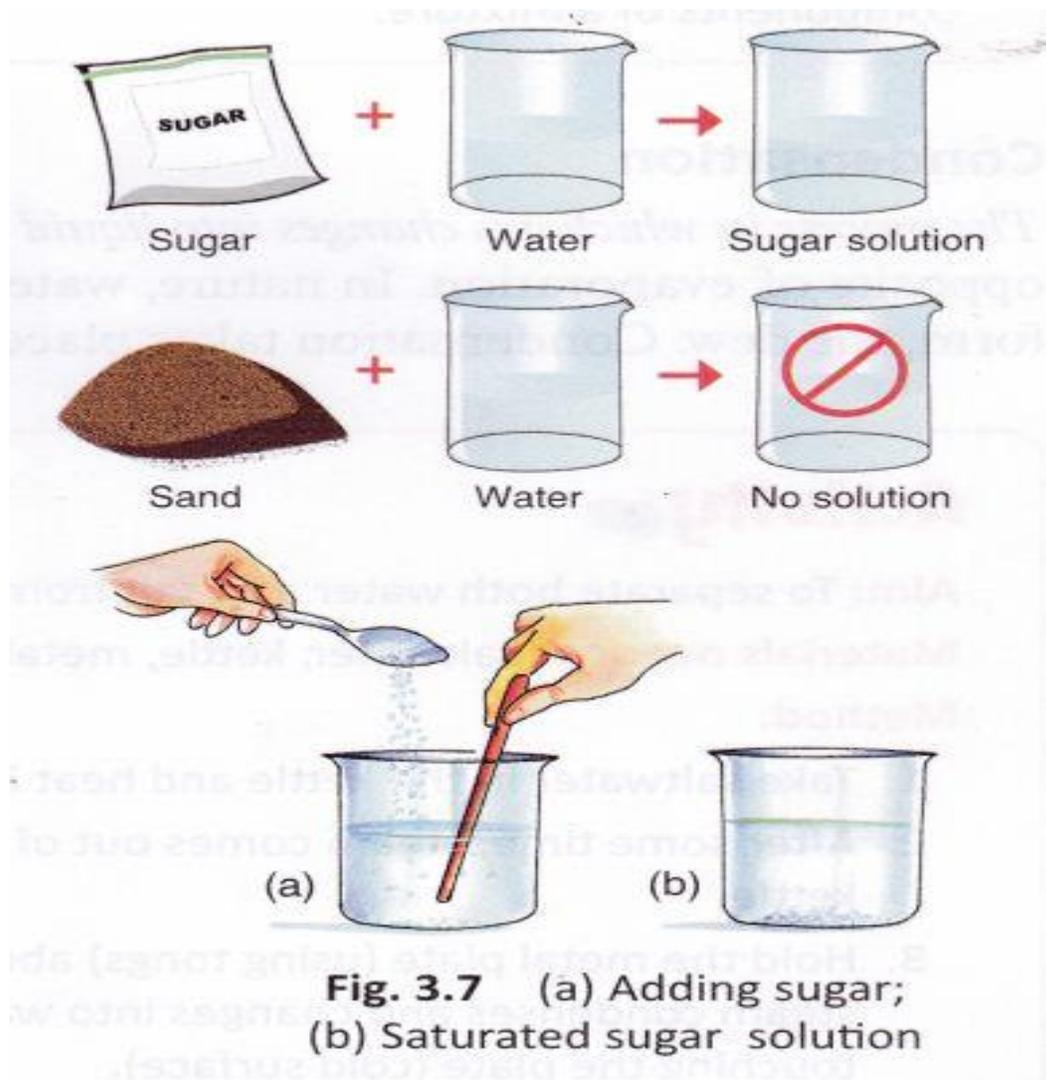
Salt dissolves in water.

Dissolving is a change where substances mix completely with the liquid they have been added to.

Not all substances dissolve in water. Only some substances, Salt dissolves in water. like salt and sugar, dissolve in water and are known as soluble substances. Substances like chalk and sand do not dissolve in water and are known as insoluble substances.

The substance that dissolves is called the solute and the substance in which the solute dissolves is called the solvent. The resulting mixture is called the solution. Thus, solute + solvent = solution.

E.g., sugar + water = sugar solution.



If we keep adding spoonfuls of sugar to water and stir the solution each time, what will happen after some time? We will notice some grains of sugar at the bottom of the

solution. This shows that no more sugar can be dissolved. We say that the solution has become saturated (Fig. 3.7).

A saturated solution is the solution in which no more of the solute can be dissolved. But what if we heat the solution? Can we then dissolve that 'extra' sugar present in the saturated solution?

Yes, we can increase the solubility of a solute by heating the solution. Solubility is the ability of a substance to get dissolved in a given liquid. The quantity of a substance that can dissolve in hot water is much more as compared to that in cold water.

There are some other factors that increase the solubility of a solute.

**Stirring** We can observe this by taking two glasses of water and adding a spoonful of sugar to each glass. Then we keep one glass undisturbed and stir the other. Sugar dissolves faster when the solution is stirred.

**Solute in powdered form** We can observe this by taking two glasses of water and adding a whole sugar cube in one glass and powdered or crushed sugar cube in the other. Sugar in the powdered form dissolves first.

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