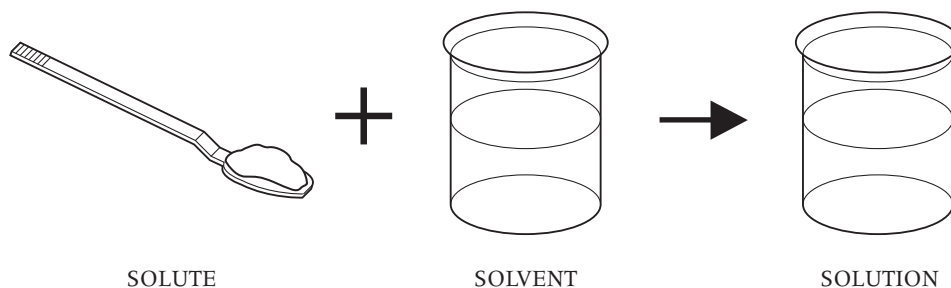


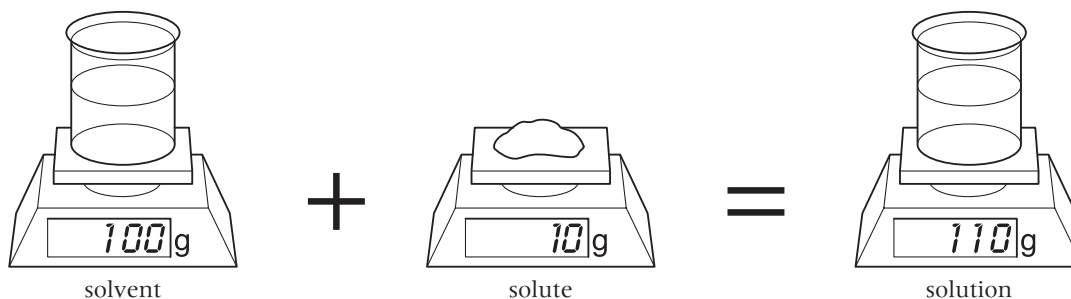
Solutions

Some solids **dissolve** in water to make a **solution**. These solids are **soluble**. A **solution** is made from a **solute** (solid) and a **solvent** (liquid). When a solution is formed, the liquid is always clear (**transparent**).



Solids that do not dissolve are **insoluble**. When an insoluble solid is mixed with water, the water goes **cloudy**. Sometimes the solid will sink to the bottom of the water.

The total **mass** of a solution equals the mass of solvent added to the mass of solute.

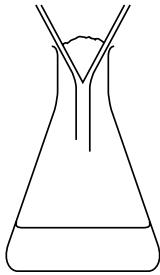
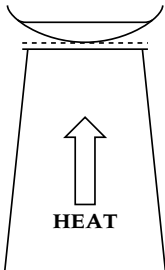
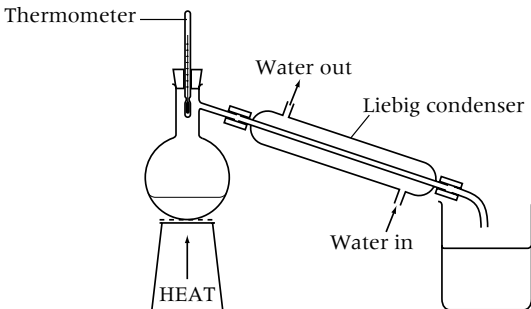
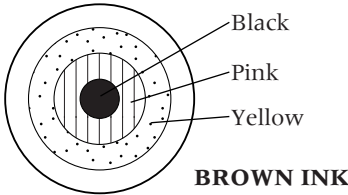


Water is the most common solvent. It is easily available, cheap, and dissolves a lot of different solutes.

Other liquids (e.g. white spirit, ethanol) can also be used as solvents. Solutes which are insoluble in water may dissolve in other solvents.

If you keep adding solutes to a solvent, you will get to a point where no more will dissolve. A **saturated solution** cannot dissolve any more solute. More solid will dissolve if you **add more solvent** (e.g. water) or **increase the temperature**.

Mixtures can be separated using different methods:

Method	Used to separate	Apparatus used	Examples
Filtering (Filtration)	Solid particles which do not dissolve from the liquid they are in		<ul style="list-style-type: none"> • Tea leaves from a cup of tea • Sand from a mixture of sand and water
Evaporation	Dissolved substances from a solution		<ul style="list-style-type: none"> • Salt from salt solution
Distillation (Evaporation followed by condensation)	The liquid from the dissolved solid in a solution or one liquid from a mixture of liquids		<ul style="list-style-type: none"> • Water from salt solution • Alcohol from a mixture of alcohol and water
Chromatography	The colours can be separated from a mixture of colours		<ul style="list-style-type: none"> • The colours found in ink • The food colourings found in fruit juice