8 Matter 3: Separation Techniques

Must Remember

- A mixture is made up of substances that are not chemically joined together.
- In a mixture, the substances keep their own properties. You can change the amounts of the substances.
- A pure substance has a sharp melting point. An impure substance does not.
- A solution is a mixture of a liquid with a solid or gas.
- In a solution, the liquid in which the solute dissolves is called the solvent.
- When a substance dissolves, solvent particles surround the solute.
- The solubility of a substance is the mass that dissolves in 100 g of water. Every substance has its own solubility.
- The solubility of a substance varies with temperature.
- Substances that cannot dissolve in a certain solvent are insoluble in that solvent.
- Filtration separates a liquid from an insoluble solid. It also separates a solution from a solid that is mixed with it, but not dissolved.
- You can separate a solute from its solution by evaporation.
- You can separate a solvent from its solution by distillation.
- You can separate substances in a mixture by chromatography if all the substances are soluble in the same solvent.

Maritime Futures – Sea Water

Sea water is a solution of water and salt, often when collecting a sample of sea water sand can also be found making it a mixture. To determine how much salt is in sea water separation techniques can be used to isolate the salt. Filtration separates the undissolved sand from the mixture. Evaporation of the salt water solution removes the water leaving salt. These methods can also be used to find impurities or toxins in sea water.

Further Study

BBC Bitesize – Pure Substances

Nice to know that...

- The solubility of a solute means how much solute can dissolve in a certain volume of solvent.
- Different solutes have different solubilities in different solvents.
- Increasing temperature often increases solubility.
- Soluble substances can dissolve, insoluble substances cannot.
- Saturated solutions are made when so much solute has been added to the solvent that no more can dissolve.

Key Terms

chromatography:
a technique to separate mixtures of liquids that are soluble in the same solvent.

dissolve:
the mixing of a substance (the solute) with a liquid (the solvent) to make a solution.

distillation:
a technique that uses evaporation and condensation to obtain a solvent from a solution.

filtration:
a way of separating pieces of solid that are mixed with a liquid or solution by pouring through filter paper.

solute:
the solid or gas that dissolves in a liquid.

solution:
a mixture of a liquid with a solid or a gas. All parts of the mixture are the same.

solvent:
the liquid in which a solid or gas dissolves.