

Key points to learn

| | |
|------------------------|---|
| Mixture | A mixture is made up of substances that are not chemically joined together |
| Properties of mixtures | In a mixture, the substances keep their own properties. You can change the amounts of the substances |
| Pure substances | Pure substances have sharp melting points |
| Impure substances | Impure substances do not have sharp melting points |
| Solution | A solution is a mixture of a liquid with a solid or gas. All parts of the solution are the same. You cannot see the separate substances |
| Solute | The substance that dissolves in a solution is called the solute |
| Solvent | The liquid in which the solute dissolves is called the solvent. Solvents include water, propanone and ethanol. |
| Dissolving | When a substance dissolves, solvent particles surround the solute particles |
| Saturated solution | Is a solution in which no more solute can dissolve. |

Key points to learn

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| Solubility | The solubility of a substance is the mass that dissolves in 100g of water. Every substance has its own solubility. Solubility of a substance varies with temperature |
| Insoluble | 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. |
| Evaporation | You can separate a solute from its solution by evaporation |
| Distillation | You can separate a solvent from its solution by distillation |
| Chromatography | You can separate substances in a mixture by chromatography if all the substances are soluble in the same solvent |
| Insoluble | Substances that cannot dissolve in a certain solvent are insoluble in that solvent |

KS3: C2.2 Separation

Techniques Knowledge Organiser

Big picture



Chemistry

1.1 Particles and their behaviour

1.2 Elements, atoms and compounds

1.3 Reactions

1.4 Acids and alkalis

2.1 The Periodic Table

2.2 Separation techniques

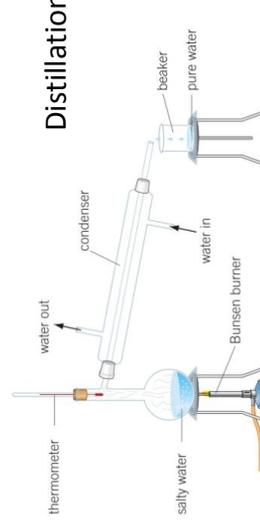
2.3 Metals and acids

2.4 The Earth

Fantastic fact

One of the most soluble salts is potassium nitrite. You can dissolve 306 g of this salt in 100 g of water at 20 °C.

Additional Information



| Lesson | Developing | Secure | Extending |
|-------------------|---|--|--|
| C2 2.1 Mixtures | I can state that parts of mixtures are not joined together. <input type="checkbox"/> | I can describe particle arrangements in mixtures. <input type="checkbox"/> | I can use particle models to represent mixtures. <input type="checkbox"/> |
| | I can state that different substances in mixtures have their own melting points. <input type="checkbox"/> | I can explain how to identify pure substances. <input type="checkbox"/> | I can comment on a substance's purity by interpreting temperature change data. <input type="checkbox"/> |
| C2 2.2 Solutions | I can identify a solvent, solute, and solution in a given scenario. <input type="checkbox"/> | I can describe solutions using key words. <input type="checkbox"/> | I can explain the relationship between solutes, solvents, and solutions. <input type="checkbox"/> |
| | I can state a solution contains dissolved particles. <input type="checkbox"/> | I can use the particle model to explain dissolving. <input type="checkbox"/> | I can draw particle diagrams to represent solutions and pure substances. <input type="checkbox"/> |
| C2 2.3 Solubility | I can describe what happens when a solute dissolves. <input type="checkbox"/> | I can explain what a saturated solution is. <input type="checkbox"/> | I can explain why temperature affects the amount of solute dissolved in a solution. <input type="checkbox"/> |
| | I can describe how temperature affects solubility. <input type="checkbox"/> | I can explain the meaning of solubility. <input type="checkbox"/> | I can explain what a solubility graph shows. <input type="checkbox"/> |
| C2 2.4 Filtration | I can name the filtrate and residue in given situations. <input type="checkbox"/> | I can explain how filtration works. <input type="checkbox"/> | I can use particle diagrams to illustrate how filtering works. <input type="checkbox"/> |
| | I can state some situations in which filtering is used. <input type="checkbox"/> | I can describe how to filter a mixture. <input type="checkbox"/> | I can explain whether or not filtering can be used in given situations. <input type="checkbox"/> |

| Lesson | Developing | Secure | Extending |
|---|--|--|--|
| C2 2.5 Evaporation and distillation | I can state some mixtures that can be separated using evaporation. <input type="checkbox"/> | I can explain how to use evaporation to separate mixtures. <input type="checkbox"/> | I can compare evaporation and distillation. <input type="checkbox"/> |
| | I can state some mixtures that can be separated using distillation. <input type="checkbox"/> | I can explain how distillation works. <input type="checkbox"/> | I can discuss whether evaporation or distillation would be suitable for separating a mixture. <input type="checkbox"/> |
| C2 2.6 Chromatography | I can state what happens to mixtures when they undergo chromatography <input type="checkbox"/> | I can explain how chromatography separates mixtures. <input type="checkbox"/> | I can explain how chromatography can be used in different scenarios. <input type="checkbox"/> |
| | I can describe what a chromatogram looks like. <input type="checkbox"/> | I can analyse chromatograms to identify substances in mixtures. <input type="checkbox"/> | I can consider how chromatography can be used to monitor the progress of reactions. <input type="checkbox"/> |

| Key word | Definition |
|--------------------|---|
| chromatogram | An image obtained from chromatography. |
| 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. |
| filtering | A way of separating pieces of solid that are mixed with a liquid or solution by pouring through filter paper. |
| filtrate | The liquid or solution that collects in the container after the mixture has passed through the filter paper. |
| filtration | A way of separating pieces of solid that are mixed with a liquid or solution by pouring through filter paper. |
| impure | A substance is impure if it has different substances mixed with it. |
| insoluble | A substance that cannot dissolve in a certain solvent is insoluble in that solvent. |
| mixture | A mixture is made up of substances that are not chemically joined together. |
| pure | A substance is pure if it has no other substances mixed with it. |
| residue | The solid that collects in the filter paper. |
| saturated solution | A solution in which no more solute can dissolve. |
| solubility | The solubility of a substance is the mass that dissolves in 100 g of water. |
| 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. |