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**Big Ideas/Substantive Concepts**

Properties, mixtures & solutions

Separation of materials

Reversible & irreversible changes

Pupils should be taught to:

* compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets
* know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution
* use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating
* give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic
* demonstrate that dissolving, mixing and changes of state are reversible changes
* explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda

Questions

What propertied do materials have?

How do we use them?

What is a solution and what is a mixture?

How can we separate materials from a mixture?

How can we separate materials from a solution?

What changes a reversible?

What changes are irreversible?

**Key Vocabulary**

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| --- | --- |
| **Tier 2** | **Tier 3** |
| property | atom |
| particle | molecule |
| separate | chemical (changes) |
| combine | physical (changes) |
| recover | reversible |
| comparative | reaction |
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Year 5: Properties and Changes of Materials

**Resources:** [CUSP curriculum](https://www.unity-curriculum.co.uk/history/history-ks2/) and [Curriculum vision](https://www.curriculumvisions.com/indexHistory.html) resources for online non-fiction texts

Making connections to prior learning

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| **Year 4:** Water Cycle (Science/Geography)  **Year 4:** Electricity  **Year 4:** States of Matter  **Year 5:** Earth & space |

Working Scientifically

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| Plan enquiries, including recognising and controlling variables where necessary | Use appropriate techniques, apparatus, and materials during fieldwork and laboratory work | Take measurements, using a range of scientific equipment, with increasing accuracy and precision | Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models |
| Report findings from enquiries, including oral and written explanations of results, explanations involving causal relationships, and conclusions | Present findings in written form, displays and other presentations | Use test results to make predictions to set up further comparative and fair tests | Use simple models to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments |

**Outdoor Learning Opportunities**

Alfresco Learning: UKS2 - Working Scientifically