



Year 5 Autumn 2 2025– Properties and changes of Materials



INTENT: What do we want the children to remember/be able to do?

- 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.
- Recognise 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.

National Curriculum Objectives • 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.		Hook To Learning Explore elastic limit		Vocabulary <table><tr><th colspan="2">Subject Specific</th><th>Transferable</th></tr><tr><td>Materials</td><td>Reversible</td><td>Enquiry</td></tr><tr><td>Solids</td><td>Irreversible</td><td>Variables</td></tr><tr><td>Liquids</td><td>Process</td><td>Prediction</td></tr><tr><td>Gas</td><td>Rusting</td><td>Conclusion</td></tr><tr><td>Separate</td><td>Burning</td><td>Evaluation</td></tr><tr><td>Filter</td><td>Baking</td><td>Evidence</td></tr><tr><td>Sieve</td><td>Floating</td><td>Relationships</td></tr><tr><td>Dissolve</td><td>Sinking</td><td>Support</td></tr><tr><td>Solution</td><td></td><td>Refute</td></tr><tr><td>Saturation Point</td><td></td><td>Properties</td></tr><tr><td>Insulate</td><td></td><td>Materials</td></tr></table>		Subject Specific		Transferable	Materials	Reversible	Enquiry	Solids	Irreversible	Variables	Liquids	Process	Prediction	Gas	Rusting	Conclusion	Separate	Burning	Evaluation	Filter	Baking	Evidence	Sieve	Floating	Relationships	Dissolve	Sinking	Support	Solution		Refute	Saturation Point		Properties	Insulate		Materials
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Key Scientists		Spencer Silver, Arthur Fry and Alan Amron (Post-It Notes) Ruth Benerito (Wrinkle-Free Cotton)																																							
Prior Learning		Implementation		Future Learning																																					
In KS1 children should: • Distinguish between an object and the material from which it is made. • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. • Describe the simple physical properties of a variety of everyday materials. • Compare and group together a variety of everyday materials on the basis of their simple physical properties. • Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.		1. Use of knowledge organiser and vocabulary sheet to develop the knowledge of the children about materials and their properties. Explore materials and their uses. Test the elasticity of elastic bands – elastic limit. 2. Separating a mixture of solids and liquids, selecting the correct equipment/ separation methods to end up with clean water. 3. Investigate the dissolving temperature of jelly, create a fair test and discuss if this would be true of all solids. 4. Investigate the saturation point of different solutions. How much salt is needed before it reaches it saturation point. Has the salt disappeared? Can we get it back? How? 5. Investigate different materials in relation to their ability to conduct or insulate heat. 6. Research – find out about how chemists create new materials, Spencer Silver, Arthur Fry and Alan Amran – post-it notes and Ruth Benerito, wrinkle – free cotton. 7. What is rusting? What materials rust? Can we stop rusting? Plan and set up a long-term investigation? 8. Heating – explore the changes made to eggs and sweet potatoes after different forms of heating. Reversible? 9. Mixing – investigating chemical reactions. Are they reversible changes? 10. Burning – what changes happen to toast/candles/matches when we burn them? Reversible? 11. Review rusting investigation from week 7. 12. Assessment.		In Year 5 children will: • 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. • Give reasons based on evidence from comparative and fair tests, for the particular uses of everyday materials, including wood, metals 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 this kind of change is usually not reversible, including changes associated with burning and the action of acid on bicarbonate of soda																																					
Working Scientifically																																									
Comparative tests	Identify & Classify	Observation over time	Pattern Seeking	Research	Impact: BIG Question: Assessment Opportunity																																				



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How does the temperature of water affect how long it takes for a jelly cube to dissolve? 	Can you group these materials based on whether they are transparent or not? 	How does a container of salt water change over time? How does a nail in saltwater change over time? 	What patterns can you notice in different reactions? How does the amount of bicarbonate of soda, washing up liquid and vinegar affect the reaction? 	What are smart materials and how can they help us? 	How can we separate a mixture of water, iron filings, salt and sand? How can we change materials reversibly and irreversibly? Which processes can be reversible? (Sometimes melting, dissolving). Which processes are irreversible? (burning, baking, chemical reactions, etc) Are there ways to stop changes? (E.g. can we stop a nail rusting? How?) End of unit test / summative assessment.
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