
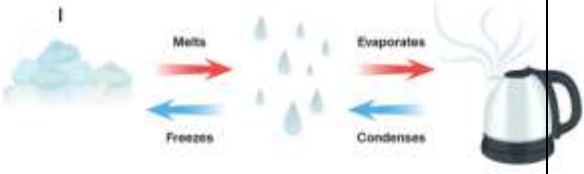






Learning Organiser for Year 5 - Properties and changes of materials

National Curriculum Summary Key Subject Concept		Key Questions
<ul style="list-style-type: none"> Compare and group together everyday materials based on evidence from comparative and fair tests, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets Understand 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. 		<ul style="list-style-type: none"> How do chemists create new materials? Why are raincoats not made of wool? Do all liquids evaporate at the same rate? How many spoonfuls of sugar can I dissolve in my tea? Do all solids dissolve in water? How can you make something dissolve more quickly? How can you separate a mixture of different materials?
Key Vocabulary	Definition	Key Facts
Solvent	A substance in which other substances are dissolved	Reversible changes <ul style="list-style-type: none"> Melting - when a solid converts into a liquid after heating, e.g. ice to water Freezing - when a liquid converts into a solid, e.g. water to ice Boiling - when a liquid converts into a gas, e.g. water into water vapour or steam Irreversible changes <ul style="list-style-type: none"> Burning - when we burn paper or wood, it turns to ash and smoke. It cannot be changed back. Cooking - when we cook eggs, they change form and cannot be changed back. Rusting - when water vapour comes into contact with iron there is a reaction and rust forms. This cannot be reversed. Separating materials  <p>The diagram consists of three beakers. The first beaker contains water and sugar, with a caption: 'Sugar dissolves in the water making a sugar solution. You cannot see the sugar but it is still there in tiny particles.' The second beaker shows water evaporating from the surface, with a caption: 'The water evaporates. This means that it becomes water vapour. The process will be quicker if the water is heated.' The third beaker shows a dry residue at the bottom, with a caption: 'Once all the water has evaporated, the sugar is left at the bottom of the beaker. This is because sugar cannot evaporate.'</p>
Soluble	Will dissolve in liquid	
Insoluble	Will not dissolve in liquid	
Condense	Change from a gas or vapour to a liquid	
Evaporate	When a liquid turns into a gas	
Dissolve	Where a solid becomes incorporated into a liquid	
Solution	A liquid mixture where a solid has dissolved into a liquid	
Saturated solution	A solution that is full of a dissolved substance and no more can be dissolved	
Reversible change	Changes in materials that are not permanent, e.g. water to ice or steam	
Irreversible change	Changes in materials which are permanent and cannot be undone, e.g. burning	
Change of state	When a material changes from a solid to a liquid, a liquid to a gas, a gas to a liquid or a liquid to a solid.	
Filter	To sift or sieve	
Filtrate	Material that has been filtered	
Thermal conductivity	The rate at which heat passes through a material	

Working Scientifically Skills	Diagrams/Charts/Pictures
<p>Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <p>Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</p> <p>Use test results to make predictions to set up further comparative and fair tests</p>	<p>Reversible change</p>  <p>Irreversible change</p> 
Possible Experiences	Biographical Information
<ul style="list-style-type: none"> Investigate how the evaporation of a liquid is affected by size of container/ viscosity/ moving air/ additives/ temperature Investigate how the boiling time of water is affected by adding salt? Investigate which liquid dissolves antacid tablets quickest Investigate whether all liquids evaporate at the same rate - salt water, vinegar, cooking oil, milk, aftershave lotion Investigate whether different frozen materials melt at the same temperature 'Which materials would be the most effective for making a warm jacket, for wrapping ice cream to stop it melting, or for making blackout curtains?' Investigate how to separate different materials, e.g. water, sand, stones, paper clips etc. Observe and compare changes that take place, for example when burning different materials or baking bread or cakes Research and discuss how chemical changes have an impact on our lives, for example when cooking 	<p>Spencer Silver (1941 -) and Arthur Fry (1931 -)</p>   <p>Invented the glue for sticky notes</p> <p>Ruth Benerito (1916 - 2013)</p>  <p>Invented easy-care cotton</p>