



Year 8 Science knowledge organiser

Module – Reactions

Topic – Chemical energy and types of reaction

Length of topic – Approx. 12 lessons

Method of assessment – Summative assessment

Links to prior learning

KS2 Year 5 Properties of Materials topic

- 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.

Knowledge to be taught.

- During a chemical reaction bonds are broken (requiring energy) and new bonds formed (releasing energy). If the energy released is greater than the energy required, the reaction is exothermic. If the reverse, it is endothermic.
- Combustion is a reaction with oxygen in which energy is transferred to the surroundings as heat and light.
- Thermal decomposition is a reaction where a single reactant is broken down into simpler products by heating.
- Chemical changes can be described by a model where atoms and molecules in reactants rearrange to make the products and the total number of atoms is conserved.

Skills to be covered

- Write word equations from information about chemical reactions.
- Present data for others to communicate your ideas.

Working scientifically strands covered

Analyse patterns	✓
Discuss limitations	✓
Draw conclusions	✓
Present data	✓
Communicate ideas	✓
Construct explanations	✓
Critique claims	✓
Justify opinions	✓
Collect data	✓
Devise questions	✓
Plan variables	
Test hypothesis	✓
Estimate risks	✓
Examine consequences	
Review theories	
Interrogate	

Assessment

Summative assessment based on knowledge taught through the topic



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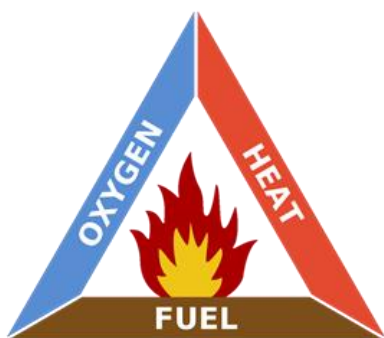
Facts

Combustion and freezing are both examples of an exothermic reaction.

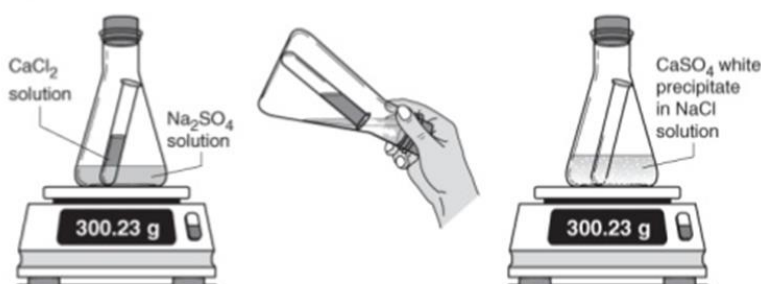


Melting is an example of an endothermic reaction.

The fire triangle is used to show the 3 requirements for a fire to occur.



The mass of the reactants will be the same as the mass of the products due to the principle of conservation of mass.



Ceramics were used on the space shuttle due to their high melting point.

Catalysts speeds up the rate of a reaction and are unchanged chemically and in mass at the end of the reaction.

Keywords

Catalysts: Substances that speed up chemical reactions but are unchanged at the end.

Chemical bond: Force that holds atoms together in molecules.

Chemical reaction: A change in which a new substance is formed.

Combustion: The process of burning by heat.

Complete combustion: Burning in a plentiful supply of oxygen or air. Complete combustion of a hydrocarbon produces water vapour and carbon dioxide.

Conserved: When the quantity of something does not change after a process takes place.

Endothermic reaction: One in which energy is taken in, usually as heat.

Exothermic reaction: One in which energy is given out, usually as heat or light.

Fuel: Stores energy in a chemical store which it can release as heat.

Hydrocarbon: A compound that contains hydrogen and carbon only.

Incomplete combustion: Burning when there is a limited supply of air or oxygen.

Oxidation: The gain of oxygen, or loss of electrons, by a substance during a chemical reaction.

Physical change: One that changes the physical properties of a substance, but no new substance is formed.

Polymer: A molecule made of thousands of smaller molecules in a repeating pattern.

Products: Substances formed in a chemical reaction, shown after the reaction arrow in an equation.

Reactants: Substances that react together, shown before the arrow in an equation.

Plastics are man-made polymers, starch is a natural polymer.

Thermal decomposition: Type of reaction in which a compound breaks down to form two or more substances when it is heated.