**Chemistry Revision: Exothermic and**

Mastery Matrix Points

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| --- |
| Explain how energy is conserved in reactions |
| Define and give examples and uses of exothermic and endothermic reactions |
| Evaluate data to decide whether a reaction is exothermic or endothermic |
| **Required practical 4: Investigate the variables that affect temperature changes in reacting solutions** |
| Define activation energy |
| Use reaction profiles to show energies of reactants and products and link to exothermic and endothermic and draw simple reaction profiles for endothermic and exothermic reactions. |
| Explain whether energy is supplied or released when bonds are broken and made (HT only) |
| Calculate the overall energy change in a reaction using bond energies and use this to decide if a reaction is endothermic or exothermic (HT only) |

Key Knowledge

Conservation of energy in chemical reactions –

Exothermic –

Examples:

Endothermic –

Examples:

Activation energy –

BENDOMEX –

Reaction profile - exothermic reaction:

Reaction profile - endothermic reaction:

**Endothermic Reactions**

Understanding and Explaining

1. Are these exothermic or endothermic reactions?

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Initial Temp (⁰C) | Final Temp (⁰C) | Exothermic or endothermic? |  | Initial Temp (⁰C) | Final Temp (⁰C) | Exothermic or endothermic? |
| 56 | 80 |  |  | 99 | 200 |  |
| 45 | 22 |  |  | 23 | 26 |  |
| 65 | 65 |  |  | 30 | 10 |  |
| 70 | 21 |  |  | 18 | 25 |  |

1. Reaction profiles show the energy in chemical bonds. Explain why the reaction profiles for both exothermic and endothermic reactions increase initially and then decrease.
2. Link the reaction to the descriptions. Match two descriptions to each name.

Temperature of the surroundings decreases

Exothermic - More energy is needed to make new bonds than break old bonds.

 Temperature of the surroundings increases.

Endothermic - More energy is needed to break old bonds than make new bonds.

1. The equation for the reaction between hydrogen and oxygen is shown below.

 Is the reaction exothermic or endothermic?