

Chemistry Knowledge Organiser

Rate and extent of chemical changes

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| 1 | Rates of reaction | The amount of product made or reactant used up in a certain amount of time |
| 2 | Factors affecting rate of reaction | Temperature, concentration, surface area, catalysts |
| 4 | Collision theory | Reactions only occur if particles collide with enough energy. |
| 5 | Activation energy | Minimum energy required for particles to react when they collide |
| 6 | Catalysts | Help reaction occurs faster by lowering the activation energy. They are not used up in the reaction. |
| 7 | Industrial catalysts | Save money as reactions can be carried out at lower temperatures and pressures however are expensive. |
| 8 | Measuring rate of reaction | Can be done by measuring the formation of a precipitate, volume of gas given off or a change in mass |
| 9 | Rate of reaction graphs | Often start with a steep climb and eventually flatten. |
| 10 | The faster the rate of a reaction... | ...the steeper the graph. |

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| 11 | Reversible Reaction | A reaction that has both a forwards and backwards direction, where the products can be made into the reactants. Depicted by the symbol \rightleftharpoons |
| 12 | Concentration | The amount of a substance per volume. Measured in g/dm ³ or mol/dm ³ |
| 13 | Pressure | The force applied per unit area. |
| 14 | Temperature | The degree of heat present in a substance or object. |
| 15 | Equation to measure the rate of reaction. | $\text{Mean rate of reaction} = \frac{\text{Quantity of reactant}}{\text{time taken to react}}$ $\text{Mean rate of reaction} = \frac{\text{Quantity of product}}{\text{time taken to react}}$ |
| 16 | Le Chatelier's principle | Equilibrium depends on certain conditions including concentration and pressure of the particles. |
| 17 | Endothermic Equilibrium Position | Temperature of equilibrium is decreased for an exothermic reaction. |
| 18 | Exothermic Equilibrium Position | Temperature of equilibrium is increased for an exothermic reaction. |