

Definitions and Concepts for CAIE Chemistry IGCSE

Topic 8 - Acids, Bases and Salts

Definitions in **bold** are for extended supplement only

Definitions have been taken, or modified from the [CAIE Specification for GCSE Chemistry, 0971, Version 1 September 2020](#)

Acid: A chemical which can neutralise bases and will turn both litmus and methyl orange red. Acids will react with metals to produce a salt and hydrogen and will react with carbonates to produce a salt, water and carbon dioxide. **Acids are proton donors.**

Amphoteric: Able to act as an acid and a base.

Anion: A negatively charged ion. Formed when an atom gains at least one electron.

Base: A chemical which reacts with acids in neutralisation reactions and will turn litmus blue and methyl orange yellow. Bases react with ammonium salts to produce a salt, ammonia gas and water. **Bases are proton acceptors.**

Cation: A positively charged ion. Formed when an atom loses at least one electron.

Crystallisation: A separation technique to obtain soluble solids from solutions. The process involves heating the solution until crystals start to form, leaving the solution to cool and then filtering the formed crystals from the solution.

Filtration: A separation technique used to separate an insoluble solid from a solution.

Flame test: Qualitative test used to identify metal ions (cations). Carried out by inserting a nichrome wire loop with the unknown compound on into a flame and observing the colour.

Fractional distillation: A process used to separate a mixture of liquids. The liquids have different boiling points so can be separated into different fractions within a fractionating column.

Litmus: A chemical dye which is used to identify acids and bases. The dye is red in the presence of an acid and blue in the presence of a base.

Metallic character: The tendency to lose an electron. Increases as you move down a group as the increased shielding and atomic radius makes the electron easier to be removed.

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Methyl orange: A chemical indicator which is used to identify acids and bases. The indicator is red in acids and yellow in bases.

Neutralisation: The reaction in which an acid and a base react together to form a salt and water.

Non-metallic character: The tendency to gain an electron. Increases from left to right across the period because there is an increased nuclear charge with a similar atomic radius, so the electrons are more easily gained.

pH scale: A measure of the acidity or alkalinity of a solution. The scale ranges from 0-14 and can be measured using universal indicator or a pH probe.

Precipitation reaction: A reaction in which solutions react to form an insoluble product.

Simple distillation: A separation technique used to separate a liquid from a solution. The solution is heated so that only the liquid with the lowest boiling point evaporates. This gas is then condensed in a condenser before being collected as a liquid.

Strong acid: A strong acid is completely ionised in an aqueous solution so that nearly all the H^+ ions are released. Examples of strong acids include hydrochloric, nitric and sulfuric acids.

Strong base: A strong base is almost completely ionised in aqueous solution so that nearly all the OH^- ions are released. Examples include sodium hydroxide and potassium hydroxide.

Universal indicator: A mixture of dyes that changes colour gradually over a range of pH and is used in testing for acids and alkalis.

Weak acid: A weak acid is only partially ionised in an aqueous solution. This means only a small number of the H^+ ions are released. Examples of weak acids include ethanoic, citric and carbonic acids.

Weak base: A weak base is only partially ionised in an aqueous solution so it does not fully convert into hydroxide ions. Ammonia is a common weak base.

