

Definitions and Concepts for CAIE Chemistry IGCSE

Topic 12 - Experimental techniques and chemical analysis

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

Definitions have been taken, or modified from the CAIE Cambridge IGCSE Chemistry 0620 syllabus for 2023, 2024 and 2025.

Chromatography: A process used to separate substances in a mixture. Separation of the substance depends on distribution between a mobile phase and a stationary phase.

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.

Filtrate: a liquid or solution that has passed through a filter

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

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.

Locating agent: A chemical which reacts with a colourless substance to produce a coloured product. They are used in paper and thin layer chromatography to help identify the substances on the stationary phase.

Melting point data: Can be used to evaluate the purity of a substance. A pure substance should have a sharp melting point.

Mobile phase: The fluid (gas or liquid) which moves through the chromatography system, carrying the mixture which is to be separated.

Pure substance: The chemistry definition of a pure substance is a substance which contains only one compound or element. The everyday definition of a pure substance is a substance which has nothing added to it, e.g. pure milk. Pure substances can be identified using melting point.



Rf value: A value used in chromatography which is calculated as the distance travelled by the dissolved substance divided by the distance travelled by the solvent. It can be used to identify substances within a mixture.

Saturated solution: a solution containing the maximum concentration of a solute dissolved in the solvent at a specified temperature

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.

Solute: a substance that is dissolved in a solvent

Solution: a mixture of one or more solutes dissolved in a solvent

Solvent: a substance that dissolves a solute

Stationary phase: The nonmoving phase which the mobile phase passes over during chromatography.

Residue: a substance that remains after evaporation, distillation, filtration or any similar process

