

# Definitions and Concepts for Edexcel Chemistry GCSE

## Topic 9 - Separate Chemistry 2

*Definitions in **bold** are for higher tier only*

*Definitions marked by “\*” are for separate sciences only*

*Definitions have been taken, or modified from the [Edexcel Specification for GCSE Chemistry. 1CH0. Issue 3. February 2018](#)*

**\*Addition polymerisation:** The reaction in which many small molecule monomers bond together to form a long chain polymer.

**\*Addition reaction:** A reaction in which at least two molecules combine together to form a larger molecule.

**\*Alcohols:** Organic compounds containing the functional group –OH. The first four members of a homologous series of alcohols are methanol, ethanol, propanol and butanol. Alcohols can be oxidised to carboxylic acids and dehydrated to alkenes.

**\*Biodegradable:** Able to be broken down by living organisms.

**\*Carboxylic acids:** Organic compounds containing the functional group –COOH. The first four members of a homologous series of carboxylic acids are methanoic acid, ethanoic acid, propanoic acid and butanoic acid. Carboxylic acids have typical acidic properties.

**\*Complete combustion:** Combustion carried out in sufficient oxygen. Water and carbon dioxide are the only products of the complete combustion of a hydrocarbon.

**\*Condensation polymerisation:** Reactions in which monomers join together and lose small molecules, such as water. These reactions involve monomers with two functional groups.

**\*DNA:** Molecule which encodes genetic instructions for the development and functioning of living organisms and viruses. Most DNA molecules are two polymer chains, made from four different nucleotides, in the form of a double helix.

**\*Ester:** The product of a condensation reaction between a carboxylic acid and alcohol. For example: ethanol + ethanoic acid → ethyl ethanoate.

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**\*Fermentation:** A chemical process by which molecules such as glucose are broken down anaerobically. Ethanol is produced when sugar solutions are fermented using yeast.

**\*Flame photometer:** A device used in flame photometry to identify the concentration of metal ions in a sample.

**\*Flame photometry:** An instrumental method used to analyse metal ions in solutions. The sample is put into a flame and the light given out is passed through a photometer. The output is a line spectrum that can be analysed to identify the metal ions in the solution and measure their concentrations.

**\*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. A solution of ethanol can be obtained from a fermentation mixture by fractional distillation.

**\*Functional group:** The group of atoms responsible for how a particular compound reacts. All compounds in the same homologous series have the same functional group.

**\*Homologous series:** A series of compounds with the same functional group and similar chemical properties.

**\*Hydrocarbons:** Molecules that are made up of hydrogen and carbon atoms only.

**\*Instrumental methods:** Methods used to detect and identify elements and compounds. They are accurate, sensitive and rapid.

**\*Monomer:** Small short chain molecules which can join together to form a long chain polymer.

**\*Nanoparticles:** Particles with diameters between 1 nm to 100 nm in size. Nanoparticles can exhibit properties different to those for the same material in bulk.

**\*Nucleotides:** The monomers which make up DNA.

**\*Polyester:** A category of polymers which contain the ester functional group in their main chain. Formed by a condensation reaction between a diol and a dicarboxylic acid.

**\*Polymer:** Large long-chain molecules made up of lots of small monomers joined together by covalent bonds.

**\*Proteins:** Polymers made up of amino acid molecules.

**\*Qualitative analysis:** Identification of the elements, ions or functional groups present in a compound.



**\*Repeating unit:** The part of a polymer whose repetition would produce the complete polymer chain.

**\*Saturated hydrocarbon:** A hydrocarbon compound containing only single bonds between carbon atoms. Alkanes are saturated compounds.

**\*Starch:** A polymer based on sugars.

**\*Unsaturated hydrocarbon:** A compound that contains double or triple carbon bonds so that it does not contain the maximum number of hydrogen atoms. Alkenes are unsaturated compounds.

