

GCSE



CCEA GCSE
Chemistry

Glossary of Terms



Glossary

- The **atomic number** is the number of protons in (the nucleus of) an atom.
- The **mass number** is the total number of protons and neutrons in (the nucleus of) an atom.
- **Isotopes** are atoms which have the same number of protons (so they are atoms of the same element) but they have a different number of neutrons (so they have a different mass number).
- A **cation** is a positive ion.
- An **anion** is a negative ion.
- A **compound** is a substance formed when two or more elements are chemically combined.
- An **ionic bond** is the attraction between oppositely charged ions.
- A **covalent bond** is formed by a shared pair of electrons.
- **Diatomic** means that there are two atoms covalently bonded in a molecule.
- **Metallic bonding** is the attraction between delocalised electrons and the positive ions in a regular lattice.
- **Malleable** means can be hammered into shape.
- **Ductile** means can be drawn out into wires.
- An **alloy** is a mixture of two or more elements at least one of which is a metal and the resulting mixture has metallic properties.
- A **nanometre** is 10^{-9} m.
- A **nanoparticle** is a structure that is 1 – 100 nm in size.
- **Allotropes** are different forms of the same element in the same physical state.
- An **element** is a substance that consists of only one type of atom and it cannot be broken down into anything simpler by chemical means.
- A **compound** is a substance that consists of two or more elements chemically combined.
- An **atom** is the simplest particle of an element that can exist on its own in a stable environment.
- A **molecule** is a particle that consists of two or more atoms chemically bonded together.
- A **period** is a horizontal row in the Periodic Table.
- A **group** is a vertical column in the Periodic Table.
- The **relative atomic mass** is the mass of the atom compared with that of the carbon-12 isotope, which has a mass of exactly 12, and it is the weighted mean of the mass numbers.

- **Percentage yield** = $\frac{\text{actual yield}}{\text{theoretical yield}} \times 100$
- **Water of crystallisation** is water that is chemically bonded into the crystal structure.
- **Hydrated** means that solid crystals contain water of crystallisation.
- **Dehydration** means removal of water of crystallisation.
- An **anhydrous** substance does not contain water of crystallisation.
- The **degree of hydration** is the number of moles of water of crystallisation chemically bonded in 1 mole of the compound.
- The **empirical formula** is the simplest whole number ratio of the atoms of each element in a compound.
- The **molecular formula** is the actual number of atoms of each element in a molecule.
- An **indicator** is a chemical that gives a **colour change** in acidic, alkaline and neutral solutions.
- A **base** is a substance that reacts with an acid producing a salt and water.
- An **alkali** is a soluble base.
- A **strong acid** ionises completely in water.
- A **weak acid** ionises partially in water.
- A **strong alkali** ionises completely in water.
- A **weak alkali** ionises partially in water.
- **Neutralisation** is the reaction between an acid and an alkali producing a salt and water.
- A **salt** is a compound formed when some or all of the hydrogen ions in an acid are replaced by metal ions or ammonium ions.
- A **pure substance** is a single element or compounds (and is not mixed with any other substance).
- A **mixture** is defined as two or more substances mixed together, which are usually easy to separate.
- The **melting point** (or melting temperature) is the temperature at which a solid changes into a liquid.
- The **boiling point** (or boiling temperature) is the temperature at which a liquid changes into a gas.
- A **formulation** is a mixture which has been designed as a useful product and has been designed as a useful product and is formed by mixing together several different substances in carefully measured quantities to ensure the product has the required properties.

- A **soluble** substance dissolves in water.
- An **insoluble** substance does not dissolve in water.
- A soluble substance which dissolves is the **solute**.
- The liquid in which the solute dissolves is the **solvent**.
- The mixture of solute dissolved in a solvent is a **solution**.
- **Miscible** liquids mix.
- **Immiscible** liquids do not mix.
- The **filtrate** is the filtered solution.
- The **residue** is the solid which remains on the filter paper.
- $R_f = \frac{\text{distance moved by spot}}{\text{distance moved by solvent}}$
- A **saturated solution** is one in which no more solid will dissolve in water at a particular temperature.
- A **precipitate** is a solid which may be formed on mixing two solutions.
- **Solubility** is the mass of solid that will saturate 100 g of water (or solvent) at a particular temperature.
- A **displacement reaction** is a reaction in which a more reactive metal takes the place of a less reactive metal in a compound.
- A **redox reaction** is one in which oxidation and reduction occur at the same time.
- **Oxidation** is gain of oxygen, loss of hydrogen or loss of electrons.
- **Reduction** is loss of oxygen, gain of hydrogen or gain of electrons.
- **Rust** is hydrated iron(III) oxide.
- **The activation energy** is the minimum energy required for a reaction to occur.
- A **catalyst** is a substance that increases the rate of a chemical reaction without being used up.
- A **reversible reaction** is a reaction where reactants can change into products and the products can change back into the reactants.
- A **dynamic equilibrium** occurs when the rate of the forward reaction is equal to the rate of the reverse reaction resulting in the amount of reactants and products remaining constant.
- An equilibrium reaction is considered to be a **closed system** where only the reactants and products are present.
- A **homogeneous reaction (or system)** is one in which all the reactants and products are in the same state.

- The **position of equilibrium** in a reversible reaction is a measure of how far the reaction has proceeded to the right (towards the products) or has it remained to the left (towards the reactants).
- **Le Châtelier's Principle** states that if a change is made to the conditions of a system at equilibrium, then the position of the equilibrium moves to oppose that change in conditions.
- A **homologous series** is a family of organic compounds where members have:
 - the same general formula
 - show similar chemical properties
 - show a gradation in their physical properties
 - successive members differ by a CH₂ unit
- A **hydrocarbon** is a compound (or molecule) consisting of hydrogen and carbon only.
- **Cracking** is the breakdown of larger/longer (less useful) saturated hydrocarbon molecules (alkanes) into smaller/shorter more useful ones, some of which are unsaturated (alkenes).
- A **functional group** is a reactive group in a molecule.
- **Combustion** is the reaction in which a fuel reacts with oxygen producing oxides and releasing heat.
- A **saturated** compound contains no C=C bonds.
- An **unsaturated** compound contains at least one C=C bond.
- **Polymerisation** is the process of creating a long chain molecule from small molecules.
- A **titration** is a method of reacting two solutions together to determine the number of moles of the solute in one of the solutions.
- **Avogadro's Law** states that equal volumes of gases under the same conditions of temperature and pressure contain the same number of particles.
- **Atom economy** = $\frac{\text{mass of desired product}}{\text{total mass of products}} \times 100$
- **Electrolysis** is the decomposition of a liquid electrolyte using a direct current of electricity.
- The **electrolyte** is the liquid or solution that conducts electricity and is decomposed by it.
- The negative electrode is called the **cathode**.
- The positive electrode is called the **anode**.
- **Inert electrodes** do not take part in the electrolysis reactions.
- **Bauxite** is aluminium ore.
- An **exothermic** reaction gives out heat (to the surroundings).

- An **endothermic** reaction takes in heat (from the surroundings).
- A **clean fuel** produces non-polluting products only (such as water) when it is burned/undergoes combustion.