

Definitions and Concepts for WJEC (Wales) Chemistry GCSE

Topic 2.3 - Metals and their Extraction

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

Definitions have been taken, or modified from the [WJEC \(Wales\) Specification for GCSE Chemistry, 3410, Version 2 March 2019](#)

Alloys: A metal compound made by combining two or more metals together. This process is carried out to give the material greater strength or resistance to corrosion.

Anode: The positive electrode. It is where negatively charged ions lose electrons in oxidation reactions. It is the electrode where oxygen is produced unless the solution contains halide ions - then the halogen is produced.

Cathode: The negative electrode. It is where positively charged ions gain electrons in reduction reactions. It is the electrode where hydrogen is produced if the metal in the electrolyte is more reactive than hydrogen.

Displacement: A chemical reaction in which a more reactive element displaces a less reactive element from its compound.

Electrode: A solid conductive material through which electricity can flow. Positive and negative electrodes are used in electrolysis to conduct electricity.

Electrolysis: The splitting up of an ionic compound using electricity. The electric current is passed through a substance causing chemical reactions at the electrodes which lead to the decomposition of the materials. Electrolysis is used for extracting metals from their ores when the metal is more reactive than carbon.

Electrolyte: A solution containing free ions from a molten or aqueous ionic substance. The ions are free to move to carry charge.

Electroplating: The process of coating a metal with a thin layer of another metal by electrolysis to improve the metal's corrosion resistance or to improve the metal's appearance.

Inert: Unreactive. Inert electrodes are used in electrolysis to prevent the electrode material affecting the reactions.

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Ore: A type of rock which contains metal compounds. The metals or metal compounds are present in sufficient amounts to make it worth extracting them.

Oxidation: A reaction involving the gain of oxygen. Oxidation is the loss of electrons.

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

Reduction: A reaction involving the loss of oxygen. Reduction is the gain of electrons.

Reduction with carbon: Process used to extract metals from their oxides when the metal is less reactive than carbon. The metal oxide is heated with carbon so that carbon reduces the metal oxide to the metallic element.

Transition metal: A metal found between Groups 2 and 3 of the periodic table. Typical properties include high melting points, high densities, form coloured compounds and catalytic activity.

