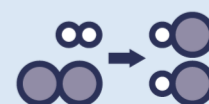




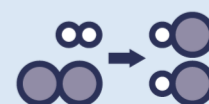
C4.2 Glossary

Anode	The positively charged electrode used in electrolysis. <i>Negatively charged ions such as fluoride ions are attracted to the anode.</i>
Bioleaching (HT only)	A process that uses bacteria to produce leachate solutions that contain metal compounds. <i>Bacteria carry out bioleaching to extract copper ions from ores.</i>
Cathode	The negatively charged electrode used in electrolysis. <i>Positively charged ions such as sodium ions are attracted to the cathode.</i>
Corrosion	The destruction of materials by chemical reactions with substances in the environment. <i>Rusting is an example of corrosion.</i>
Cryolite	A compound that reduces the melting point of aluminium oxide, <i>Cryolite is used for the electrolysis of molten aluminium oxide.</i>
Discharged	When ions gain or lose electrons to form neutral atoms or molecules. <i>Sodium ions are discharged at the cathode during electrolysis.</i>
Displacement reaction	A reaction where a more reactive element replaces a less reactive element in a compound. <i>A displacement reaction takes place when carbon reacts with iron oxide.</i>
Electrode	A conductor through which electricity can flow. <i>Anodes and cathodes are conductors and can be made of graphite.</i>
Electrolysis	The process of passing an electric current through a substance, to split it up into its ions. <i>Electrolysis requires an electrolyte, electrodes and a power source.</i>
Electrolyte	A liquid containing ions that current is passed through during electrolysis. <i>An aqueous solution of sodium chloride is an example of an electrolyte.</i>
Electron	A negatively charged subatomic particle that orbits the nucleus of an atom. <i>In ionic bonding electrons are transferred from one atom to another.</i>



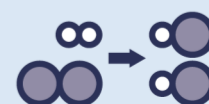


Electroplating	Adding a thin layer of metal to an object using electrolysis. <i>A metal spoon can be electroplated with silver.</i>
Empirical formula	The simplest ratio of atoms of each element in a compound. <i>The empirical formula of calcium hydroxide is $\text{Ca}(\text{OH})_2$.</i>
Extracted	To take something out <i>Aluminium can be extracted from its ore, aluminium oxide, using electrolysis.</i>
Galvanise (SS only)	Zinc is used as a sacrificial metal to prevent the corrosion of iron. <i>Iron pipes can be galvanised to prevent corrosion.</i>
Half equation (HT only)	A rock that contains enough metal compound to extract the metal. <i>Haematite is a common iron oxide ore.</i>
Ion	A charged particle or group of particles. <i>A sodium ion has a positive charge.</i>
Ionic bonding	Ionic bonding occurs in compounds formed from metals combined with non-metals. Electrons are lost or gained to form a stable electronic configuration. <i>Ionic bonding occurs in sodium chloride because sodium is a metal and chlorine is a non-metal. As sodium chloride forms, an electron is transferred from a sodium atom to a chlorine atom, forming Na^+ and F^- ions.</i>
Ionic equation (HT only)	A balanced symbol equation that shows the reacting ions in a chemical reaction. <i>Ionic equations allow us to see more easily what has been oxidised and what has been reduced in a reaction..</i>
Low-grade ore	An ore that contains a very low percentage of the metal or compound to be extracted. <i>Most nickel ores are low-grade ores.</i>
Mining	The digging and moving of rock from the Earth. <i>Mining is needed to obtain metal ores but it can be destructive to wildlife.</i>
Molten	When a substance has been heated so it is a liquid. <i>Molten aluminium oxide can be electrolysed.</i>





Ore	<p>A rock that contains enough metal compound to extract the metal.</p> <p><i>Haematite is a common iron oxide ore.</i></p>
Oxidation	<p>When electrons are lost.</p> <p><i>When a magnesium atom is oxidised, it loses two electrons and becomes a Mg^{2+} ion.</i></p>
Phytomining (HT only)	<p>An extraction process that uses plants to absorb metal compounds. The plants are harvested and then burned to produce ash that contains metal compounds.</p> <p><i>Phytomining is used to extract copper from copper ores.</i></p>
Pure	<p>A substance that is made from only one type of particle.</p> <p><i>Pure, molten aluminium oxide only contains aluminium ions and oxide ions.</i></p>
Recasting/ reforming	<p>When molten, recycled metal is used to form something new.</p> <p><i>During the recycling process, molten aluminium can be recast to form cans.</i></p>
Recycling	<p>When a substance is collected and processed to form a usable material.</p> <p><i>Metals can be recycled by melting and recasting or reforming into different products.</i></p>
Redox	<p>A reaction in which oxidation and reduction take place at the same time</p> <p><i>When a metal and oxygen react, a redox reaction occurs.</i></p>
Reduction	<p>When electrons are gained.</p> <p><i>When a chlorine atom is reduced, it gains two electrons and becomes a Cl^{2-} ion.</i></p>
Rusting	<p>The corrosion of iron.</p> <p><i>Iron rusts when it reacts with oxygen.</i></p>
Sacrificial protection (SS only)	<p>When a metal contains a coating of a more reactive metal so that it is protected from corrosion.</p> <p><i>Magnesium can be used to coat iron as sacrificial protection which prevents iron from being oxidised and therefore rusting.</i></p>
Spectator ions	<p>Ions that are the same in the reactants and the products.</p> <p><i>Spectator ions are excluded when we write ionic equations.</i></p>





Sustainable

Recycling and reusing materials when there is a limited amount of the material on Earth.

*Recycling metals ensures the **sustainable** use of metals.*

**Valence
electron(s)**

Electrons in the outer shell of an atom or ion.

*A fluorine atom has 7 **valence electrons**.*

