

Keyword	Definition	Topic
Abundance	amount of one element as a proportion of the total, in a given environment, e.g. atomic abundance of isotopes	Atoms
Alpha particle scattering	experiment by Rutherford and Marsden, some alpha particles deflected by thin gold leaf, evidence for nuclear model	Atoms
Atmospheric pollution	pollution caused by releasing harmful gases into atmosphere; carbon dioxide, sulphur dioxide, methane	Atoms
Atom	neutral particle, made of protons and neutrons in central nucleus, surrounded by electrons	Atoms
Atomic Number	number of protons in nucleus, also known as proton number	Atoms
Bohr nuclear model	Neils Bohr's theory, electron shells about nucleus, fixed distances and energies explained many observations	Atoms
Boiling point	temperature for transition from liquid to gas state	Atoms
Chemical bonds	attraction of two atoms, by sharing or transfer of electrons	Atoms
Chromatogram	pattern of spots on chromatography paper, shows separation of mixture	Atoms
Chromatography	method to separate parts of a mixture using solvent, more mobile parts travel greater distance	Atoms
Compound	substance made up of atoms of at least two different elements, chemically joined together	Atoms
Condensor	laboratory apparatus, internal tube carries condensing gas, external tube carries cooling water	Atoms
Covalent bond	chemical bond formed when atoms share pair of electrons to form molecules	Atoms
Crystallisation	formation of solid state particles from a solution, molecules in regular 3D patterns, e.g. salt crystals from brine	Atoms
Distillation	method to separate liquid from mixture, heat mixture until desired liquid evaporates, cool vapour to return to liquid	Atoms
Electron	negatively charged particle, in shells (energy levels) around nucleus in atom	Atoms
Electron shell	region of atom that contains electrons, also known as an energy level	Atoms
Electronic structure	arrangement and number of electrons in atom or ion	Atoms
Element	substance made up of only one type of atom	Atoms
Energy levels	regions around atom that contains electrons, also called shells	Atoms
Evaporation	transition from liquid to gas state	Atoms
Filtration	physical method to separate insoluble solid from a liquid	Atoms
Insoluble	does not dissolve in a particular solvent	Atoms
Ion	charged particle, lost or gained electron(s)	Atoms
Ionic bonding	strong attraction between oppositely charged ions	Atoms
Isotope	different form of the same element, different number of neutrons, same number of protons	Atoms
Mass Number	total number of protons and neutrons in a atom	Atoms
Mixture	substance made from two or more elements or compounds, not chemically bonded to each other	Atoms
Molecule	particle made up of at least two atoms held together by covalent bonds	Atoms
Neutron	neutral particle in nucleus of atom, relative charge 0, relative mass 1	Atoms
Noble gases	elements in Group 0 of the periodic table, also called inert gases, sometimes called Group 8	Atoms
Nucleus	centre of the atom, contains neutrons and protons	Atoms
Plum pudding model	theory 100 years ago, atoms behaved as uniform spheres of positive charge with points of negative charge	Atoms
Product	substance formed in a chemical reaction	Atoms
Proton	positively charged atomic particle found in nucleus, relative charge +1, relative mass 1	Atoms
Reactant	A substance that reacts in a chemical reaction.	Atoms
Relative Atomic Mass	average mass of atoms compared to mass of one atom of carbon-12, bigger number in periodic table	Atoms
Shells	model of electron energy levels about the atom, each shell has a maximum number of electrons allowed	Atoms
Simple distillation	method to separate liquid from mixture, liquid boiled, evaporated then cooled and condensed	Atoms
Solute	solid part of a solution	Atoms
Solution	mixture of solvent and solute	Atoms
Solvent	liquid part of a solution	Atoms
Solvent front	furthest distance travelled by solvent in paper chromatography	Atoms
Symbol (chemical)	first one or two letters of the latin name of the element	Atoms
Thermometer	measuring apparatus for temperature, glass tube type or electronic sensor type	Atoms
Alkali metals	elements in group 1 of periodic table, lithium, sodium, potassium, etc., 1 electron in outer shell, reactive	Periodic table
Anion	negatively charged particle	Periodic table
Catalysts	increases rate of a chemical reaction without being used up itself	Periodic table
Cation	positively charged particle	Periodic table
Displacement reaction	reaction where a more reactive metal replaces a less reactive metal in a compound	Periodic table
Dot and cross diagram	method to draw and explain electron shells around atoms, helps to explain bonds	Periodic table
Group	a column in the periodic table, contains elements with similar properties	Periodic table
Halide ions	halogen atom with single extra electron, negative -1 charge, e.g. Cl ⁻	Periodic table
Halogens	Group 7 elements in periodic table, 7 outer electrons, chlorine, bromine, etc.	Periodic table
Hydroxide	OH ⁻ diatomic anion	Periodic table
Inert	does not undergo chemical reactions	Periodic table
Ionic compounds	positive and negative ions bonded by electrostatic forces of attraction, regular lattice structure	Periodic table
Melting point	temperature for transition from solid to liquid state	Periodic table
Mendeleev	famous chemist who invented the Periodic Table of Elements, arranged elements in order of properties	Periodic table
Metal	crystal structure in solid state, delocalised free electrons allow conduction, reacts to form positive ions	Periodic table
Metal hydroxide solution	alkali solution, soluble metal hydroxides dissolve in water to form OH ⁻ ions	Periodic table
Non-metal	element without free delocalised electrons, does not form positive ions in reactions, (hydrogen is oddity)	Periodic table
Period	a row in the Periodic Table of elements, same highest number of electrons	Periodic table
Periodic table	A table of all the known elements, arranged so that elements with similar properties are in groups.	Periodic table
Reactivity series	list of elements arranged in order of reactivity, most reactive elements at the top, least reactive at the bottom	Periodic table
Transition metals	metal elements found in the central block of the periodic table	Periodic table
3D models	physical balls and sticks to help explain chemical bonding, usually colour coded for elements	Bonding
Allotrope	physical form of an element, e.g. graphite and diamond are allotropes of carbon	Bonding
Alloy	metal that is a mixture of two or more metals, or a mixture involving metals and non-metals	Bonding
Ball and stick models	3D modelling, often using plastic colour-coded balls to help explain atomic and molecular bonds	Bonding
Delocalised electron	free electron not associated with a particular atom or bond, free to move within structure	Bonding
Diamond	carbon giant covalent structure, uniform diamond cubic structure, very hard	Bonding
Double covalent bond	pairs of electrons shared by two atoms	Bonding
Electrical conductivity	ability of a material to carry flow of electrons, depends on free delocalised electrons, inverse of resistance	Bonding
Empirical formula	shows simplest ratio of atoms in a compound	Bonding
Fullerenes	carbon molecule, spherical, cylindrical, etc., e.g. Buckminster or Bucky ball	Bonding
Giant covalent structures	large molecule held together by covalent bonds, e.g. diamond	Bonding
Giant ionic lattice	ionic compounds such as salt crystals, uniform 3D structure	Bonding
Graphene	allotrope of carbon, semi-metal, good conductor, single layer of carbon atoms in hexagonal structure	Bonding
Graphite	allotrope of carbon, semi-metal, good conductor, natural mineral, soft but stable	Bonding
Intermolecular forces	force of attraction between molecules	Bonding
Lattice	regular structure or pattern of particles	Bonding
Lubricant	substance to reduce friction between moving parts, e.g. engine oil in cars	Bonding
Macromolecule	large molecule with covalent bonds, also called giant covalent structure	Bonding
Malleable	physical property of a material, able to be beaten or pressed into a different shape	Bonding
Metallic bond	Electrostatic force of attraction between positive metal ions and delocalised free electrons	Bonding

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Model	a way to explain something - physical, mathematical, drawing, etc. , e.g. ball and stick molecular models	Bonding
Molecular formula	shows number of atoms in each unit of compound	Bonding
Polymer	long chain molecule formed by joining lots of smaller molecules (monomers) together	Bonding
Repeating unit (polymer)	regular small part of long polymer chain	Bonding
Salt	common table salt is sodium chloride, crystalline solid, ionic compound	Bonding
Simple molecules	few atoms with covalent bonds	Bonding
Single covalent bonds	pair of electrons shared between two atoms	Bonding
Triple covalent bonds	3 pairs of electrons shared between 2 atoms	Bonding
Boiling	transition from liquid to gas state	States
Bulk property	large scale effect of a chemical compound	States
Coarse particle (atmosphere)	air pollution particle size between 2 500 and 10 000 nanometres	States
Condensation	change from gas state into liquid state	States
Condensing	changing from gas state into liquid state	States
Fine particle (atmosphere)	particle diameter 100 nm to 2500 nanometres, used to describe solid pollutants in air	States
Freezing	transition from liquid to solid state	States
Gas	state of matter, particles free to move, spaced far apart, weak forces of attraction, fill container, random motion	States
Liquid	state of matter, particles close together but random, able to move and flow, fit shape of container	States
Melting	transition from solid to liquid state	States
Nanoparticle	diameter between 1 nanometre and 100 nanometre, 1×10^{-9}	States
Nanoscience	study of really really small things, $\sim 1 \times 10^{-9}$	States
Particle theory model	simple way to explain states of matter using concept of the motion of small balls	States
Particulate	very small particle, in atmospheric pollution carbon particulates are less than 10 microns diameter	States
Solid	state of matter, particles close packed, regular lattice pattern, fixed shape, particles vibrate about fixed points	States
State symbols	solid (s), liquid (l), gas (g), aqueous solution (aq)	States
Surface area to volume ratio	surface area of a particle divided by its volume	States
Atom economy	ratio of mass in final used product to mass of reactants, as a percentage	Calculations
Avogadro constant	number of particles in one mole of substance, 6.02×10^{24}	Calculations
Balancing equations	way to ensure that mass of reactants equal to mass of products	Calculations
By-products	outputs of a reaction that are not the main aim of the process	Calculations
Concentration	amount of substance in a given volume, e.g. moles per litre or grams per cubic decimetre	Calculations
Conservation of mass	total mass before = total mass after	Calculations
Equilibrium position	balance point where forward and reverse reactions are the same, amount of reactants and products constant	Calculations
Excess	too much of something, more than required	Calculations
Industrial reactions	large scale chemical reactions in factories	Calculations
Limiting reactant	if a reactant is completely used up, reaction stops thus product limited	Calculations
Mole	6.02×10^{23} particles of a substance (Avogadro), mass of 1 mole = value of relative formula mass in grams	Calculations
Number of moles	multiples of Avogadro (6.02×10^{23}) quantities of particles	Calculations
Percentage mass	ratio of mass of element to mass of compound, $\times 100\%$	Calculations
Percentage yield	ratio of actual product to theoretical product in a reaction, $\times 100\%$	Calculations
Relative formula mass	sum of all relative atomic masses in a compound	Calculations
Reversible reaction	where products of reaction can react to form original reactants	Calculations
Sustainable	development that does not harm the future society	Calculations
Theoretical yield	amount of product expected if all reactants react, predicted yield	Calculations
Volume of gas	quantity of gas in a container, must be stated with pressure and temperature to be meaningful	Calculations
Yield	amount of product made in a reaction	Calculations
Acid	substance with pH level less than 7, forms positive hydrogen ions in water	Acids & alkalis
Acid strength	amount of acid ionised in water, usually as a percentage, strong acid = high % ionised in water	Acids & alkalis
Alkali	substance with pH level more than 7, forms negative hydroxyl ions in water	Acids & alkalis
Anode	positive electrode	Acids & alkalis
Aqueous solution	mixed with water	Acids & alkalis
Base	substance that reacts with acids in neutralisation reactions	Acids & alkalis
Bauxite	rock, aluminium ore	Acids & alkalis
Burette	laboratory apparatus, long glass tube with tap and scale for dispensing liquids accurately	Acids & alkalis
Cathode	negative electrode	Acids & alkalis
Concentration (of acid)	amount of acid in a given volume, e.g. moles per litre or grams per cubic decimetre	Acids & alkalis
Dissociation	molecules splitting into smaller particles – atoms, ions or radicals	Acids & alkalis
Electrode	electrical conductor placed in electrolyte, often carbon rods	Acids & alkalis
Electrolysis	process of breaking down substance using electricity	Acids & alkalis
Electrolyte	liquid in electrolysis used to conduct electricity	Acids & alkalis
End-point (titration)	when acid or alkali completely neutralised	Acids & alkalis
Extraction	obtaining something from a mixture or compound	Acids & alkalis
Half equation	shows reaction and transfer of electrons, reduction or oxidation, e.g. electrodes during electrolysis	Acids & alkalis
Indicator	substance that changes colour above or below a certain pH value	Acids & alkalis
Ionic equation	simplified equation showing only the reactive particles and their products	Acids & alkalis
Limewater	solution of calcium hydroxide in water, when carbon dioxide bubbled through it the solution turns cloudy	Acids & alkalis
Litmus	single indicator, blue in alkalis, red in acids	Acids & alkalis
Metal ores	rocks that are the natural source of metals	Acids & alkalis
Methyl orange indicator	single indicator, red in acid, yellow in alkali	Acids & alkalis
Molten	liquid state, implies that heat used to transition from solid to molten	Acids & alkalis
Neutral substance	substance with pH of 7	Acids & alkalis
Neutralisation	reaction between acid and base, usually forms salt and water	Acids & alkalis
Oxidation	chemical reaction, electrons lost or oxygen gained	Acids & alkalis
pH scale	scale from 1 to 14, 1 is strong acid, 14 is strong alkali, 7 is neutral	Acids & alkalis
Phenolphthalein indicator	single indicator, clear in acid, pink in alkali	Acids & alkalis
Pipette	glass tube with rubber bulb, used to extract and deposit liquids from one container to another by suction	Acids & alkalis
Redox reaction	where one substance is reduced and another is oxidised	Acids & alkalis
Reduction	reaction where electrons are gained or oxygen is lost	Acids & alkalis
Rough titration	a quick practise test, used to ascertain quantities and starting point	Acids & alkalis
Salts	ionic compound formed by neutralisation of acid and base	Acids & alkalis
Single indicator	only one compound that changes colour at a known pH	Acids & alkalis
Soluble salts	salts that can dissolve in water	Acids & alkalis
Strong acid	fully ionises in aqueous solution	Acids & alkalis
Titration	experimental test used to find the concentration of a solution	Acids & alkalis
Titre	minimum volume of acid needed to neutralise an alkali	Acids & alkalis
Universal indicator	wide range of colour change indicates the pH of a solution	Acids & alkalis
Weak acid	partly ionises in water solution	Acids & alkalis
Wide range indicator	shows gradual change in colour, continuous spectrum for testing pH, e.g. universal indicator	Acids & alkalis

Activation energy	minimum energy needed by colliding particles in order to react	Energy
Battery	two or more cells, chemical energy store	Energy
Bond energy	energy required to break a chemical bond, or energy released when a bond is made	Energy
Catalysts	increases rate of a chemical reaction without being used up itself	Energy
Collision theory	model of reactions where particles collide with a minimum energy in order to react	Energy
Combustion	exothermic reaction between a fuel and oxygen	Energy
Endothermic (reaction)	reaction where energy taken from surroundings	Energy
Energy level diagram	graph of energy against progress (time) in a reaction	Energy
Enzyme	biological catalyst, protein molecule	Energy
Exothermic (reaction)	reaction which transfers energy to the surroundings	Energy
Fuel cell	container of fuel and oxygen, energy from reaction generates electricity, e.g. hydrogen fuel cell	Energy
Hydrochloric acid	HCl in aqueous solution, used to make polyvinyl chloride PVC plastic, also stomach acid	Energy
Hydrogen-oxygen fuel cell	container of fuel and oxygen, energy from reaction generates electricity, potential future use in cars	Energy
Le Chatelier's Principle	for a reversible reaction at equilibrium; if conditions change then system will counteract this change	Energy
Mean rate of reaction	average number of reactants changed into products per unit time	Energy
Non-rechargeable (battery)	electric battery that is thrown away after use	Energy
Precipitate	chemical reaction makes a solid product from a solution	Energy
Rate of reaction	how fast reactants are changed into products in a reaction	Energy
Rechargeable (battery)	Electric energy store, once energy used by a component, energy stored again by input of electric current	Energy
Voltage	potential difference, energy available per unit charge from a battery or power source, units volts V	Energy
Complete combustion	when fuel burns in plenty of oxygen, only products are carbon dioxide and water	Hydrocarbons
Cracking	process used to break long-chain hydrocarbons into shorter, more useful hydrocarbons, shorter chain length	Hydrocarbons
Crude oil	fossil fuel in natural state out of the ground, mixture of hydrocarbons of different chain length, see cracking	Hydrocarbons
Diesel oil	refined component from crude oil, hydrocarbon, fuel for cars, lorries and heating	Hydrocarbons
Feedstock	raw material for a process	Hydrocarbons
Flammable	a substance that is easy to ignite, thus high risk to safety	Hydrocarbons
Fossil fuel	coal, oil and natural gas, buried remains of plants and animals, non-renewable resources that we burn	Hydrocarbons
Fraction (of distillation)	group of hydrocarbons condense together when crude oil separated by fractional distillation, e.g. petrol, naphtha, k	Hydrocarbons
Fractional distillation	process used to separate substances in a mixture according to their boiling points	Hydrocarbons
Fractionating column	vertical tube containing hot gas mixture, components condense at different heights, output tubes collect fractions	Hydrocarbons
Heavy fuel oil	fraction of crude oil used in furnaces for heating or ships, longer chain molecules than petrol or diesel	Hydrocarbons
Homologous series	compounds with same functional group and similar properties	Hydrocarbons
Hydrocarbon	compound made from only hydrogen and carbon	Hydrocarbons
Incomplete combustion	fuel burns with insufficient oxygen, produces carbon monoxide and carbon particulates, partial combustion	Hydrocarbons
Kerosene	also called paraffin, fraction of crude oil, old fuel for heating and lamps	Hydrocarbons
Liquefied petroleum gas (L	also called propane or butane, used in some vehicles and for camp cooking, etc	Hydrocarbons
Oil refinery	industrial site made of large pipes and towers, separates the useful fractions from crude oil	Hydrocarbons
Organic compound	chemical compound that contains carbon	Hydrocarbons
Partial combustion	fuel burns without sufficient oxygen, produces carbon monoxide and carbon particulates, incomplete combustion	Hydrocarbons
Petrol	hydrocarbon fuel, fraction taken from crude oil, used in cars	Hydrocarbons
Saturated	molecule that contains only single bonds, cannot have more atoms added	Hydrocarbons
Thermal decomposition	reaction where one substance chemically changes into at least two new substances when heated	Hydrocarbons
Viscous	material property, thick liquid, pours slowly, e.g. treacle	Hydrocarbons
Addition polymers	long chain molecules made up of alkene monomers, double bonds open to form bonds in chain	Organic compounds
Alcohols	compounds containing hydroxyl (OH) functional group	Organic compounds
Alkane	saturated hydrocarbon with the general formula C_nH_{2n+2} . E.g. methane, ethane, propane etc.	Organic compounds
Alkene	unsaturated hydrocarbon that contains a carbon-carbon double bond and has the general formula C_nH_{2n} . E.g. eth	Organic compounds
Amino acid	organic molecule, made of amino and carboxylic acid groups, building block of proteins	Organic compounds
Butanol	member of alcohol group, C_4H_9OH	Organic compounds
Carboxylic acids	compound with $COOH$ functional group	Organic compounds
Condensation polymerisation	complex monomers react to form long chain polymers	Organic compounds
DNA	deoxyribonucleic acid, long chain molecule in cells that stores genetic information	Organic compounds
Esters	compound with COO functional group	Organic compounds
Ethanoic acid	CH_3COOH , organic compound, also called acetic acid, found in vinegar	Organic compounds
Ethanol	C_2H_5OH , also called drinking alcohol, organic compound	Organic compounds
Fermentation	anaerobic respiration in yeast fungus, sugar to ethanol, using enzymes	Organic compounds
Methanoic acid	$HCOOH$, simple carboxylic acid, also called formic acid, naturally found in ants	Organic compounds
Methanol	CH_3OH , also called wood alcohol or methyl alcohol	Organic compounds
Monomer	small molecule that can be joined together with other small molecules to form a polymer chain	Organic compounds
Polyester	long chain polymer molecule made of small ester monomers, used in clothing	Organic compounds
Polypeptides	long chain polymer molecule made of small amino acid monomers	Organic compounds
Polyunsaturated fat	fat that contains more than one carbon-carbon double bond	Organic compounds
Primordial soup theory	lightning caused gases in atmosphere to react and form amino acids, this made organic matter	Organic compounds
Propanol	type of alcohol, isopropyl alcohol	Organic compounds
Protein	large chain molecule made of smaller amino acid residues called polypeptides,	Organic compounds
Sugars	type of soluble carbohydrate molecule	Organic compounds
Unsaturated	molecule that contains at least one double bond, may have more atoms added	Organic compounds
Additive (paint)	compound mixed into paint to change properties, e.g. titanium dioxide white pigment	Chemical analysis
Binder (paint)	material that holds different particles together	Chemical analysis
Flame emission spectrosc	method to identify metal ions in solution, atomic line spectra of light observed when 'burned'	Chemical analysis
Flame tests	substance held in flame of Bunsen burner, colour of emitted light identifies metal ions	Chemical analysis
Formulations	mixture made to precise ratios	Chemical analysis
Line spectrum	unique 'fingerprint' for each element, specific frequencies of emitted light used for identification	Chemical analysis
Mobile phase	in chromatography, where molecules are able to move	Chemical analysis
Paper chromatography	mixture placed on paper dipped in solvent, components travel different distances up the paper for identification	Chemical analysis
Pigment (paint)	compound that reflects a particular colour of light, added to paint, e.g. titanium dioxide is a white pigment	Chemical analysis
Propanone	acetone, industrial solvent	Chemical analysis
Pure	a substance that contains only one element or compound	Chemical analysis
Retardation factor (Rf value)	ratio of distance travelled by centre of spot to distance travelled by solvent front	Chemical analysis
Solvent (paint)	paints either use water as a solvent or volatile hydrocarbons (VOC)	Chemical analysis
Spectroscopy	study of absorption and emission of electromagnetic radiation by materials	Chemical analysis
Stationary phase	where materials do not move in paper chromatography	Chemical analysis
Tangent	straight line that touches a curve without crossing it	Chemical analysis
Test for carbon dioxide	bubble gas through limewater (calcium hydroxide solution), if cloudy CO_2 present, calcium carbonate formed	Chemical analysis
Test for carbonate ions	test mystery solution with acid, collect gas and use test for CO_2 , carbonate + acid $\rightarrow$ salt + water + CO_2	Chemical analysis
Test for chlorine	fill test tube with gas, place damp litmus paper in tube, if it turns white then chlorine present, bleaching effect	Chemical analysis
Test for halide ions	add dilute nitric acid then silver nitrate solution, see precipitation table to identify halide ion	Chemical analysis

Test for hydrogen	fill test tube with gas, place lit splint at open end of tube, if 'squeaky pop' then H ₂ present	Chemical analysis
Test for negative ions	test mystery solution for halide ions, carbonate ions or sulfate ions – learn the indicative results	Chemical analysis
Test for oxygen	fill test tube with gas, place glowing splint in tube, if relights then O ₂ present	Chemical analysis
Test for positive ions	flame tests or precipitation reactions for metal ions – see and learn both colour charts	Chemical analysis
Test for sulfate ions	add dilute hydrochloric acid then barium chloride solution, white precipitate indicates a sulfate	Chemical analysis
Absorption (of carbon dioxide)	removing carbon dioxide from atmosphere into rocks or ocean stores	Atmosphere
Acid rain	usually pollutants dissolved in rain water, e.g. sulphur forms sulphuric acid, nitrogen forms nitric acid	Atmosphere
Air pollution	harmful compounds in the atmosphere, e.g. carbon particulates due to incomplete combustion	Atmosphere
Atmosphere	layer of air that surrounds the Earth	Atmosphere
Carbon capture and storage	process of collecting CO ₂ emitted (from power stations) and storing it so not released into atmosphere	Atmosphere
Carbon cycle	continuous cycle of carbon from the air, through food chains and back into the air	Atmosphere
Carbon footprint	measure of greenhouse gases released	Atmosphere
Carbon monoxide	CO molecule, dangerous gas, product of incomplete combustion	Atmosphere
Carbon neutral fuel	fuel absorbs as much CO ₂ from atmosphere (when grown) as it releases when burned	Atmosphere
Carbon particulates	small particles of unburned carbon, less than 10 microns diameter, harmful pollutant in air	Atmosphere
Carbon tax	government scheme to encourage big businesses to reduce production of carbon into the air	Atmosphere
Climate change	any change in the Earth's climate, e.g. global warming, changing rainfall patterns, etc.	Atmosphere
Early atmosphere	different composition to today - mostly carbon dioxide, little oxygen, more water vapour	Atmosphere
Emissions (of pollutants)	pollutant gases given out by vehicles, industry or farming	Atmosphere
Evolution (of atmosphere)	change in composition of gases due to highly volcanic nature of Earth 400 million years ago	Atmosphere
Fossil evidence	remains or imprints of living organisms, millions of years old, used to show age of rocks	Atmosphere
Global warming	increase in average surface temperature of the Earth	Atmosphere
Greenhouse effect	gases in atmosphere emit radiation to Earth which increases surface temperature, both natural and man-made	Atmosphere
Greenhouse gases	gases in atmosphere that absorb and emit radiation easily	Atmosphere
Locking away (carbon)	removing carbon from gas in atmosphere into rocks or seawater for long time	Atmosphere
Methane	CH ₄ , simple hydrocarbon molecule, natural gas fuel, natural by-product of animal digestion	Atmosphere
Nitrogen oxides (Nox)	Nox are pollutants in the atmosphere, cause irritation to lungs, asthma, includes all oxides of nitrogen	Atmosphere
Planet evidence	observations of other planets explains evolution of Earth's atmosphere, e.g. greenhouse effect on Venus	Atmosphere
Rock evidence	rocks contain atmosphere gases from the date they were formed	Atmosphere
Sulfur dioxide	pollutant in atmosphere from combustion of fossil fuels	Atmosphere
Volcano evidence	gases emitted by volcanos today show the gases in atmosphere millions of years ago	Atmosphere
Alloy	metal that is a mixture of two or more metals, or a mixture involving metals and non-metals	Materials
Aluminium	group 3 metal, many uses in engineering, usually used in alloy form	Materials
Ammonia	NH ₃ molecule, waste product of some organisms, see Haber-Bosch process, uses: fertiliser, cleaning chemical	Materials
Barrier to corrosion	paint finishes or applications of thin metal layers to prevent rust and oxides forming	Materials
Biodegradable	may be broken down by microorganisms	Materials
Biodiesel	type of biofuel produced from vegetable oils	Materials
Biofuel	type of renewable fuel produced from plants and waste, e.g. ethanol or biodiesel	Materials
Bioleaching	process by which copper is separated from copper sulfide using bacteria	Materials
Brass	alloy of copper (2/3) and zinc (1/3)	Materials
Brittle	mechanical property of a material, low tensile strength, breaks with little plastic deformation	Materials
Bronze	alloy of mainly copper and tin (12%), different useful properties than pure copper	Materials
Bunsen burner	laboratory apparatus, used for heating, combusts methane gas	Materials
Ceramics	non-metallic solid, high melting point, not carbon based	Materials
Clay	fine grained sediment of rock	Materials
Composites	combination of two or more materials, improved overall properties, e.g. reinforced concrete	Materials
Corrosion	metals react with chemicals in environment, e.g. steel 'rusts' as iron reacts with oxygen	Materials
Cross-links	bonds between polymer chains, increases polymer strength and rigidity, e.g. vulcanised rubber	Materials
Emulsifier	substance added to an emulsion to make it more stable and stop it from separating out	Materials
Emulsion	mixture made up of lots of tiny droplets of one liquid suspended in another liquid	Materials
Fertiliser	mineral compound used to increase crop yields, natural or man-made source of nutrients, e.g. ammonia NH ₃	Materials
Filtration (of water)	removal of unwanted suspended solid particles, to purify for drinking	Materials
Flammability	how easy it is to ignite (set fire to) a substance	Materials
Flexibility	ability of a material to respond to applied force, opposite of stiffness	Materials
Fresh water	collected from natural rivers and lakes	Materials
Galvanise	metal finish of zinc applied to steel, prevents corrosion, hot dip method common	Materials
Glass	non-crystalline amorphous solid, often made of silica sand	Materials
Gold	Au, atomic number 79, aurum, malleable and ductile metal, high conductivity, low corrosion, precious	Materials
Haber process	industrial process to make ammonia from nitrogen and hydrogen	Materials
High density polyethylene	HDPE, thermoplastic polymer made from ethylene monomer, used for rigid bottles and pipes, etc., polythene	Materials
Hydrogenation	addition of hydrogen to a compound	Materials
Hydrophilic	attracted to water, water loving	Materials
Hydrophobic	attracted to oil or repelled by water, water hating	Materials
Life cycle assessment	impact of: raw materials, manufacturing & packaging, use of product, product disposal	Materials
Low density polyethylene	flexible polythene used for plastic bags and packaging	Materials
Monounsaturated fat	fat that contains just one carbon-carbon double bond	Materials
Natural resources	resource not made by humans	Materials
Non-renewable resource	resource that will run out in our lifetime, e.g. fossil fuel	Materials
NPK fertilisers	nitrogen, phosphorous and potassium used as nutrients to help plants grow	Materials
Ore	rock that contains enough mineral to make it profitable to extract	Materials
Phytomining	using plants to extract metals from the soil, used to clean contaminated soil and water	Materials
Porcelain	hard white ceramic made by heating a pure clay to a very high temperature	Materials
Porous	material with small holes or voids that allow liquid to pass into or through	Materials
Potable water	water that is safe for drinking	Materials
Recycling	converting waste materials into new materials	Materials
Renewable resource	resource that may be asd	Materials
Resistance to chemicals	property of materials, e.g. some polymers are used to contain strong acid	Materials
Reuse	use again, often for the same purpose	Materials
Rigidity	property of materials, resistance to deformation when force applied, stiffness	Materials
Rust	corrosion, reaction with oxygen, usually referring to iron or steel	Materials
Sacrificial corrosion protection	blocks or coatings of more reactive metals used to protect less reactive metals	Materials
Sea water (brine)	salt water, 35 grams of salt per litre of water	Materials
Smart material	material with properties that change in response to external stimuli, like heat or pressure	Materials
Steel	alloy of iron, carbon and other trace elements, high tensile strength	Materials
Sterilisation (of water)	microorganisms killed or removed	Materials
Thermosetting polymers	polymer with cross-link bonds between the chains	Materials
Thermosoftening polymers	made with tangled long chains, no cross-link bonds	Materials

Transparent	material property, allows light image to pass through easily	Materials
Volatility	how easily a substance turns into a gas	Materials
Waste water	water flushed away down drains from homes and businesses	Materials
Waste water treatment	screening, sedimentation, aerobic digestion, anaerobic digestion	Materials