

Structure and bonding

General

Key term	Definition
Atom	the smallest possible particle of an element; atoms are made up of protons, neutrons and electrons
Chemical bond	a strong electrostatic force of attraction holding atoms together
Compound	a pure substance made of two or more different elements whose atoms are joined by chemical bonds; the atoms are in a fixed ratio
Conductor of electricity	a substance that allows charged particles to move through it easily
Dot and cross diagram	used to show how electrons from the outer shells/energy levels of atoms are shared or transferred when atoms form molecules or ions
Electron	a negatively charged subatomic particle with very little mass found in the electron shells/energy levels of atoms
Electron shells/energy level	the part of an atom outside the nucleus occupied by electrons
Element	a pure substance made of only one type of atom
Giant lattice	the regular arrangement of atoms or ions that form extended structures
Inelastic	is not flexible
Regular lattice	an arrangement of repeating atoms or ions that form a 3D structure
Subatomic particle	a particle smaller than an atom

Covalent structure and bonding

Key term	Definition
Covalent bond	a type of bond formed by atoms sharing one or more pairs of electrons
Diatomic	when a molecule is composed of two atoms
Intermolecular forces	the relatively weak attractive and repulsive forces between molecules
Intramolecular forces	the attractive and repulsive forces within a molecule
Macromolecule	a very large molecule
Molecule	two or more atoms connected by chemical bonds

Ionic structure and bonding

Key term	Definition
Anion	a negative ion
Brittle	something that cracks or breaks when force is applied to it
Ion	a charged particle formed when one or more electrons are lost or gained from an atom or molecule
Ionic bond	an electrostatic force of attraction between oppositely charged ions in a regular lattice that forms between a metal and a non-metal
Polyatomic ion	a charged particle made of two or more atoms joined together

Metallic structure and bonding

Key term	Definition
Alloy	a mixture of two or more elements at least one of which is a metal, where the resulting mixture has metallic properties
Cation	a positive ion
Delocalised electron	an electron in a molecule or structure that is not associated with any particular atom, ion, or covalent bond and which is free to move
Ductile	can be drawn out into wires
Electrostatic force of attraction	a force of attraction between particles with opposite charges
Malleable	can be hammered or bent into shape
Metal	an element that is shiny when cut, malleable and conducts electricity well; metals are found on the left and middle of the periodic table and tend to lose electrons to form positive ions
Metallic bond	an electrostatic force of attraction between delocalised electrons and the positive ions in a regular lattice
Thermal conductivity	a measure of how easily a substance allows heat to move through it

Structure and bonding of carbon

Key term	Definition
Allotropes	different forms of the same element in the same physical state; for example, allotropes of carbon are diamond, graphite, graphene and fullerenes
Tetrahedral	molecules and structures that have one atom in the centre and four atoms at the corners of a triangular pyramid