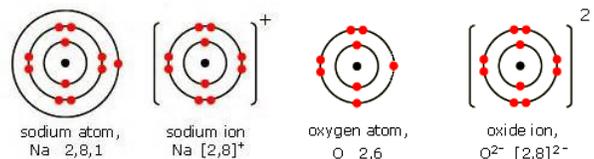
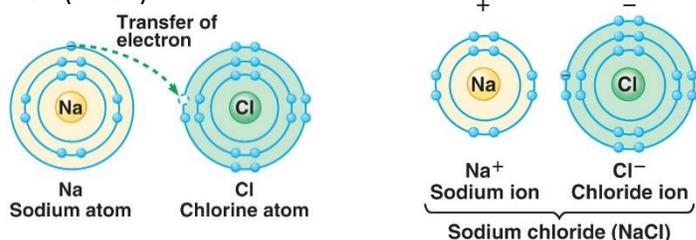


Year 10 Semester 1 Knowledge Organiser

Atoms want to have a full outer shell as this makes them stable. To do this they form bonds with other atoms.

Ionic Bonds

Metals and non-metals will form ionic bonds. The **metal** atom **loses electrons** to become a **positive** ion (cation) and the **non-metal** atom **gains electrons** to become a **negative** ion (anion).



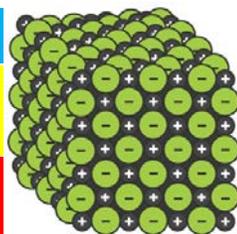
The electrons from the metal transfer to the non-metal so that both atoms have a full outer shell.

The ions formed are attracted by an electrostatic force.

Ionic compounds form a giant structure called a lattice.

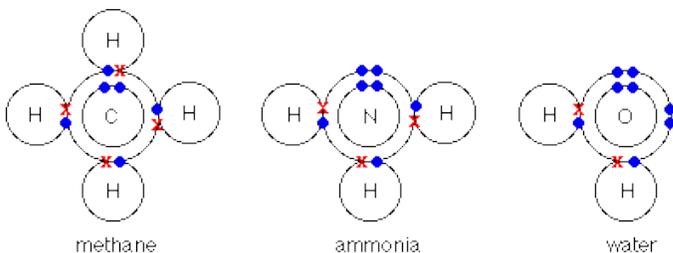
The electrostatic attraction is strong meaning ionic compounds have a high melting point as a lot of energy is needed to overcome the attraction.

Ionic compounds don't conduct when solid because the ions are locked in position. When molten the ions are free to move and can conduct.



Covalent Bonds

Two non-metals will form a covalent bond. The atoms share electrons to make themselves stable.



Although the covalent bond is strong the simple molecules are held together by weak intermolecular forces. This means they have low boiling points.

The covalent molecules don't conduct electricity because there are no free electrons.

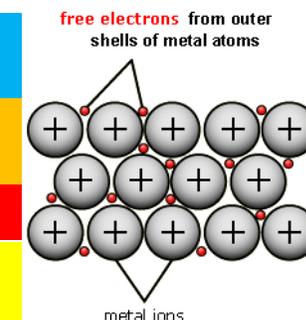
Metallic Bonds

Metallic bonds are metal ions surrounded by delocalised electrons.

Metals conduct electricity because the electrons are free to move.

The metallic bond is strong so they have a high melting point.

Metals are malleable because the layers are able to slide over each other.



Anion	A negatively charged ion
Boiling point	Temperature at which substance changes from a liquid to a gas
Cation	A positively charged ion
Covalent bond	A shared pair of electrons between atoms
Delocalised electrons	Free moving electrons from the outer shell of metal atoms. Form a strong attraction with metal ions
Dot and cross diagram	Diagram showing how electrons are arranged in a molecule or ion (dots for one atom, crosses for another atom)
Electrical conductivity	Measure of how well a substance conducts electricity
Electron	Negatively charged sub atomic particle
Electron transfer	Movement of electrons from one atom to another
Electrostatic attraction	Force of attraction between oppositely charged ions
Intermolecular force	Relatively weak force of attraction between molecules that keeps them together
Ion	Particle with a charge, positive or negative
ionic bond	Forms between metals and non-metals. Oppositely charged ions attract to form an ionic bond.
ionic formula	How ionic compounds are represented
ionic lattice	Regular arrangement of positive ions surrounded by negative ions
Melting point	Temperature at which substance changes from a solid to a liquid
Metal ions	Positively charged atom in a metal
Metallic bond	Forces that keep atoms together in a metal
Molecule	Two or more atoms chemically joined
Simple covalent molecule	Substance that contains only a few non-metal atoms held together by covalent bonds
Stable	An atom is stable when it has a full outer shell