

Cambridge IGCSE Chemistry

Topic 3: atoms, elements and compounds

Bonding: the structure of matter

Notes





Describe the differences between elements, mixtures and compounds, and between metals and non-metals

- Element = substance made from only one type of atom
- Compound = substance made from two or more elements that have reacted chemically with each other
- A mixture:
 - Consists of 2 or more elements or compounds not chemically combined together
 - Chemical properties of each substance in the mixture are unchanged
- Metals = elements that react to form positive ions.
 - Majority of elements are metals.
 - Found to the left and towards the bottom of the periodic table., they lose electron(s) in order to form these positive ions
- Non-metals = elements that do not form positive ions.
 - Found towards the right and top of the periodic table, because they gain electron(s) in order to form these negative ions
- Metals are generally conductive
- Non metals (excluding graphite) are generally not conductive

Describe an alloy, such as brass, as a mixture of a metal with other elements

- Most metals in everyday uses are alloys. Pure copper, gold, iron and aluminium are all too soft for everyday uses and so are mixed with small amounts of other elements (in these cases with similar metals) to make them harder for everyday use.
 - Gold in jewellery is usually an alloy with silver, copper and zinc
 - brass is an alloy of copper and zinc
- alloys are harder than pure metals because:
 - in a pure metal, all the + ions are the same size and in a regular arrangement so can easily slide over each other
 - in an alloy, there are + ions from different metals, meaning they are different sizes, which disrupts the regular arrangement and prevents the layers from sliding as easily

