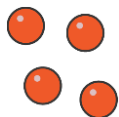


# Elements, Compounds and Simple Chemical Reactions

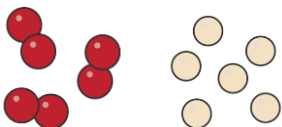
An atom is the smallest particle of a chemical element that can exist. You can find information about the elements on the periodic table. There are 118 elements on the periodic table. (Only 94 of these occur naturally on Earth!). An atom is the smallest part of anything that can exist, whereas an element is made up of more than one atom of the same type chemically bonded together



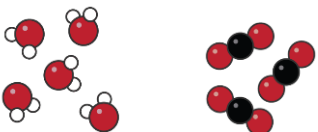
This is the periodic table. It shows all of the elements that exist, probably in the whole universe!

Chemical elements have different properties to the individual atoms they are made from because of the fact there are lots of atoms present.

An element is a **pure substance** that cannot be broken down into any other substances. An element is made from just one type of atom, and examples include oxygen, hydrogen and iron.



A **compound** is a pure substance that is made from more than one element. In a compound, elements are chemically bonded together, which makes it very difficult to separate them.

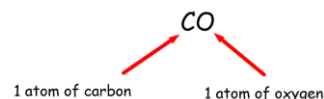


## Chemical formula

Remember that we use **chemical symbols** to stand for elements. These can be found on the periodic table.

For a **molecule**, we use the chemical symbols of the atoms it contains to write down its **formula**.

For example: Carbon monoxide



## Chemical formula

Numbers in formulae (plural for formula)



We use number to show when there is more than one atom of an element.

The numbers are written below and to the right of the element.

What different elements is this made of?

How many atoms of each element are there in this compound?

Numbers in formulae (plural for formula)



We use number to show when there is more than one atom of an element.

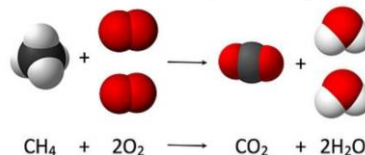
The numbers are written below and to the right of the element.

What different elements is this made of?

How many atoms of each element are there in this compound?

Most chemical reactions are irreversible changes. This is because the atoms are rearranged to form new substances.

The products cannot be turned back into the original reactants.



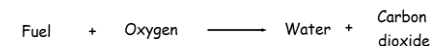
In a **reversible** (or physical) change you can get back what you had at the start. No new chemicals (**products**) are made like in a chemical reaction. The particles are just rearranged.

## Fire Triangle



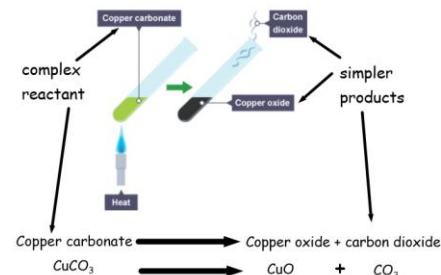
The fire triangle shows the three things needed for a fire to start and keep burning.

During this reaction carbon dioxide and water is produced.



## Thermal decomposition

A compound being broken down into simpler elements or compounds using **heat**



**Exothermic reactions** are chemical reactions which release energy from the chemicals into the surroundings. This energy is usually released as heat, so the surroundings get hotter.

**Endothermic reactions** absorb energy from the surroundings. This energy is usually absorbed as heat, so the surroundings get colder.

