

Working out Oxidation Numbers

Oxidation numbers are a useful tool that allow chemists to work out whether an element has been oxidised or reduced in a chemical reaction.

But, more importantly, it allows chemists to write half-equations then full balanced equations.

Some simple **general rules** are shown in the box below.

There are **many exceptions**, so you need to **use with caution!**

- The oxidation number for **simple ions** is just the charge **e.g.**

Ag ⁺	is	+1
S ²⁻	is	-2
Al ³⁺	is	+3

- The oxidation number for an **element** = **0**
- The oxidation number for **oxygen** in compounds = **-2**
- The oxidation number for **hydrogen** in compounds = **+1**
- The oxidation number for **halogens** in compounds = **-1**
(many exceptions for **halogens**, e.g. when bonded to oxygen which is more electronegative than all halogens **except fluorine**)
- The oxidation number for **group 1** ions in compounds = **+1**
- The oxidation number for **group 2** ions in compounds = **+2**
- Assume that the **sum of the oxidation numbers** in a chemical formula is **equal to the overall charge** on that formula.