

Key word	Definition
Element	a substance that cannot be broken down in to other substances. Contains one type of atom.
Periodic table	A table of all the elements, in which elements with the similar properties are grouped together.
Chemical symbol	A one or two letter code for an element.
Metal	Elements on the left hand side of the periodic table. Shiny, most are good conductors of heat & electricity.
Non-metal	Elements on the right hand side of the periodic table. Dull, most are poor conductors of heat and electricity.
Physical property	A property of a material that you can observe or measure.
Chemical property	How a substance behaves in its chemical reactions.
Oxide	A substance made up of a metal or non-metal element joined to oxygen.
Oxidation	A chemical reaction in which a substance combines with oxygen.
Ductile	Can be drawn out into wires.
Malleable	Can be hammered into shape.
Reactant	A starting substance in a chemical reaction.
Product	A substance that is made in a chemical reaction.
Salt	A compound in which the hydrogen atoms of an acid are replaced by atoms of a metal element.
Reactive	A substance is reactive if it reacts vigorously with substances.
Reactivity series	A list of metals in order of how vigorously they react.
Displacement	Reaction where a more reactive metal takes the place of a less reactive metal in a compound.

Properties of metals and non-metals

Metals are on the **left** of the stepped line in the periodic table, non-metals are on the **right**.

Metals have high melting points (**except Mercury** which is a liquid), are shiny, most are good conductors of heat and electricity, high density, malleable and ductile.

Non-metals have low melting points, are dull, most are poor conductors of heat and electricity, have low density and are brittle.

Reactions: Metals + acids

General equation: Metal + Acid → Salt + hydrogen gas

Example (*words*): Iron + Hydrochloric acid → Iron chloride + Hydrogen

Observation: Bubbles / Fizzing (as hydrogen gas produced)

Reactions: Metals + oxygen

General equation: Metal + Oxygen → Metal oxide

Example (*words*): Calcium + Oxygen → Calcium Oxide

Observation: Metals with oxide layers can be dull not shiny and when reacting with oxygen they can glow bright and give off heat, e.g. Magnesium burning

Reactions: Metals + water

General equation: Metal + water → metal hydroxide + hydrogen gas

Example (*words*): Calcium + water → Calcium hydroxide + Hydrogen

Observation: Bubbles / Fizzing (as hydrogen gas produced)

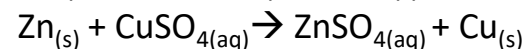
Magnesium reacts very **slowly with water** to produce the metal hydroxide and hydrogen, but it reacts **quickly with steam** to give the metal oxide and hydrogen.

Magnesium + water → Magnesium oxide + Hydrogen

Reactions: Displacement reactions

Using the **reactivity series** a more reactive metal will **displace** a less reactive metals from their compounds.

Example: Zinc + Copper sulphate → Zinc sulphate + Copper



Observation: Iron metal forming (zinc more reactive than copper so it displaces it.)

A reaction with a less reactive metal will not work.

E.g. Thermite reaction mixes 2 powders & heating them strongly. It's a very exothermic reaction.

When metals react they do so differently. The nearer the top of the reactivity series the more reactive they are.

Reactivity series

REACTIVE

Potassium

Sodium

Lithium

Calcium

Magnesium

Aluminium

Carbon

Zinc

Iron

Lead

Hydrogen

Copper

Silver

Gold

UNREACTIVE