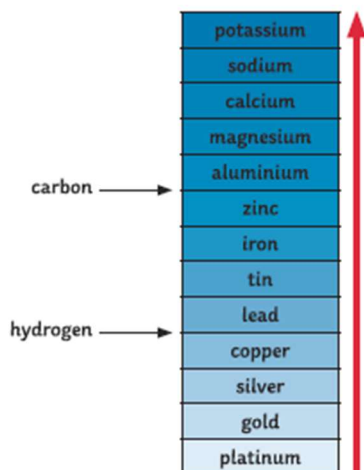


Knowledge organiser

The Reactivity Series

Here's a mnemonic to help you learn the order:

purple (potassium)
 slime (sodium)
 can (calcium)
 make (magnesium)
 a (aluminium)
 careless (carbon)
 zebra (zinc)
 insane (iron)
 try (tin)
 learning (lead)
 how (hydrogen)
 camels (copper)
 surprise (silver)
 gorillas (gold)



The reactivity series is a league table for metals. The more reactive metals are near the top of the table with the least reactive near the bottom. In chemical reactions, a more reactive metal will displace a less reactive metal.

Reactions of Metals with Water

Metals, when reacted with water, produce a metal hydroxide and hydrogen.

lithium + water \rightarrow lithium hydroxide + hydrogen



The more reactive a metal is, the faster the reaction.

Reactions of Metals with Dilute Acid

Metals, when reacted with acids, produce a salt and hydrogen.

Sodium + hydrochloric acid \rightarrow sodium chloride + hydrogen



Metals that are below hydrogen in the reactivity series **do not** react with dilute acids.

Reactions of Acids

The general formula for the reaction between an acid and a metal is:
 acid + metal \rightarrow salt + hydrogen

For example: hydrochloric acid + sodium \rightarrow sodium chloride + hydrogen



When an acid reacts with an alkali, a neutralisation reaction takes place and a salt and water are produced.

The general formula for this kind of reaction is as follows:

acid + alkali \rightarrow salt + water

hydrochloric acid + sodium hydroxide \rightarrow sodium chloride + water



Naming Salts

The first part comes from the metal in the metal carbonate, oxide or hydroxide. The second part of the name comes from the acid that was used to make it.

Acid Used	Salt Produced
hydrochloric	chloride
nitric	nitrate
sulfuric	sulfate

For example, sodium chloride.

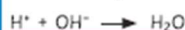
pH Scale



In aqueous solutions, acids produce H^+ ions and alkalis produce OH^- ions.

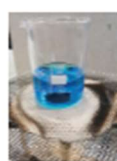
Neutral solutions are pH7 and are neither acids or alkalis.

For example, in neutralisation reactions, hydrogen ions from an acid react with hydroxide ions from an alkali to produce water:

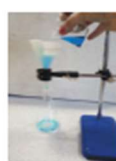


Making Soluble Salts

1. Make a saturated solution by stirring copper oxide into the sulfuric acid until no more will dissolve.



2. Filter the solution to remove the excess copper oxide solid.



3. Half fill a beaker with water and set this over a Bunsen burner to heat the water. Place an evaporating dish on top of the beaker.



4. Add some of the solution to the evaporating basin and heat until crystals begin to form.



5. Once cooled, pour the remaining liquid into a crystallising dish and leave to cool for 24 hours.



6. Remove the crystals with a spatula and pat dry between paper towels.

