

Chapter 4: Acids and alkalis Knowledge organiser

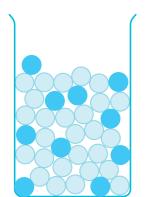


Acids and alkalis

Acids and alkalis are special solutions which are chemical opposites to each other.

If a solution is between acid and alkaline it is neutral.

Acids and alkalis can be:



concentrated

Lots of acid/alkali particles for the amount of water.

dilute

A small number of acid/alkali particles in the same amount of water.

Acids and alkalis are **corrosive** This means that they can cause burns if they get on your skin.



Acids and alkalis can be extremely dangerous, depending on the type of acid/alkali and its concentration.

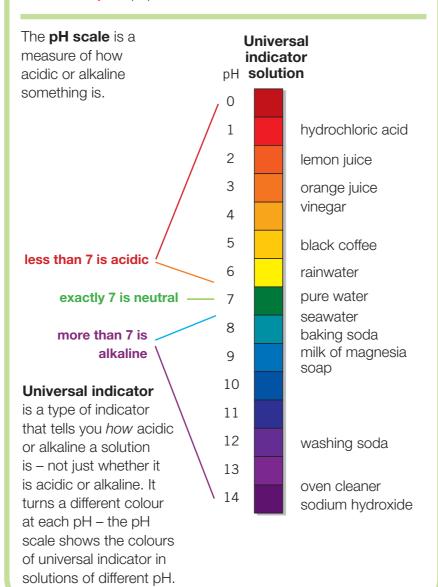
As a general rule the more concentrated the solution, the more dangerous it can be.

Indicators

If you want to know if something is acidic or alkaline, you need to use an **indicator**. Indicators contain a dye that turns different colours in acidic and alkaline solutions.

Litmus paper is a type of indicator. It can be either **pink** paper or **blue** paper.

- in acid blue paper turns pink
- in alkali pink paper turns blue



Reactions with acids

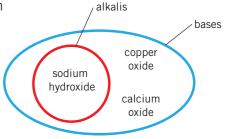
When an acid reacts with a metal element or compound a **salt** is formed. The hydrogen atoms of the acid are replaced with atoms of the metal element.

$$Zn + H_2SO_4$$
 \rightarrow $ZnSO_4 + H_2$
zinc + sulfuric acid \rightarrow zinc sulfate + hydrogen

A **base** is a compound that can react with an acid to make a neutral solution.

This is called **neutralisation**.

Bases that are soluble in water are alkalis.



Neutralisation reactions produce water and a salt.

for example.

sodium hydroxide + hydrochloric acid → sodium chloride + water copper oxide + sulfuric acid → copper sulfate + water

Metals can also react with acids, but they produce a salt and hydrogen gas. for example,

magnesium + hydrochloric acid → magnesium chloride + hydrogen

Naming salts

The name of the metal comes first, for example, magnesium chloride.

Different acids produce different types of salt:

- hydrochloric acid produces metal chlorides
- sulfuric acid produces metal sulfates
- nitric acid produces metal nitrates



Make sure you can write definitions for these key terms.

acid alkali base concentrated

corrosive

dilute indicator litmus

neutral

neutralisation

pH scale

salt

universal indicator