

Reaction Part 1 Acids and Alkalis

Knowledge organiser

Yr7

Chemical Reactions

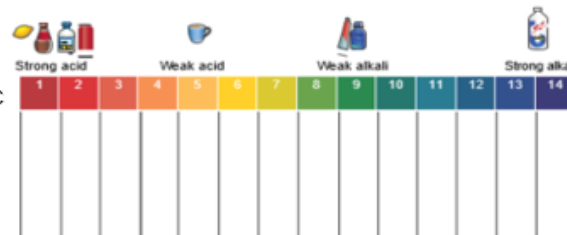
- A chemical reaction is a change in which atoms are rearranged to make new substances
- A reversible reaction is one where the products can react to get back the substances which you started with, most chemical reactions are not reversible
- You can look for signs that a chemical reaction has taken place such as flames, smells, heat change, a loud bang or gentle fizz

Acids and Alkalis

- Acids and alkalis are the chemical opposites of one another
- Both acids and alkalis can be corrosive and irritants

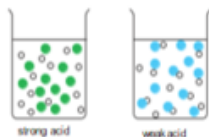
To see whether a substance is an acid or an alkali, we can use an indicator. Indicators show how acidic or how alkaline a solution is by showing its position on the pH scale, one example of this is universal indicator

- If the solution has a pH value of 1–6 it is acidic
- If the solution has a pH value of 8–14 it is alkaline
- If the solution has a pH value of 7 it is known as neutral



Acid Strength

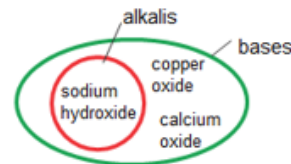
- The strength of an acid depends on how much of the acid has broken apart when it has dissolved in water
- Hydrogen chloride dissolves in water to form hydrochloric acid, this is a strong acid as all of the particles split up
- A weak acid will have particles that do not all split up



- The concentration of the acid is the amount of acid which has dissolved in 1 litre of water
- The more concentrated the acid, the lower the pH

Neutralisation

- Neutralisation reactions are any reaction in which acids react with a base to cancel out the effect of the acid
- These reactions form a neutral solution with a pH of seven
- A base is any substance which neutralises an acid
- An alkali is a base which has been dissolved in water



Salts

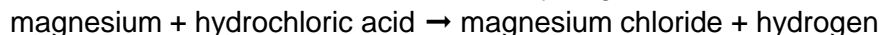
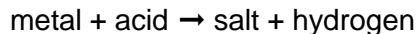
- Salts are substances which are formed when an acid reacts with a metal or metal compound
- Different acids form different types of salts:
- Hydrochloric acids form chloride
 - Sulphuric acids form sulphates
 - Nitric acids form nitrates

Make sure you can write definitions for these key terms

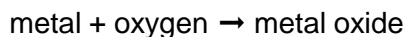
Concentration	concentrated	corrosive	hydroxide	acidic	alkali	Alkaline	base	chemical	Chemical reaction
Weak acid	Universal indicator	reversible	salt	indicator	irritant	neutral	neutralisation	pH scale	Strong acid

Reaction Part 2 Metals and Non-Metals Knowledge Organiser

When a metal reacts with an acid it will produce a salt and hydrogen gas, the fizzing that you see is the hydrogen gas being given off



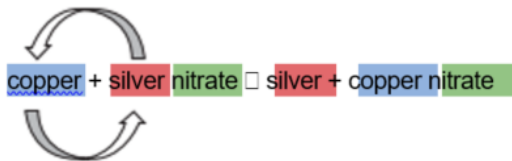
When a metal reacts with oxygen a metal oxide is formed, this process is known as oxidation



- When a metal reacts with water it forms a metal hydroxide and hydrogen gas.
- The alkali (group 1) metals react most vigorously, giving off a brightly coloured flame



When a more reactive metal reacts with a compound containing a less reactive metal, it can take its place, this is known as a displacement reaction



- If the metal on its own is higher in the reactivity series than the metal in the compound a reaction will take place
- If the metal on its own is lower in the reactivity series than the metal in the compound, a reaction will not take place

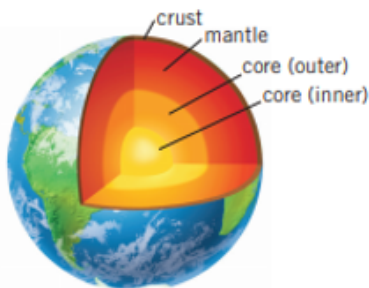
- The reactivity series describes how reactive different metals are compared to one another
- The higher the metal is in the reactivity series the more reactive it will be this means that it will react much more vigorously



Earth Part 1 Earths Structure Knowledge Organiser

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The Earth

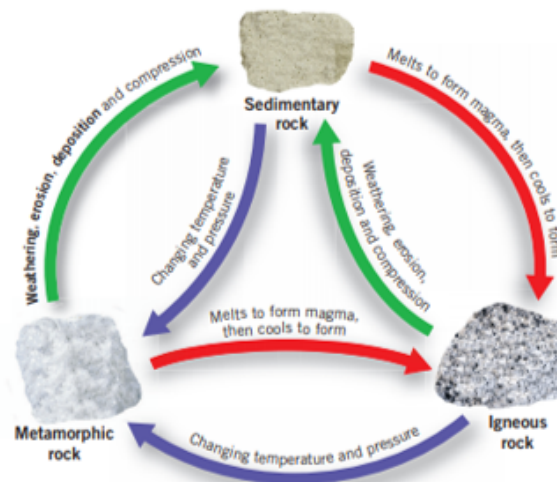


The Earth has three main layers:

- The **crust** is rocky and solid
- The **mantle** is made from mainly solid rock but this can flow
- The **outer core** is liquid metal and the **inner core** is solid

The Rock Cycle

The rock cycle shows how rocks change and how their materials are recycled over millions of years



Types Of Rock

Type of rock	How it is formed	Properties	Uses
sedimentary rock	<ul style="list-style-type: none"> • sediment piles up in one place and, over many years, sticks together by compaction or cementation • compaction: weight of sediments above squeeze them into rocks • cementation: another substance sticks the sediments together 	<ul style="list-style-type: none"> • porous: made of small grains stuck together so there are holes that water can pass through • soft: easy to break apart the sediments 	building materials (e.g. sandstone and limestone)
igneous rock	<ul style="list-style-type: none"> • when liquid rock cools it turns into igneous rocks these are made of crystals locked tightly together • magma: liquid rock underground-cools slowly and forms large crystal • lava: liquid rock above the ground-cools quickly and forms small crystals 	<ul style="list-style-type: none"> • durable and hard (difficult to damage): the crystals are locked tightly together • not porous: there is no space between crystals 	Pavement rail tracks
metamorphic rock	<ul style="list-style-type: none"> • other rocks under that Earth are heated and put under pressure • over time, these rocks become metamorphic 	<ul style="list-style-type: none"> • not porous: there is no space between crystals 	marble used for kitchens slate used for roofing tiles

Make sure you can write the definitions for these key terms

crust	deposition	durable	Igneous rock	lava	Inner core	magma
mantle	Metamorphic rock	Outer core	porous	Rock cycle	sediment	Sedimentary rock