

Chemistry Revision Guide

Normanhurst School

Year 7



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Acids & Alkalis

Acids & alkalis:

- There are 2 groups of chemicals called acids and alkalis
- They can both be dangerous if they are strong
- They have many uses in the home, in cooking, and in industry.

Hazard symbols.

Know the hazard symbols for chemicals that are:

- Irritants
- Harmful
- Corrosive

Indicators (Litmus & pH paper):

- Litmus paper turns blue in alkalis and red in acids
- Universal indicator (pH paper) has a range of colours for strength of acid and alkali, and neutral
- It is better to use pH paper

Acids, alkalis and neutralisation:

- All acids have the word acid in their chemical name
- All alkalis have the word hydroxide in their name
- If you mix an acid and alkali in the right proportions you get something that is neutral (pH 7).

Simple Chemical Reactions

What is a chemical reaction?

- When 2 chemicals meet and a change takes place
- The change is permanent (irreversible).

Important words:

- Reactants: substances you start with
- Products: new substances produced.

Signs of a chemical reaction

- Does it fizz? (give off a gas)
- Does it smell?
- Does it look different or change colour?
- Does it get hot or cold?

Metals & acids

- Some acids are corrosive
- They eat away or corrode the metal
- Hydrogen is produced.

The test for hydrogen:

- Hydrogen is lighter than air
- Collect the gas in an inverted test tube
- Put a lighted splint to the tube
- A squeaky pop is heard.

Acids & carbonates

- Acids react with carbonates
- Carbon dioxide gas is produced.

The test for carbon dioxide:

- Carbon dioxide is heavier than air
- Collect the gas in a test tube
- Add lime water
- It turns milky white.

Burning

- Burning is a chemical reaction involving oxygen
- The product is an oxide.

When you burn carbon with oxygen:

- Carbon + oxygen → carbon dioxide

Particle model of solids, liquids & gases

Solids, liquids & gases

- Solids are very dense
- Solids have a fixed shape and volume
- Liquids are also quite dense
- Liquids have a fixed volume but no particular shape
- Gases are not dense
- Gases have no particular shape or volume.

The Particle Model of Matter

- All substances are made up of particles
- Solid – the particles are close and fixed firmly together
- Liquid – the particles are still close but can move over each other
- Gas – the particles are far apart and free to move.

Particles, heat & temperature

- Particles are always vibrating or moving
- Particles moving or vibrating have kinetic energy
- We call this energy the heat energy of the substance
- If we add more heat, the particles move or vibrate faster
- As they move faster the temperature rises.

Solids:

- Particles can only vibrate
- Forces between particles are too strong to break
- The vibration energy increases with temperature
- The Melting Point temperature approaches.

Liquids:

- Melting point – solid turns to liquid
- The energy is sufficient to break the forces holding the particle
- The particles can move over each other
- The particles are still close
- The movement energy increases with temperature
- The Boiling Point approaches.

Gases:

- Boiling Point – liquid turns into gas
- Particles have sufficient energy to break away completely
- This process is called evaporation
- The particles are now far apart
- Raising the temperature only increases the speed of the particles.

Expansion

- As the temperature rises the particles get more energy
- As they vibrate or move faster that take up more room
- The volume increases
- Substances expand on heating
- This is how thermometers work.

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Diffusion in gases:

- Perfume smell will spread around a room
- The perfume particles are being hit by air particles
- This random process is called diffusion.

Diffusion in liquids:

- A blue dye will spread in clear water
- The water particles are hitting the blue dye particles.

Solutions

Dissolving salt in water

- Salt seems to disappear in water
- The salt has dissolved
- Salt is soluble in water
- A salt solution has been made
- Salt solution is a mixture of salt and water.

Key words in dissolving

- Salt is the solute
- Water is the solvent
- Salty water is the solution.

Why do substances dissolve?

- The water molecules (solvent) are moving around
- They hit the solid salt crystal
- Bits of the crystal are broken off
- Slowly the bits are broken so small that they cannot be seen.

Temperature & dissolving

- The higher the temperature the faster the water molecules are moving
- The salt crystal dissolves faster.

Temperature & saturation

- A solvent can only hold so much solute in solution
- The higher the temperature, the more solute that can be dissolved.

Separating solvent & solute

- Solutions (mixtures) can be separated
- The solvent can be recovered by evaporation & condensation
- The solute will re-crystallise.

Chromatography

- Different colour molecules can be separated
- Put a spot of the mixture on filter paper
- Put one end of filter paper in water (or other solvent)
- As the water soaks up the paper, the colour molecules will move
- The smallest molecules move furthest.