BBC BITESIZE

Electrolysis of molten salts

Alisha Kakar: Salt is the stuff you might find in recipes for cooking, but when it's melted into a molten state and electricity is passed through it, it splits into its elements, a process called electrolysis.

But what makes electrolysis possible?

That's where electrolytes come in.

Electrolytes are substances that conduct electricity when they are molten or dissolved in solution.

In these states, the ions are free to move and carry charge ready for electrolysis.

The best way to think of electrolysis is like giving a stubborn substance an electrical nudge to help it split apart.

When we connect a direct current, also known as DC, the electricity forces the electrolyte to break down into its elements.

This is how scientists set up electrolysis.

A DC power supply is placed in the molten ionic compound.

In this compound, the ions are free to move and carry a charge.

A positively charged electrode is called the anode.

It attracts the negative ions.

A negatively charged electrode is called the cathode and the positive ions naturally move towards it.

It's like the age old love story, opposites attract.

An easy way to remember this is the word panic.

Positive anode, negative is cathode.

When ions reach an electrode, they either gain or lose electrons and turn back into atoms or molecules.

Take molten lead bromide as an example.

During electrolysis, the positive lead ions move to the cathode, gain electrons and form lead metal.

The negative bromide ions moved to the anode, lose electrons and form bromine atoms, these pair up to make bromine gas.

So, lead collects at the negative electrode and bromine is released at the positive electrode.

Over to you with a quick challenge.

Which word can we use to remember how electrodes are charged?

Is it pond, point or panic?

It's the word panic that reminds us.

Positive anode, negative is cathode.

Let's recap.

Electrolysis breaks down a compound using electricity.

Electrolytes contain ions that can move freely and carry the current or charge.

And ions are charged particles that migrate towards electrodes.

And remember, the electrode charge mnemonic PANIC.

When it comes to revising electrolysis of molten salts, it's all about electricity, ions and electrodes.