AQA Chemistry GCSE

Required Practical 3

Electrolysis

Methods taken from the AQA Required Practical Handbook

Electrolysis

Aim

Investigate what happens when aqueous solutions are electrolysed using inert electrodes.

Equipment list

- 0.5 M copper(II) chloride solution
- 0.5 M sodium chloride solution
- A petri dish lid with bored holes
- Two carbon rod electrodes with support bungs
- Two crocodile/4mm plug leads
- Low voltage power supply
- Blue litmus paper
- Forceps

Method

1. Add about 50cm^3 of copper chloride solution to a beaker.
2. Add the lid and insert electrodes through the holes making sure the electrodes don't touch.
3. Attach crocodile leads to the electrode and connect the rods to the DC terminals of a low voltage power supply.
4. Set the power supply to 4V and switch the power supply on.
5. Using the forceps hold the litmus paper near the positive electrode.
6. After a few minutes turn the power supply off and observe the negative electrode.
7. Record observations at the electrodes.

Experiment repeated with sodium chloride

1. Add about 50cm^3 of sodium chloride solution to a beaker.
2. Add the lid and insert electrodes through the holes, making sure the electrodes don't touch.
3. Attach crocodile leads to the electrode and connect the rods to the DC terminals of a low voltage power supply.
4. Set the power supply to 4V and switch the power supply on.
5. Using the forceps hold the litmus paper near the positive electrode.
6. After a few minutes turn the power supply off and observe the negative electrode. There should be effervescence.
7. Record observations at the electrodes.

Results

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Solution	Positive electrode (anode)			Negative electrode (cathode)		
	Observations	**Element formed**	**State**	**Observations**	**Element formed**	**State**
Copper (II) chloride	Bubbles of gas Bleaches blue litmus white	Chlorine	gas	Brown/red solid coating on rod	Copper	solid
Sodium chloride	Bubbles of gas Bleaches blue litmus white	Chlorine	gas	Bubbles of gas (more rapid production)	Hydrogen	gas

Safety precautions

- Safety goggles must be worn.
- Room should be well ventilated because large quantities of chlorine gas is toxic.