

Edexcel Chemistry IGCSE

Practical 1.60C: Investigate the
electrolysis of aqueous solutions
(chemistry only)

Notes



Electrolysis of Sodium Chloride

Aim

To investigate the electrolysis of aqueous sodium chloride.

Equipment list

- 250 cm³ beaker
- Two inert electrodes
- Power pack
- Crocodile clips and wires

Chemicals required

- Sodium chloride solution

Method

1. Set up the apparatus as shown in figure 1. The two electrodes should be connected to the power pack using crocodile clips and wire.
2. Half fill a beaker with the sodium chloride solution. Place the electrodes into the beaker, making sure they do not touch.
3. Turn on the power pack to 3V and leave for 2 minutes.
4. Record any observations that occur whilst the experiment is being carried out.

Key points

- It is important that the electrodes do not touch as this would cause the current will flow from one electrode to the other, without passing through the solution.
- At the positive electrode (anode), a non metal is formed. At the negative electrode (cathode), a metal or hydrogen is formed, depending on the position of the metal in the reactivity series compared with hydrogen.

Diagram

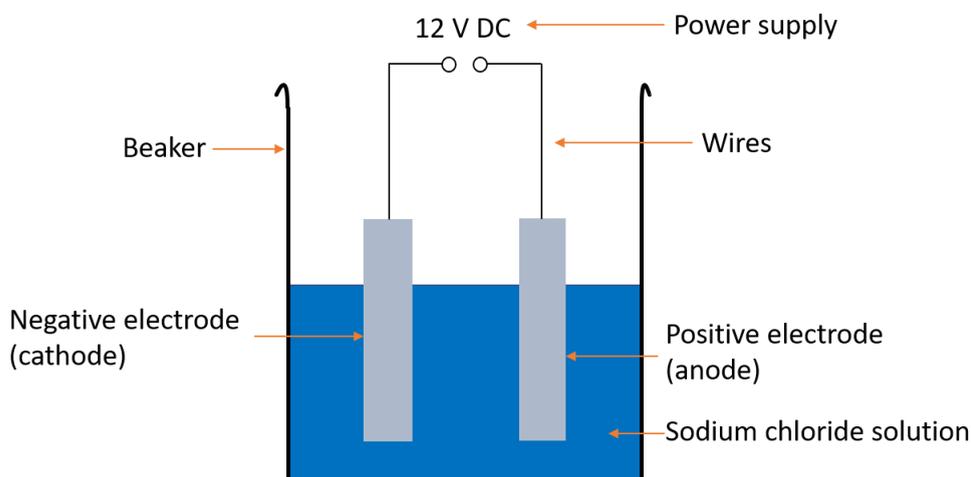


Figure 1 Experiment Setup



Safety precautions

- Keep the room well ventilated as chlorine gas is toxic and an irritant.
- Wear safety goggles.
- Turn off the power pack when not in use.

Analysis of results

The following observations should be made during this experiment if carried out correctly:

Positive electrode - Bubbles of chlorine gas produced

Negative electrode - Bubbles of hydrogen gas produced

Hydrogen is produced at the negative electrode rather than sodium because sodium is more reactive.

The gases produced at both electrodes will be colourless. To confirm the identities of these gases, the following tests can be completed:

- Place a lit splint into a test tube of the gas. If hydrogen is present, a squeaky pop sound will be made.
- Place a piece of damp blue litmus paper into a test tube of the gas. If chlorine is present, the litmus paper will turn red then it will be bleached white.

