

Edexcel Chemistry IGCSE

1.60C - Electrolysis

Investigate the electrolysis of aqueous solutions

(chemistry only)

Flashcards

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Why do ionic compounds only conduct electricity when aqueous or molten?



Why do ionic compounds only conduct electricity when aqueous or molten?

Aqueous or molten ionic compounds have ions that are free to move.

When solid, the ions are fixed in an ionic lattice.



Which electrode is the cathode and which is the anode?



Which electrode is the cathode and which is the anode?

Cathode - negative electrode

Anode - positive electrode



How do you set up a general electrolysis experiment?



How do you set up a general electrolysis experiment?

- Place the positive and negative electrodes in a beaker containing a molten or dissolved ionic compound
- Connect both electrodes to a power supply with wires



How could you investigate what happens when an aqueous solution of NaCl is electrolysed?



How could you investigate what happens when an aqueous solution of NaCl is electrolysed?

- Half fill a beaker with aqueous NaCl
- Place a lid on the beaker and insert the electrodes into the solution through holes in the lid (electrodes must not touch)
- Connect the electrodes to a low voltage power supply
- Switch the power supply on to 4V
- Turn off the power after a few minutes and record any observations



What forms at the cathode and the anode in electrolysis?



What forms at the cathode and the anode in electrolysis?

Cathode: Metals or hydrogen

Anode: Non-metals



What would you observe at each electrode when sodium chloride solution is electrolysed?



What would you observe at each electrode when sodium chloride solution is electrolysed?

Positive electrode: Bubbles of gas (chlorine)

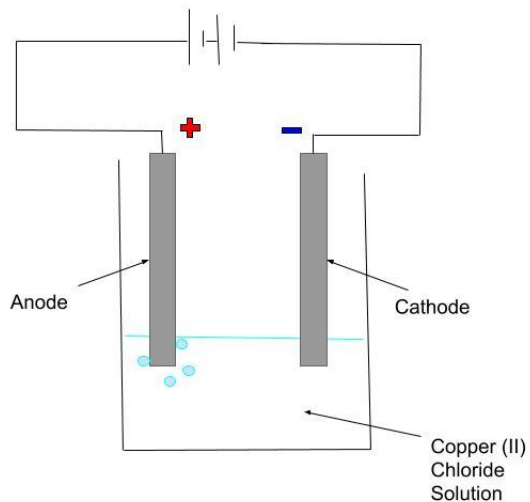
Negative electrode: Bubbles of gas rapidly produced (hydrogen)



Draw a diagram of the apparatus set up
when copper chloride solution is
electrolysed



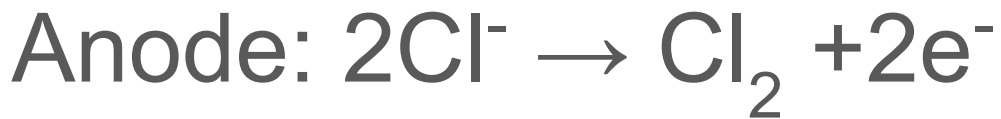
Draw a diagram of the apparatus set up when copper chloride solution is electrolysed



Write half equations for the reactions that occur at the electrodes when aqueous NaCl is electrolysed



Write half equations for the reactions that occur at the electrodes when aqueous NaCl is electrolysed



In the electrolysis of NaCl hydrogen is produced at the cathode. Why is sodium not produced?



In the electrolysis of NaCl hydrogen is produced at the cathode. Why is sodium not produced?

Hydrogen is produced because sodium is more reactive than hydrogen.

Sodium remains in the solution.



Write the half equation for the reaction occurring at the cathode when aqueous CuSO_4 is electrolysed



Write the half equation for the reaction occurring at the cathode when aqueous CuSO_4 is electrolysed



At which electrode does oxidation occur?



At which electrode does oxidation occur?

Positive electrode (anode)



To which electrode do positive ions move towards?



To which electrode do positive ions move towards?

Negative electrode (cathode)



What are the products of electrolysis of copper sulfate when using inert electrodes?



What are the products of electrolysis of copper sulfate when using inert electrodes?

Copper at negative electrode

Oxygen at positive electrode



What forms at each electrode when electrolysis of sulfuric acid is carried out?



What forms at each electrode when electrolysis of sulfuric acid is carried out?

Negative electrode: Hydrogen

Positive electrode: Oxygen



How could you test that oxygen was produced at the positive electrode?



How could you test that oxygen was produced at the positive electrode?

The gas produced would relight a glowing splint



How could you test that hydrogen was produced at the negative electrode?



How could you test that hydrogen was produced at the negative electrode?

A 'squeaky pop' sound would be made if a lit splint was placed in a sample of hydrogen



A solid is deposited on the cathode during the electrolysis of aqueous CuSO_4 . What is this solid?



A solid is deposited on the cathode during the electrolysis of aqueous CuSO_4 . What is this solid?

Copper

