



Practical Guide Chemistry Electrolysis

This document contains:

- Links to YouTube clips showing the practical procedure
- Information from examination boards AQA, OCR, Edexcel
- Potential examination questions and answers

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- AQA

Required practical activity	Apparatus and techniques
Investigate what happens when aqueous solutions are electrolysed using inert electrodes. This should be an investigation involving developing a hypothesis.	AT 3, AT 7, AT 8

- Edexcel

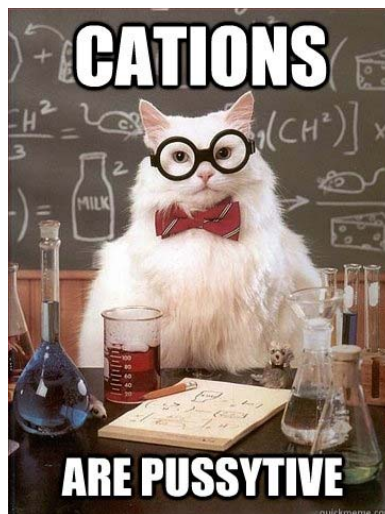
3.31	<i>Investigate the electrolysis of copper sulfate solution with inert electrodes and copper electrodes</i>	This involves setting up an electrolysis to investigate the effect of changing the current on the mass of the copper electrodes used in the electrolysis of copper sulfate solution. The second part of this investigation covers the products formed during the electrolysis of copper sulfate solution using inert (graphite) electrodes. Quantitative analysis when using copper electrodes will be expected.
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- OCR **PAG 2: Electrolysis**

Electrolysis of aqueous sodium chloride or aqueous copper sulfate solution testing for the gases produced.



Video 1

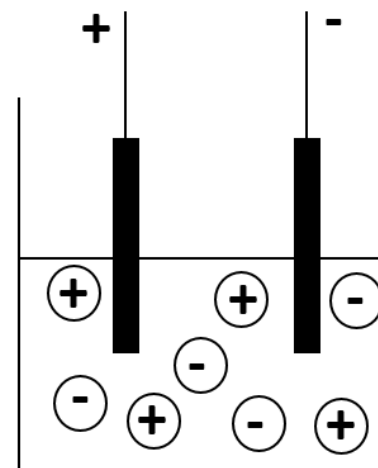


Video 2

A student carried out the electrolysis of copper sulfate using inert electrodes. He noticed that one of the electrodes turned a copper colour.

1. Define oxidation and reduction in terms of electrons.
2. Label the following diagram using the key terms provided.

Anion; Cation; Anode;
Cathode; Electrode; Electrolyte



3. State which electrode turned a copper colour and explain why.
4. Write an ionic equation for the reaction taking place at the cathode.

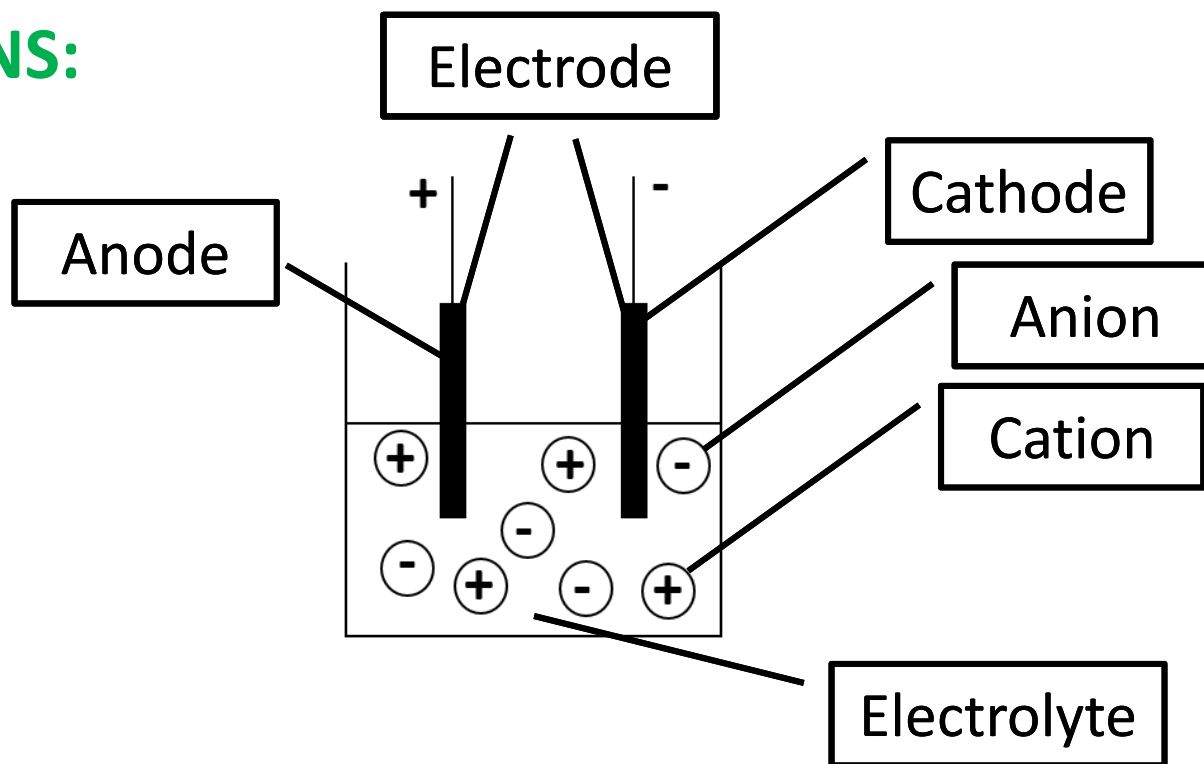
1. Define oxidation and reduction in terms of electrons.

ANS:

- **OIL RIIG**
- **Oxidation is loss of electrons**
- **Reduction is gain of electrons**

2. Label the following diagram using the key terms provided.

ANS:





3. State which electrode turned a copper colour and explain why.

ANS:

- **Cathode / negative electrode**
- **Copper ions are positive/ cations**
- **Attracted to negative electrode**

3. Write an ionic equation for the reaction taking place at the cathode.

ANS:



Key questions:



- What safety precautions should you take when carrying out this experiment and why?
- What did you observe at the anode?
- How do you explain the formation of the product at the anode?
- **Write the half equation for the formation of the product at the anode and explain whether it is oxidation or reduction.**
- What did you observe at the cathode?
- How do you explain the formation of the product at the cathode?
- **Write the half equation for the formation of the product at the cathode and explain whether it is oxidation or reduction.**

Key questions:



- What happens to the colour of the solution during the electrolysis?
- If the electrolysis is continued for a long time, what will be left in the solution?
- What safety precautions should you take when carrying out this experiment and why?
- Why is it necessary to clean the copper electrodes with emery paper before using them?
- Why do you use an ammeter in the circuit?
- Why do you use a variable resistor in the circuit?

Key questions:



- Why is it necessary to measure the time taken for the electrolysis?
- Which factors should be kept the same during the electrolysis?
- How do you wash and dry the electrodes at the end of the electrolysis?
- Why is it necessary to dry the electrodes?



A summary document is also available on Huddle which contains all the relevant information about this practical from the different examination boards. This document includes practical methods and other potential examination questions