

Electron transfer reactions · supported focus

Supported focus · HL

Supported scope

- Supported HL focus. First assessment 2025; current brief acquired; full Chemistry guide not acquired. Remaining guide, assessment and practical requirements retain their recorded holds.
- State model conditions and distinguish fictional data from measurements.

Electrolysis · 1.1

Reasoning

An aqueous salt solution can produce different electrode products from the molten salt. Water introduces competing species into the system. Start with a prediction. State the quantities or features you would compare, then decide what evidence could distinguish two explanations.

Electrolysis · 2.1

Reasoning

Oxidation is loss of electrons and reduction is gain of electrons. In electrolysis, cations move toward the cathode and anions toward the anode. Reduction occurs at the cathode. oxidation: Loss of electrons; reduction: Gain of electrons.

Electrolysis · 3.1

Reasoning

Predict products using the specified electrolyte and electrode material. In an aqueous solution, hydrogen or oxygen may form because water-related species compete. Molten salts contain only the ions of the salt. Use a low-voltage direct-current supply, approved electrodes, and the school risk assessment. Collect gases only by an approved method. Keep chlorine demonstrations teacher-controlled; do not ask students to generate hazardous gases independently.

Electrolysis · 4.1

Reasoning

State the known values and their units. Choose the relation because its assumptions fit this case, then rearrange before substitution. Known: a copper ion gains two electrons. Half-equation: $\text{Cu}^{2+} + 2\text{e}^{-} \rightarrow \text{Cu}$. One mole of Cu^{2+} requires two moles of electrons. For 0.050 mol of copper, electron amount = $2 \times 0.050 = 0.100$ mol.

Electrolysis · 4.2

Reasoning

How many moles of electrons reduce 0.20 mol of Cu^{2+} to copper? Use the same sequence: known quantities $\rightarrow$ model $\rightarrow$ relation $\rightarrow$ substitution $\rightarrow$ unit and interpretation.

Electrolysis · 5.1

Reasoning

Electrode signs depend on the cell type. In an electrolytic cell the cathode is negative; reduction remains the defining process at a cathode in every cell. Return to the original observation. Explain what the result supports, which conditions it assumes, and one way to test a competing explanation.

Electrolysis · 5.2

Reasoning

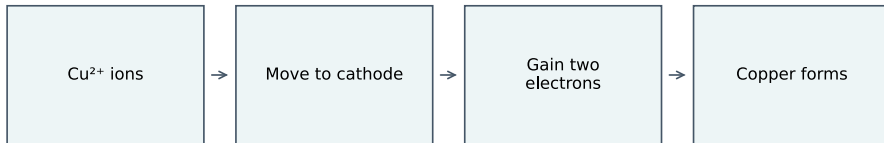
Reduction means loss of electrons. This claim is false: Electrode signs depend on the cell type. In an electrolytic cell the cathode is negative; reduction remains the defining process at a cathode in every cell.

Electrolysis · 5.3

Reasoning

Redox and electrolysis: Predict products using the specified electrolyte and electrode material. In an aqueous solution, hydrogen or oxygen may form because water-related species compete. Molten salts contain only the ions of the salt.

Electrolysis · diagram



- Original teaching diagram: Redox and electrolysis
- Use the labels and the stated model together.

Electrolysis · original transfer

Your turn

A fictional electrolytic cell deposits 0.15 mol Cu from Cu^{2+} . Find electron amount and write the half-equation. Explain whether cathode sign defines reduction.

Electrolysis · transfer reasoning

Method and interpretation

0.30 molelectrons; $\text{Cu}^{2+} + 2\text{e}^- \rightarrow \text{Cu}$. Reduction is electron gain. The electrolytic cathode is negative, but electrode signs depend on cell type; the process defines the name.

Check yourself

- Explain oxidation using the stated model.
- Explain reduction using the stated model.
- Change one value in the original transfer; explain which assumption still matters.