

Answer on Question #49441 – Chemistry – Inorganic Chemistry

According to Faraday law:

$$m = \frac{I \cdot t \cdot M}{F \cdot z}$$

m is the mass of the substance liberated at an electrode in grams

I is the current passed through the substance

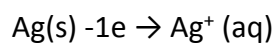
t is time of electrolysis

F = 96485 C mol⁻¹ is the *Faraday constant*

M is the molar mass of the substance

z is the valency number of ions of the substance (electrons transferred per ion).

Anode process:



$$m = \frac{5 \text{ A} \times 7200 \text{ s} \times 108 \text{ g/mol}}{96485 \text{ C/mol} \times 1} = 40.296 \text{ g}$$

If purity of silver is 95 % by weight so:

$$m_{\text{Ag}} = \frac{40.296}{0.95} = 42.417 \text{ g}$$

Anode is dissolving, losing mass. Δm is 42.417 g, starting mas is 100 g, so resulting would be:

$$m_{\text{anode}} = 100 \text{ g} - 42.417 \text{ g} = 57.583 \text{ g}$$

Answer: 57.583 g