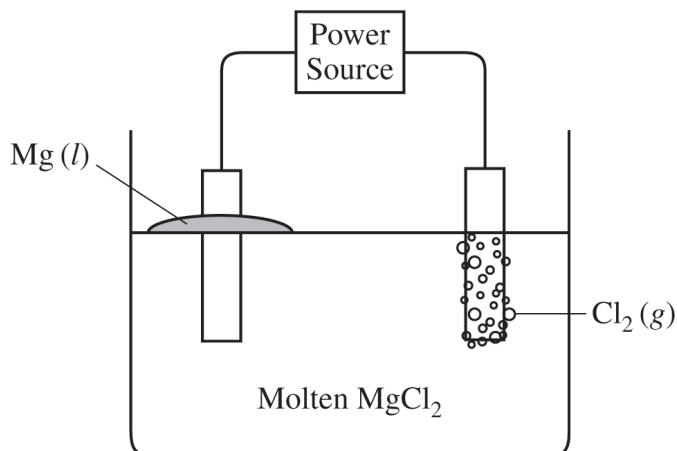




Half-Reaction	E° (V)
$\text{Mg}^{2+} + 2 e^- \rightarrow \text{Mg}$	-2.37
$\text{Cl}_2 + 2 e^- \rightarrow 2 \text{Cl}^-$	+1.36

- i. Molten MgCl_2 can be decomposed into its elements if a sufficient voltage is applied using inert electrodes. The products of the reaction are liquid Mg (at the cathode) and Cl_2 gas (at the anode). A simplified representation of the cell is shown above. The reduction half-reactions related to the overall reaction in the cell are given in the table.

(b) Would an applied voltage of 2.0 V be sufficient for the reaction to occur? Support your claim with a calculation as part of your answer.

(c) If the current in the cell is kept at a constant 5.00 amps, how many seconds does it take to produce 2.00 g of $\text{Mg}(l)$ at the cathode?

GO ON TO THE NEXT PAGE.