Molten electrolysis: products and half-equations

Teacher / technician

YEAR 11 / LESSON 110 / CHEMISTRY ONLY

Staff preparation and answer guidance. Keep separate from student sheets. Written and model-based lesson; no laboratory procedure is implied.

Coverage and delivery

Chemistry only: 1.58C–1.59C. Recorded-evidence lesson; no lead salt, bromine or molten-salt apparatus is issued.

Allow about 60 minutes. Follow the student sequence and use the answers to check reasoning.

Requisition • class of 30, working in 15 pairs

Item	Per pair / setup	Class total
Booklet / writing tools	1 per learner	30 sets
Model kit / periodic table	1 set per pair	15 sets

Immediate safety

Desk activity only; keep small model pieces away from mouths.

Preparation and delivery

Read alongside the student method

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1. Provide 30 booklets and 15 model kits or reusable atom counters; no chemicals are needed.

2. Use 10 minutes retrieval, 25 independent/pair tasks, 15 explanation and 10 corrections. Keep first attempts visible.

3. No lead/bromine reagents or heat source are requisitioned; use the linked reference as background.

4. Do not show pupils handling lead or sniffing bromine as an acceptable observation method.

5. Check all carbon valencies, formula subscripts and equation coefficients. Label any supplied numbers as practice data, not class observations.

Close of lesson

- Return shared equipment and retain corrected reasoning.

Check before teaching

Check the cards, reference data and quantities against this requisition. Keep the staff answer guide separate until the checking stage. Supplied numerical practice datasets are labelled examples; they are not class measurements.

Answers and teaching notes

Expected explanations • do not give as experimental observations

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- Pb^{2+} cations.
- $Pb^{2+}+2e^{-} \rightarrow Pb$.
- $2Br^{-} \rightarrow Br_2+2e^{-}$.
- Anode bromide oxidation: electrons are lost.
- $PbBr_2 \rightarrow Pb+Br_2$.
- Lead compounds are toxic, bromine vapour is hazardous and the melt is very hot; a paper lesson does not supply an approved live method.

References and provenance

Pearson Chemistry specification

RSC molten lead bromide reference

Prepared 22 November 2026. Original wording, tables and questions. Sources inform the concepts and technique; the lesson scope and classroom quantities are explicitly described here. No laboratory trial or final school risk approval is claimed.