**Chemistry Revision: Electrolysis**

Mastery Matrix Points

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| Describe how electrolysis is carried out  |
| Explain the electrolysis of molten compounds eg. Lead bromide  |
| Predict what is produced at each electrode  |
| I can write half equations for the reaction occurring at each electrode  |
| I can explain how electrolysis can be used to extract metals from their ores  |
| I can explain how electrolysis can be used to determine the presence of hydrogen in an aqueous solution  |
| **Required practical 3: Investigate what happens when aqueous solutions are electrolysed (including the development of a hypothesis)**  |

Key Knowledge

Electrolysis –

Electrolyte -

Cathode –

Anode -

Electrolysis works with a molten or dissolved compound because…

OIL RIG:

Oxidation is

Reduction is

At the anode:

Oxidation - Positive/negative ions gain/lose electrons?

At the cathode

Reduction- Positive/negative ions gain/lose electrons?

In the electrolysis of aqueous solutions, at the negative electrode (\_\_\_\_\_\_\_\_), hydrogen is produced if the metal

is \_\_\_\_\_ reactive than hydrogen.

At the positive electrode (\_\_\_\_\_\_), \_\_\_\_\_\_\_ is produced unless the

solution contains halide ions when the halogen is produced. This happens because in the aqueous solution water molecules break down producing \_\_\_\_\_\_\_\_\_ions and \_\_\_\_\_\_\_\_ions that are discharged.

Understanding and Explaining

1. Describe how electrolysis works.

Passing an electric current through \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ causes the ions to move to the electrodes. Positively charged ions move to the \_\_\_\_\_\_\_\_\_\_\_\_\_electrode (the \_\_\_\_\_\_\_\_\_\_\_\_), and negatively charged ions move to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_electrode (the \_\_\_\_\_\_\_\_\_\_\_). Ions are \_\_\_\_\_\_\_\_\_\_\_\_\_\_ at the electrodes producing elements.

1. Describe and explain the electrolysis of molten lead bromide. Include half equations for the anode and cathode.
2. Explain why electrolysis is used for the extraction of metals such as aluminium (rather than reduction by heating with carbon, which is used to extract other metals like iron).

1. Describe and explain the electrolysis of molten aluminium oxide. Include half equations for the anode and cathode.
2. Why cryolite is used in the electrolysis of aluminium oxide?
3. Give two reasons why the electrolysis of aluminium oxide is expensive.
4. Describe the electrolysis of sodium chloride solution. State what is produced at each of the electrodes. Include half equations.