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Electrowinning of cobalt from acidic sulphate solutions – effect of chloride ion

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Abstract

Cobalt electrowinning from acidic sulphate solution was carried out in the presence and absence of chloride ion in the electrolyte. The effect of current density, electrolyte flow rate and temperature on cobalt electrowinning was studied from pure cobalt sulphate solutions and solutions containing 2000 mg dm^{-3} chloride ion. It was found that presence of chloride ion did not have any significant effect on cobalt deposition potential, current efficiency and preferred crystal orientation of the electrowon cobalt. However, the surface morphology of the cobalt electrodeposits was affected quite strongly which may be attributed to the variation of the intensity of the crystal planes during the electrodeposition process.



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Keywords

Electrometallurgy; electrowinning

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