

Electro-Winning of Dilute Solution of Copper Metal from Sepon Mine, Lao PDR

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Abstract : Electro-winning of copper metal from dilute sulfate solution (13.7 g/L) was performed in a lab electrolytic cell with stainless-steel cathode and lead-alloy anode. The effects of various parameters including cell voltage, electro-winning temperature and time were studied in order to acquire an appropriate current efficiency of copper deposition. The highest efficiency is about 95% obtaining from electro-winning condition of 3V, 55°C and 3,600 s correspondingly. The cathode copper with 95.5% Cu analyzed using atomic absorption spectrometry can be obtained from this single-winning condition. In order to increase the copper grade, solvent extraction should be used to increase the sulfate concentration, say 50 g/L, prior to winning the cathode copper effectively.

Keywords : copper metal, current efficiency, dilute sulfate solution, electro-winning

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