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Recovery of H_2SO_4 and NaOH from Na_2SO_4 by electrodialysis with heterogeneous bipolar membrane

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ABSTRACT

Electrodialysis (ED) with heterogeneous bipolar membranes (BPMs) was studied experimentally on a laboratory scale in order to examine the recovery of the sodium sulfate solution into sulfuric acid and sodium hydroxide. The capacity of the system was evaluated in terms of its dependence on membrane configuration, product concentration, temperature, and circulation flow rate. A preliminary economic evaluation of ED with a heterogeneous BPM in a uranium ore mining wastewater treatment plant was also carried out. This process is primarily used in cases where the purity of the sulfuric acid and sodium hydroxide recycled does not play a significant role and the high costs of the homogeneous BPMs negatively affect the economy.

Keywords: Electrodialysis; Bipolar membrane; Heterogeneous membrane; Sulfuric acid; Sodium hydroxide; Recovery

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