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Selective Solvent Extraction of Calcium and Magnesium from Concentrate Nickel Solutions Using Mixtures of Cyanex 272 and D2EHPA

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Abstract : The performance of organophosphorus extractants Cyanex 272 and D2EHPA on the purification of concentrate nickel sulfate solutions was evaluated. Batch scale tests were carried out at pH range of 2 to 7 using a laboratory solution simulating concentrate nickel liquors as those typically obtained when sulfate intermediates from nickel laterite are re-leached and treated for the selective removal of cobalt, zinc, manganese and copper with Cyanex 272 ([Ca] = 0.57 g/L, [Mg] = 3.2 g/L, and [Ni] = 88 g/L). The increase on the concentration of D2EHPA favored the calcium extraction. The extraction of magnesium is dependent on the pH and of ratio of extractants D2EHPA and Cyanex 272 in the organic phase. The composition of the investigated organic phase did not affect nickel extraction. The number of stages is dependent on the magnesium extraction. The most favorable operating condition to selectively remove calcium and magnesium was determined.

Keywords : solvent extraction, organophosphorus extractants, alkaline earth metals, nickel
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