REMOVAL OF CHROMATE BY SOLVENT IMPREGNATED RESINS (SIRs) STABILISED BY COATING AND CHEMICAL CROSSLINKING

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ABSTRACT

In this study, solvent impregnated resins (SIRs) were stabilized by the formation of a surface coating consisting of crosslinked poly(vinyl alcohol). Aliquat 336 was chosen as extractant in the SIRs prepared for chromate removal.

Batch sorption studies showed that both uncoated and coated SIRs containing Aliquat 336 are effective for the removal of chromate ions from aqueous solution. Although the kinetic performance of uncoated SIRs was more favorable for chromate removal, it was possible to obtain rapid kinetics in coated SIRs by decreasing the degree of crosslinking of the coating layer. In addition a series of column-mode sorption-elution studies have been carried out. The complete elution of chromate from SIRs was achieved with a mixture of 1 mol/L NaOH-1 mol/L NaCl. The chemical stability of SIRs was monitored after each cycle by nitrogen analysis. The decrease in nitrogen content of uncoated resins was significant after each cycle due to the loss of extractant. In case of coated SIRs, only a small decrease was observed after one cycle and thereafter, the nitrogen content remained virtually constant.