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PERFORMANCE EVALUATION OF ANIONIC POLYMER-CATIONIC SURFACTANT COMPLEX COAGULANTS IN WATER TREATMENT

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Abstract

The performance of some complex coagulants derived from weak and medium anionic polymers and medium cationic surfactant in coagulation-flocculation process for water treatment was experimentally investigated by carrying out kinetic studies and by determining the optimum coagulant dose. The complex coagulants were prepared from weak anionic and medium anionic copolymers of acrylamide and sodium acrylate with the commercial names Praestol 2515 and Praestol 2540, and medium cationic surfactant derived from triethanolamine with the commercial name Tetranyl AT-7590. The coagulation-flocculation process was studied for suspensions of kaolin particles in tap water. The electro-kinetic studies revealed that the addition of surfactant leads to a significant decrease of coagulant concentration for which the electro-kinetic potential of the dispersion medium becomes zero. The favorable influence of the addition of surfactant also resulted from the kinetic studies. Thus, the formation of some large flocks leads to shortening the flocculation period. These results are consistent with those obtained for sedimentation velocity, sludge volume and separation efficiency.

Key words: anionic polymer, cationic surfactant, coagulation – flocculation, complex coagulant

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