Electrochemical Coagulation of Clay Suspensions

J. Szynkarczuk, J. Kan, T. A. T. Hassan[1] and J. C. Donini

CANMET, Western Research Centre, 1 Oil Patch Drive, Devon Alberta T0C 1E0, Canada

[1] Present address: Department of Mining and Petroleum Engineering, Al Azhar University, Cairo, Egypt.

Abstract: In the electrocoagulation process a suspension of kaolinite and bentonite is coagulated by electrochemical treatment where aluminum anodes are dissolved and aluminum ions react with clay particles, forming flocs which precipitate. Several factors affecting the efficiency of electrocoagulation are investigated. They include NaCl concentration, voltage, and flow conditions within the cell. Increased NaCl concentration led to lower electric resistance and cleaner running electrodes. Enhanced shear associated with recirculation resulted in clear supernatant and more compact flocs. While increasing the feed rate, which was equivalent to decreasing aluminum concentration through the system, reduced cake height but increased turbidity.

Key Words: Bentonite • Coagulation • Electrochemical treatment • Kaolinite

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