

Crossflow microfiltration of electrocoagulated kaolin suspension: Fouling mechanism

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Journal of Membrane Science 243 (1-2), pp. 143-153, 2004

Abstract: The fouling mechanism of a woven fabric membrane, when treating kaolin suspension, was investigated with and without the use of a ferric coagulant that was produced using an electrochemical cell. The investigation was carried out at different kaolin concentrations and crossflow velocities (CFV). Without coagulation, the investigation of process performance showed that the flux decline with time was proceeding exponentially. The effect of CVF on the permeate flux was clear, particularly, when the crossflow velocity was increased to 2 m/s. The fouling mechanism investigation showed that membrane fouling proceeded in accordance with the standard law of filtration, which is attributed to the infiltration of colloidal particles into the pores of the membrane. With coagulation, membrane fouling was found to proceed according to the classical cake filtration model, in some of the runs. This was attributed to the formation of agglomerated particle on top of the primary membrane. © 2004 Elsevier B.V. All rights reserved.