

Evaluation of Fiber Filter and Microfiltration Efficiencies for Kaoline Clay (KC) Particle Separation with Coagulation Pretreatment

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Fouling due to suspended particles and colloidal materials is a major problem during the use of membrane system. This study investigates the coagulation performance (Ferric chloride and Poly acrylic acid, PA) of synthetic suspension using Kaoline clay (KC). Coagulant amounts were varied to study the removal efficiency of KC, based on turbidity removal. The optimum pH for the coagulants was also identified. Fiber filter and cartridge microfilter were also studied for their efficiencies in particle separation. Inline coagulation (coagulation without settling) was also studied. Coagulation followed by fiber filter and cartridge filter was found to be very effective in turbidity removal. Fiber filter had limited ability for particle removal, however, addition of coagulation pre-treatment and cartridge filter as post treatment significantly enhanced the removal performance of the system. It is expected that this combined system, would help to reduce the load going to downstream operation such as backwashable microfilter (BMF). This would help in minimizing the number of BMF systems and would increase its lifetime.