

Microfiltration of the Sugar Refinery Wastewater Using Ceramic Membrane with Kenics Static Mixer

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Abstract : New environmental regulations and the increasing market preference for companies that respect the ecosystem had encouraged the industry to look after new treatments for its effluents. The sugar industry, one of the largest emitter of environmental pollutants, follows this tendency. Membrane technology is convenient for separation of suspended solids, colloids and high molecular weight materials that are present in a wastewater from the sugar industry. The idea is to microfilter the wastewater, where the permeate passes through the membrane and becomes available for recycle and re-use in the sugar manufacturing process. For microfiltration of this effluent a tubular ceramic membrane was used with a pore size of 200 nm at transmembrane pressure in range of 1 - 3 bars and in range of flow rate of 50 - 150 l/h. Kenics static mixer was used for permeate flux enhancement. Turbidity and suspended solids were removed and the permeate flux was continuously monitored during the microfiltration process. The flux achieved after 90 minutes of microfiltration was in a range of 50-70 L/m²h. The obtained turbidity decrease was in the range of 50-99% and the total amount of suspended solids was removed.

Keywords : ceramic membrane, microfiltration, permeate flux, sugar industry, wastewater

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