



## The evaluation of fouling effects in membrane process dealing with the biologically pre-treated textile effluents

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### ABSTRACT

Wastewater reuse is necessary in the textile industry due to its consumption of large amounts of freshwater. However, the main problem with the membranes is the decline of permeate flux due to the accumulation of organic and inorganic molecules on the membrane surface when the raw wastewater is used. This study focused on the fouling effect of aerobically and anaerobically pre-treated textile industry effluents using ultrafiltration (UC010) and nanofiltration (NP010 and NP030) membrane processes. Ultrafiltration (UF) and nanofiltration (NF) membranes were applied sequestered (UF or NF) and combined (UF + NF) to treat effluents from a full-scale aerobic sequencing batch reactor (SBR), which is present in the factory, and a laboratory-scale anaerobic treatment plant, namely the static granular bed reactor (SGBR). Membrane experiments at 10 bar operating pressure were carried out on the laboratory scale to obtain better results. Initial fluxes with NP010 seriously declined after 24 h during the long-term experiments (96 h). According to the membrane flux decline and the fouling rates, aerobically pre-treated textile wastewater was better than anaerobically pre-treated textile wastewater, suggesting that dissolved organic matter formed in the anaerobic treatment processes.

*Keywords:* Reuse; Membrane; Fouling; Aerobic treatment; Anaerobic treatment; Textile wastewater

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