Surfactants role in the enhancement of the treatment efficiency of the dyeing effluents with combination of membrane processes

Ghazza Masmoudia, Emna Ellouzea, Foued ElAynib, Raja Ben Amaraa,*

aLaboratoire Sciences des Matériaux et Environnement, Faculté des Sciences de Sfax, Route de Soukra km 4, 3028 Sfax, Tunisia
Tel. +216 21 603 013; email: Raja.Rekik@fss.rnu.tn

bCentre International des Technologies de l'Environnement de Tunis, Avenue Yasser, Arafat 1100, Tunisia

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ABSTRACT

The industrial process of reactive dyeing of cotton is a sequence of several operations. Different types of surfactants were used several times during the dyeing process; anionic, nonionic, and cationic. The dyeing effluent is heavily charged with pollution especially color and salt. In a treatment at source approach, the dyeing effluent was isolated and then mixed with the other baths containing surfactants. A combined treatment involving microfiltration (MF), as pretreatment followed by nanofiltration (NF) as mean treatment, was investigated. The mixing of the dyeing bath with another effluent showed 100% of MF flux improvement, but the color retention still higher for the single dyeing bath. The NF treatment produces a completely discolored effluent with 100% of suspended solids retention, while the chlorides removal did not exceed 50%.

Keywords: Reactive dye; Surfactants; Microfiltration; Nanofiltration; Color removal; Chlorides retention

*Corresponding author.

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