A systematic study has been conducted to have an insight into the separation efficiency of phenol with the help of Gemini surfactants and conventional nonionic surfactant in their single and mixed systems using micellar-enhanced ultrafiltration (MEUF). A flat sheet membrane with a total effective area of 0.08 m² and a molecular weight cut-off of 10 kDa, was selected in this investigate. The effects of feed component (surfactant concentration for single surfactant system and mixed ratio for mixed surfactant system) on solubilization and filtration efficiency were researched. Some related parameters were used to estimate the performance of various surfactant systems, such as distribution coefficient ($D$), the phenol concentration in micellar phase ($P_m$), the surfactant concentration in micellar phase ($S_m$), the micelle loading ($L_m$), and the equilibrium distribution constant ($K$). With the increase of feed surfactant concentration or the addition of nonionic surfactant, the degree of solubilization of phenol enhances, leading to the decrease of permeate concentration and the augment of retentate concentration. Consequently, $D$, $P_m$, and $S_m$ increases. The addition of nonionic surfactant has positive effects to recounterbalance the interior structure and improve the micellar solubilization power for phenol. Both the single and mixed C12-2-16 systems have higher $D$, $P_m$, and $S_m$ values than these of C12-2-12, due to the longer length alkyl chain and more optimized structure. $L_m$ and $K$ are the significant indicators for evaluating the effectiveness of dissolving phenol. Irreversible fouling was almost eliminated with a series of cleaning solution in a short time. There results from the laboratory-scale experiments could be very useful in selection of the suitable surfactant systems for raising efficiency and could serve as valuable guide for MEUF in industrial application.

**Keywords:** Gemini surfactant; Micellar-enhanced ultrafiltration; Distribution; Phenol; Membrane fouling cleaning