عنوان مقاله:

Comparison of the Separation Characteristics of Polyvinyl Alcohol Membrane in Dehydration of Benzene and Toluene Using Pervaporation

محل انتشار:

مجله علوم و فن آوری نفت, دوره 8, شماره 4 (سال: 1397)

تعداد صفحات اصل مقاله: 8

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خلاصه مقاله:

Pervaporation (PV) is a well-established membrane technique used in separation; especially dehydration of organic solvents. Along with other parameters such as permeate pressure and feed temperature; feed composition is an important parameter, which affects separation characteristics and membrane performance in pervaporation. In this paper, the separation characteristics of a hydrophilic polyvinyl alcohol (PVA) membrane in the dehydration of benzene and toluene by pervaporation in the temperature range of ۳۰-۶۰ °C and permeate pressure of ۷ mmHg have been compared. The results show that the difference in the molecular sizes of benzene and toluene and their mutual solubilities with water cause differences in separation parameters, so that for example at ۵۰ °C, in dehydration of benzene water flux and water concentration in the permeate are ۰.۵۳ (g/hm۲) and ۲.۰۳ (wt.%) respectively, while the corresponding values in toluene dehydration are ۰.۶۱ (g/hm۲) and ۳.۱۹ (wt.%) respectively. Therefore these amounts result in higher pervaporation separation index (PSI) for toluene compared to benzene.

کلمات کلیدی:

(Pervaporation, Benzene, Toluene, Dehydration, Poly (vinyl alcohol