

Vapor Adsorption of Ethyl Benzene Using Organically Modified Clay

여상도*, 장지선
경북대학교
(syee@knu.ac.kr*)

Organically modified clay was used to adsorb ethyl benzene from a gaseous phase. The organoclay was prepared by adsorbing hexadecyltrimethylammonium (HDTMA) on the surface of montmorillonite particles. Ethyl benzene was adsorbed to the organoclay using a fixed adsorption bed. The adsorption was carried out at various inlet concentrations of gaseous ethyl benzene in a carrier gas (nitrogen). The adsorption behavior of ethyl benzene was investigated using natural clay as well as organoclay. Adsorption breakthrough curves were obtained, and the adsorption data were modeled with two adsorption isotherms. Desorption of ethyl benzene was also conducted using pure nitrogen, and the desorption profiles were fitted with a theoretical models. It was found that adsorption isotherms exhibited a favorable Type I behavior, which implies that the adsorption capacity is strongly dependent on vapor concentration at low concentration ranges. The temperature effect on the adsorption isotherm was also investigated.