

CO₂ Vacuum Stripping Process from Aqueous Amine Solutions with Membrane Contactor

공창인, 안효성, 김정훈*

한국화학연구원

(jhoonkim@kRICT.re.kr*)

A membrane vacuum stripping process was applied to the desorption process for the purpose of desorption energy reduction in an amine absorption process. Composite membranes with a PDMS(polydimethylsiloxane) dense layer on a PE(polyethylene) support layer were prepared by a casting method and used as a membrane contactor for CO₂ stripping. Aqueous amine solutions of 30 wt% MEA (monoethanolamine), DEA (diethanolamine) and TEA (triethanolamine) were used as absorbents. CO₂ flux was examined under various operating conditions by varying the vacuum pressure, stripping temperature, CO₂ loading and type of amine solution. CO₂ stripping flux increased with increasing temperature and CO₂ loading as well as decreasing vacuum pressure. CO₂ stripping flux was higher in the TEA and DEA solutions than in the MEA solution. PDMS-PE composite membrane has long term stability for vacuum stripping process compared with PTFE porous membrane.