



ChemTech

International Journal of ChemTechResearch

CODEN(USA): IJCRGG, ISSN: 0974-4290, ISSN(Online):2455-9555
Vol.10 No.3,pp 118-127,2017

Synthesis and Physical-Chemical Characterization of DEA-Crosslinked Poly(Vinyl Alcohol) Membranes

María T. Acevedo^{1*}, Alejandra Tapia¹, Álvaro Realpe¹

¹Department of Chemical Engineering, Research Group of Modeling of Particles and Processes, Engineering Faculty, Universidad de Cartagena, Colombia

Abstract: In this research, crosslinked PVA was impregnated with 0, 15 and 20% of diethanolamine so as to study the effect of the alkanolamine on the physical-chemical properties which are connected to the CO₂ separating process via membranes. Formaldehyde and a porous membrane of polysulfone were used as crosslinking agent and support, respectively. Membranes were characterized by FTIR, SEM-EDS, contact angle, water absorption and porosity measurements. The results suggest that although the water absorption in the bulk of polymer diminished when the percentage of diethanolamine increased, the surface hydrophilicity and appearance of the membranes were not appreciably affected due to this modification. A favorable balance of properties such as water uptake, the porosity and the superficial hydrophilicity were achieved using the crosslinking and synthesis conditions proposed in this paper, considering the positive effect of those characteristics in the permeability/selectivity of CO₂ through the membrane.

Keyword : crosslinked PVA, diethanolamine, CO₂ separating process, membranes, surface hydrophilicity.

María T. Acevedo *et al*/International Journal of ChemTechResearch, 2017,10(3):118-127.
