

RB-4

Characterization of Organic Solvent Resistant Membranes

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The membrane technology is more convenient and economical way in the separation field than conventional technology such as distillation, extration, crystallization, and so on. Therefore, membrane are used as efficient tools for the separation and concentration of molecular mixture in many industrial area.

Although the polymeric membrane have various advantage, they have disadvantages as well. One of them is a poor resistance to organic solvent. Therefore, organic solvent resistant membranes were prepared by soluble polyimide. The membranes were prepared by phase inversion method. The homogeneous polymer solutions were obtained by the two different method ; the one is that the polymer synthesized was completely dissolved in a solvent to prepare a membrane casting solution, the other is that a membrane casting solution was prepared by the unit process from the viscose solution of polymerization.

The nascent membranes were obtained by handy casting using a Doctor's knife in the thermo-hygrostatic chamber.

In order to reveal the membrane stability against organic solvents, The membranes were immersed in various organic solvents. After 48 hours, the pure water flux change and weight loss were observed.

Table Permeation Characteristics of Polyimide Membranes.

PI conc. (wt%)	PVP content* (wt%/ PI wt)	FWP ** ($\ell / m^2 hr$)	Rejection(%) ***		
			20,000	35,000	50,000
18.0	0	140.0	60.5	88.5	99
	1 0	160.8	40.0	84.4	99
	2 0	192.8	35.0	69.0	99
	3 0	200.7	30.0	60.5	99

Solvent evaporation period : 30 sec.

solvent evaporation temp. : 25 °C

RH : 65 %

Doctor's knife thickness : 200 μm

*PVP content : wt% against PI weight

**Applied operating pressure : 1 kg/cm^2

*** Feed solution concentration : PEG 1,000 ppm