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APPENDICES

Appendix A Calculation.

Permeability, define in equation A1, is a measure of membrane ability to permeate molecules

$$P = \frac{flux}{\dfrac{\Delta P}{l}}$$ (A1)

where P = Permeability $(\mu mol)/(cmHg\cdot cm\cdot s)$

          flux   = amount of permeate per membrane area in run time

                  $\mu mol/(cm^2\ s)$

          ΔP = Pressure Drop (cmHg)

           l = Membrane Thickness (cm)

Appendix B Membrane pervaporation results.

Table B1 Concentration of each component (wt%) in the feed charger, permeate and retentate using polyimide membrane. Feed composition (wt. ratio) PX: OX: n-heptane: 1-hexene = 1:1:1:1

Component Concentration	Feed	Permeate	Retentate
wt% PX	27.513	33.192	29.215
wt% OX	27.435	31.778	27.424
wt% n-heptane	24.033	22.741	27.177
wt% 1-hexene	21.019	12.289	16.184

Table B2 Concentration of each component (wt%) in the feed charger, permeate and retentate using 10 wt% silicalite/polyimide mixed matrix membrane. Feed composition (wt. ratio) PX: OX: n-heptane: 1-hexene = 1:1:1:1

Component Concentration	Feed	Permeate	Retentate
wt% PX	28.137	47.564	28.392
wt% OX	28.083	45.989	28.303
wt% n-heptane	23.767	5.716	23.708
wt% 1-hexene	20.013	0.731	19.597

Table B3 Concentration of each component (wt%) in the feed charger, permeate and retentate using 20 wt% silicalite/polyimide mixed matrix membrane. Feed composition (wt. ratio) PX: OX: n-heptane: 1-hexene = 1:1:1:1

Component Concentation	Feed	Permeate	Retentate
wt% PX	27.648	47.564	27.625
wt% OX	27.515	45.989	27.455
wt% n-heptane	23.914	5.716	23.957
wt% 1-hexene	20.924	0.731	20.962

Table B4 Concentration of each component (wt%) in the feed charger, permeate and retentate using 30 wt% silicalite/polyimide mixed matrix membrane. Feed composition (wt. ratio) PX: OX: n-heptane: 1-hexene = 1:1:1:1

Sample	Feed			
	wt% PX	wt% OX	wt% n-heptane	wt% 1-hexene
1	27.012	26.871	24.533	21.585
2	27.181	27.024	23.856	21.939
3	27.326	27.173	23.885	21.616

Sample	Permeate			
	wt% PX	wt% OX	wt% n-heptane	wt% 1-hexene
1	50.571	47.730	1.700	0.000
2	77.368	22.632	0	0
3	52.981	47.019	0	0

Sample	Retentate			
	wt% PX	wt% OX	wt% n-heptane	wt% 1-hexene
1	27.055	26.924	24.505	21.516
2	27.308	27.159	23.858	21.676
3	27.345	27.200	23.932	21.523

Table B5 Separation factor of polyimide membrane. Feed composition (wt. ratio) PX: OX: n-heptane: 1-hexene = 1:1:1:1

A:B Separation factor				
A B	PX	OX	n-heptane	1-hexene
PX	1.000	0.960	0.784	0.485
OX	1.042	1.000	0.817	0.505
n-heptane	1.275	1.224	1.000	0.618
1-hexene	2.063	1.981	1.620	1.000

Table B6 Separation factor of 10 wt% silicalite/polyimide mixed matrix membrane. Feed composition (wt. ratio) PX: OX: n-heptane: 1-hexene = 1:1:1:1

A:B Separation factor				
A B	PX	OX	n-heptane	1-hexene
PX	1.000	0.969	0.142	0.022
OX	1.032	1.000	0.147	0.022
n-heptane	7.029	6.809	1.000	0.152
1-hexene	46.299	44.851	6.590	1.000

Table B7 Separation factor of 20 wt% silicalite/polyimide mixed matrix membrane. Feed composition (wt. ratio) PX: OX: n-heptane: 1-hexene = 1:1:1:1

A:B Separation factor				
A B	PX	OX	n-heptane	1-hexene
PX	1.000	0.777	0.026	0.000
OX	1.288	1.000	0.033	0.000
n-heptane	39.072	30.344	1.000	0.000
1-hexene	∞	∞	∞	1.000

Table B8 Separation factor of 30 wt% silicalite/polyimide mixed matrix membrane. Feed composition (wt. ratio) PX: OX: n-heptane: 1-hexene = 1:1:1:1

A:B Separation factor				
A \ B	PX	OX	n-heptane	1-hexene
PX	1.000	0.712	0.000	0.000
OX	1.858	1.000	0.000	0.000
n-heptane	27.020	25.636	1.000	0.000
1-hexene	∞	∞	∞	1.000

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