

Supplementary Information

Table S1. Diffusion coefficients of Pebax®2533 films at 25 °C (T0 samples).

Solvent	Diffusion coefficient ($10^{-8} \text{ cm}^2 \text{ s}^{-1}$)						Selectivity (-)	
	CO ₂	CH ₄	O ₂	N ₂	He	H ₂	CO ₂ /N ₂	H ₂ /N ₂
ethanol	133	106	204	170	2300	1020	0.78	6.0
<i>i</i> -propanol	135	102	220	202	1880	1070	0.67	5.3
1-butanol	133	124	221	153	2590	1110	0.87	7.2
HFIP	124	99.5	203	135	2620	1110	0.92	8.2
<i>Hot press</i>	158	121	270	201	3030	1390	0.79	6.9

Table S2. Solubility coefficients of Pebax®2533 films at 25 °C (T0 samples).

Solvent	Solubility coefficient ($\text{cm}^3 \text{ cm}^{-3} \text{ bar}^{-1}$)						Selectivity (-)	
	CO ₂	CH ₄	O ₂	N ₂	He	H ₂	CO ₂ /N ₂	H ₂ /N ₂
ethanol	1.15	0.18	0.072	0.033	0.0069	0.027	35.0	0.84
<i>i</i> -propanol	1.12	0.19	0.066	0.029	0.0087	0.027	38.7	0.92
1-butanol	1.22	0.16	0.074	0.041	0.0074	0.029	27.4	0.66
HFIP	1.21	0.19	0.075	0.046	0.0069	0.026	26.1	0.56
<i>Hot press</i>	1.07	0.18	0.063	0.033	0.0059	0.022	32.2	0.71