APPENDICES

Dynamic Mechanical Analyzer Data Sheet

A. Dynamic Mechanical Properties Data Sheet

Loss Modulus Data Sheet

Figure 3.1;

% PI in PS/PI blends	T_α of PS (°C)	K" (peak) of PS (MPa)	T_α of PI (°C)	K" (peak) of PI (MPa)
0	76.31	1.89	-	-
17	86.95	2.81	-43.05	0.637
25	70.57	9.31	-49.86	3.21
100	-	-	-43.64	6.95

Figure 3.2;

% P(S-*b*-I) in PS/PI (75/25)	T_α of PS (°C)	K" (peak) of PS (MPa)	T_α of PI (°C)	K" (peak) of PI (MPa)
0	40.26	12.6	-49.62	10.3
0.5	78.60	11.7	-41.67	6.02
1.0	68.87	9.98	-40.68	4.25
2.0	77.87	8.85	-48.95	2.42
4.0	71.32	10.9	-48.74	1.04

Figures 3.3-3.4;

% P(S-*b*-I) in PS/PI (75/25)	T_α of PS (°C)	K" (peak) of PS (MPa)	T_α of PI (°C)	K" (peak) of PI (MPa)
0	55.42	10.9	-49.74	6.74
0.5	75.64	11.3	-48.20	4.24
1.0	62.03	10.4	-48.73	4.56
2.0	72.99	11.3	-50.75	3.16
4.0	67.65	11.3	-52.93	2.63

Note: The data of figures 3.3-3.4 are the average data.

Figure 3.5;

% P(S-*b*-I) in PS/PI (83/17)	T_α of PS (°C)	K" (peak) of PS (MPa)	T_α of PI (°C)	K" (peak) of PI (MPa)
0	86.95	2.81	-43.05	0.637
1.0	78.67	13.8	-47.19	4.32

Figures 3.6-3.9;

PS/PI (0 % BLOCK COPOLYMER)				
% PI in PS/PI blends	T_α of PS (°C)	K" (peak) of PS (MPa)	T_α of PI (°C)	K" (peak) of PI (MPa)
0	86.23	3.03	-	-
8	42.76	7.01	-	-
17	86.24	3.84	-45.53	0.579
25	55.42	10.9	-49.74	6.74
33	96.62	6.92	-46.91	3.54
42	79.62	6.85	-49.61	5.83
50	107.37	4.58	-48.27	3.69
67	106.80	4.25	-45.37	6.62
83	105.42	4.28	-44.40	8.16
100	-	-	-45.44	1.06

PS/PI (1 % BLOCK COPOLYMER)				
% PI in PS/PI blends	T_α of PS (°C)	K" (peak) of PS (MPa)	T_α of PI (°C)	K" (peak) of PI (MPa)
0	-	-	-	-
8	46.69	9.79	-52.30	4.66
17	83.64	12.6	-46.73	4.23
25	62.03	10.4	-48.73	4.56
33	96.51	5.67	-45.03	3.04
42	85.63	7.31	-56.75	5.34
50	102.59	4.32	-41.83	4.35
67	102.13	6.63	-42.87	9.44
83	125.81	4.80	-49.04	8.34
100	-	-	-	-

Note: The data of figures 3.6-3.9 are the average data.

Storage Modulus Data Sheet

Figure 3.10;

% PI in PS/PI blends	T_α of PS (°C)	K' (peak) of PS (MPa)	T_α of PI (°C)	K' (plateau) of PI (MPa)
0	105.25	6.43	-	-
17	121.52	9.54	-59.73	9.54
25	66.00	2.73	-47.50	27.3
100	-	-	-42.74	24.1

Figure 3.11;

% P(S-*b*-I) in PS/PI (75/25)	T_α of PS (°C)	K' (peak) of PS (MPa)	T_α of PI (°C)	K' (plateau) of PI (MPa)
0	66.00	27.3	-47.50	27.7
0.5	81.04	32.5	-50.24	30.4
1.0	68.10	28.6	-35.12	21.0
2.0	75.43	29.9	-43.86	15.4
4.0	57.47	38.1	-53.47	16.7

Figures 3.12-3.14;

% P(S-*b*-I) in PS/PI (75/25)	T_α of PS (°C)	K' (peak) of PS (MPa)	T_α of PI (°C)	K' (plateau) of PI (MPa)
0	67.89	25.5	-45.13	23.8
0.5	78.48	30.9	-47.16	23.5
1.0	69.40	52.5	-50.95	39.9
2.0	73.79	33.8	-42.93	20.7
4.0	63.14	35.1	-48.71	16.2

Note: The data of figures 3.12-3.14 are the average data.

Figure 3.15;

% P(S-*b*-I) in PS/PI (83/17)	T_α of PS (°C)	K' (peak) of PS (MPa)	T_α of PI (°C)	K' (plateau) of PI (MPa)
0	90.64	9.54	-59.73	6.21
1.0	87.55	37.2	-43.22	31.9

Figures 3.16-3.19;

PS/PI (0 % BLOCK COPOLYMER)				
% PI in PS/PI blends	T_α of PS (°C)	K' (peak) of PS (MPa)	T_α of PI (°C)	K' (plateau) of PI (MPa)
0	103.44	10.6	-	3.57
8	68.59	23.0	-	16.9
17	118.86	12.0	-57.11	6.41
25	67.89	25.5	-45.13	23.8
33	89.46	25.0	-46.46	21.5
42	83.23	22.2	-47.25	16.4
50	109.42	16.0	-47.85	21.5
67	108.31	14.9	-45.40	32.0
83	-	-	-43.34	33.5
100	-	-	-43.82	41.2

PS/PI (1 % BLOCK COPOLYMER)				
% PI in PS/PI blends	T_α of PS (°C)	K' (peak) of PS (MPa)	T_α of PI (°C)	K' (plateau) of PI (MPa)
0	-	-	-	-
8	75.14	31.2	-46.46	21.3
17	86.00	41.4	-45.91	31.1
25	69.40	52.5	-50.95	39.9
33	98.86	20.8	-44.82	12.7
42	86.41	23.8	-53.99	15.3
50	96.37	17.7	-38.68	24.0
67	104.25	-	-42.55	40.8
83	-	-	-48.90	36.8
100	-	-	-	-

Note: The data of figures 3.16-3.19 are the average data.

B. Mechanical Properties

Young's Modulus Data Sheet

Figure 3.20;

Young's modulus (Ex0.01) (KPa)		
% PI is PS/PI blends	0 % block copolymer	1 % block copolymer
25	33.9	35.2
33	20.0	21.3
42	12.4	13.7
50	7.03	8.81
67	5.36	8.63
83	4.54	8.61
100	4.51	-

Note: Young's modulus data were measured by the highest stress rate (500 mN/min) to minimize relaxation of the samples.

Strain Rate or Rate of Deformation Data Sheet

Figure 3.21;

Strain rate (min^{-1}) (stress rate = 10mN/min)		
% PI is PS/PI blends	0 % block copolymer	1 % block copolymer
25	0.49	0.44
33	0.77	0.68
42	2.16	2.02
50	3.76	2.42
67	4.97	2.62
83	5.62	2.65
100	5.73	-

Figure 3.21;

Strain rate (min^{-1}) (stress rate = 100mN/min)		
% PI is PS/PI blends	0 % block copolymer	1 % block copolymer
25	4.23	3.78
33	6.80	6.03
42	10.5	10.8
50	17.7	17.2
67	29.9	22.3
83	34.2	25.6
100	37.9	-

Figure 3.22;

Strain rate (min^{-1}) (stress rate = 200mN/min)		
% PI is PS/PI blends	0 % block copolymer	1 % block copolymer
25	7.54	6.48
33	11.2	10.7
42	19.8	18.8
50	32.2	32.7
67	41.4	37.1
83	53.1	42.7
100	67.7	-

Figure 3.23;

Strain rate (min^{-1}) (stress rate = 300mN/min)		
% PI is PS/PI blends	0 % block copolymer	1 % block copolymer
25	10.9	9.45
33	16.5	15.5
42	26.0	25.0
50	45.2	39.3
67	62.1	44.8
83	80.4	45.0
100	91.8	-

Figure 3.24;

Strain rate (min^{-1}) (stress rate = 400mN/min)		
% PI is PS/PI blends	0 % block copolymer	1 % block copolymer
25	12.3	11.5
33	20.5	19.6
42	32.9	30.2
50	57.3	48.2
67	75.6	51.7
83	91.6	52.8
100	93.0	-

Figure 3.25;

Strain rate (min^{-1}) (stress rate = 500mN/min)		
% PI is PS/PI blends	0 % block copolymer	1 % block copolymer
25	14.7	14.2
33	25.0	23.5
42	40.3	36.4
50	71.1	56.8
67	93.3	57.9
83	110	58.1
100	110	-

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