



PPS/ABS

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Dynamic and Mechanical Properties of PPS/ABS Blends

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ABS : PPS ABS ,
 maleic anhydride(MAH) ABS MABS ,
 PPS/MABS 가 가 ,
 가

ABSTRACT : In this study, the PPS/ABS blend system was investigated in order to identify the relationship between the incorporation of compatibilizing moieties and the mechanical properties. ABS resin was chemically modified by the incorporation of maleic anhydride using reactive extrusion method to yield MABS resin, and PPS/MABS blend was prepared by a twin screw extruder. Single glass transition behavior was observed in the various compositions of PPS/MABS blend by dynamic mechanical analysis study. Upon the examination of the mechanical properties, the PPS/MABS blend exhibited an enhanced tensile, flexural and impact strength, which might be due to the better chemical compatibilization to result in the reduced interfacial tension between each components.

Keywords : PPS/ABS blend, mechanical, compatibilization.

가, 1,3,4 , 5-7 ,
 8
 가
 Gibbs 가
 가

1,2

Poly(phenylene sulfide)(PPS) MAH ABS 0.5 phr
 가 가 0.15 phr
 가 80 - 120 280 (HAAKE system 90)
 250 3 mm 230, 240
 240
 20 rpm
 dicumyl peroxide
^{9,10} PPS Irganox B1171 0.15 phr
 가 PPS ABS
 , PPS 가
 가 PPS/ABS
 100:0, 70:30, 50:50,
 30:70 PPS/MABS
 가 ¹¹
^{12,13} PPS 90) (HAAKE system
 250, 270 300 ,
 3 mm 280
 CO₂ 가 20 rpm
¹⁴
 PPS 가
 ABS
 ABS
 PPS DMA TA dynamic
 mechanical analyzer 983
 10×35×1.9 mm
 10 /min 50 150
 (E') (E"), tan
¹⁵ PPS/ABS
 ABS
 Instron 4400R
 ASTM D638
 crosshead 50 mm/
 min
 PPS (Grade P-4) 5
 , ABS (acrylonitrile
 butadiene styrene) () LG HI121
 (melt flow index =18.0 g/10 min, M_w=100000)
 . Maleic anhydride dicumyl peroxide
 Aldrich
 MABS . MABS maleic anhydride ABS
 ASTM D790M - 92
 5

RADMANA ITR-2000 instrumented
impact tester

가
peak force

가

tan

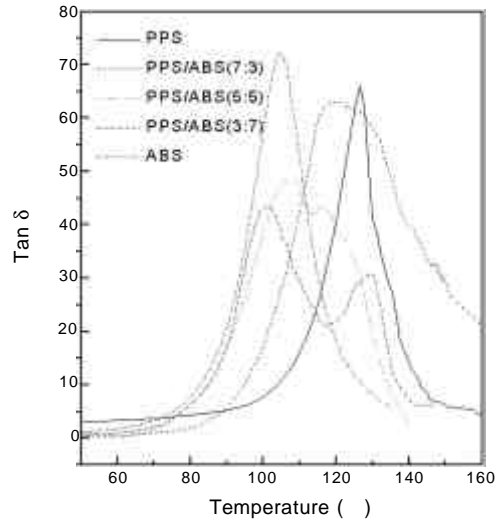


Figure 1. Tan δ's of PPS, ABS and blends.

1,2 DMA
PPS/ABS PPS/MABS
tan
Figure 1, 2
PPS/ABS PPS/MABS tan
ABS
70 wt% T_g
가
tan
가
ABS 50 wt%
가 가
ABS 30 wt% ABS
PPS T_g
tan 가
ABS

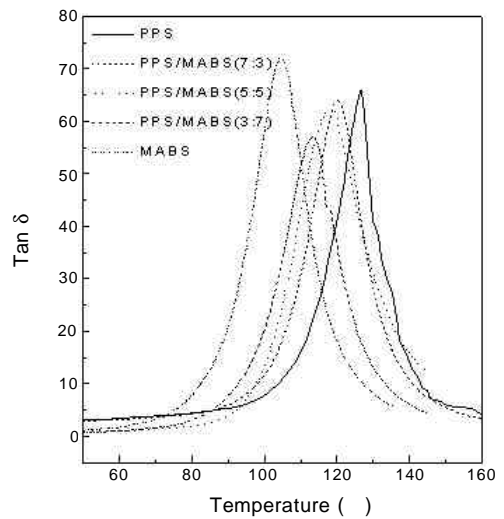


Figure 2. Tan δ's of PPS, MABS and blends.

PPS -S- -SH 가 T_g 가
ABS -C N
Figure 2
PPS/MABS tan

PPS

PPS/ MABS

- SH

가 T_g

, PPS

가

PPS

- SH

Table 1. Mechanical Properties of PPS/ABS Blends

mechanical properties	tensile			flexural		impact	
	modulus (GPa)	strength (MPa)	strain at break	modulus (GPa)	strength (MPa)	gradient (N/mm)	peak force (N)
PPS : ABS							
10:0	7.9	66	87	7.0	82	548	352
7:3	6.7	76	47	5.7	84	406	401
5:5	6.3	90	22	5.2	90	324	410
3:7	6.1	107	9	4.7	103	288	423
0:10	5.8	45	12	4.3	51	264	513

Table 2. Mechanical Properties of PPS/MABS Blends

mechanical properties	tensile			flexural		impact	
	modulus (GPa)	strength (MPa)	strain at break	modulus (GPa)	strength (MPa)	gradient (N/mm)	peak force (N)
PPS : MABS							
10:0	7.9	66	87	7.0	82	548	352
7:3	6.9	87	67	5.9	87	434	411
5:5	6.4	103	47	5.4	106	353	426
3:7	6.2	119	29	4.8	112	302	454
0:10	5.8	45	11	4.3	49	264	513

PPS/ABS
 MABS 가
 MAH ABS
 Table 1 Table
 PPS 15 ABS MABS가 가
 1, 2
 ABS MABS
 가가 PPS
 MABS 가 ABS
 가 ,
 , PPS/MABS 가
 PPS/ABS 가
 PPS MABS 가
 가 ,
 가 ,
 PPS/ABS
 ABS 가
 가 T_g
 30 wt%
 가
 ABS 가
 Table 1, 2

PPS/ABS /

DMA tan 가

(-SH, -CN)

PPS

가

ABS

Table 2

.¹⁶

MABS

가

가

, PPS/MABS 가

Table 1, 2 PPS/ABS
ABS

가 ABS MABS 가
가

1. PPS/MABS PPS/ABS
DMA tan , PPS/
MABS

가가

2. MABS ABS 가
가

MABS 가

3. PPS/MABS 가 PPS/ABS

가

가

가 MABS 가
가

ABS

gradient
peak force
Table 1, 2

가

2

가

가 가

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