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APPENDICES

Appendix A Scanning Electron Microscopy Analysis

TableA1 Dispersed phase sizes for blends

HDPE/PA6 80/20		
Compatibilizer Amount (phr)	Dispersed Phase Size without Zinc Oxide (μm)	Dispersed Phase Size with Zinc Oxide (μm)
0	4.9	4.9
0.1	2.6	3.0
1	2.4	2.9
2.5	1.7	1.7
5	0.7	1.2
10	0.2	0.5
HDPE/PA6 20/80		
Compatibilizer Amount (phr)	Dispersed Phase Size without Zinc Oxide (μm)	Dispersed Phase Size with Zinc Oxide (μm)
0	14	14
0.1	13.8	10.4
1	3.9	5.7
2.5	3.3	4.5
5	2.8	3.4
10	2.3	2.4

Appendix B Mechanical Properties

TableB1 Tensile strength of PA6/HDPE blends with HDPE-g-MAH (Fusabond®)

HDPE/PA6 80/20		
Compatibilizer Amount (phr)	Tensile strength (MPa) without Zinc Oxide	Tensile strength (MPa) with Zinc Oxide
0	19.67	19.67
0.1	20.66	19.59
1	25.78	23.90
2.5	27.93	27.64
5	28.20	28.46
10	28.46	27.65
HDPE/PA6 20/80		
Compatibilizer Amount (phr)	Tensile strength (MPa) Without Zinc Oxide	Tensile strength (MPa) With Zinc Oxide
0	37.61	37.61
0.1	42.21	36.60
1	45.54	45.78
2.5	46.62	45.28
5	49.27	44.53
10	49.39	52.20

TableB2 Tensile modulus of PA6/HDPE blends with HDPE-g-MAH (Fusabond®)

HDPE/PA6 80/20		
Compatibilizer Amount (phr)	Tensile modulus (Psi) without Zinc Oxide	Tensile modulus (Psi) with Zinc Oxide
0	127498.00	127498.00
0.1	154758.00	139502.75
1	154544.25	141413.50
2.5	152889.67	149767.50
5	143641.33	140253.50
10	133105.75	155109.50
HDPE/PA6 20/80		
Compatibilizer Amount (phr)	Tensile modulus (Psi) without Zinc Oxide	Tensile modulus (Psi) with Zinc Oxide
0	187885.75	187885.75
0.1	167818.25	189078.67
1	204679.00	172863.67
2.5	195643.67	137776.00
5	187924.33	168113.00
10	194036.33	167093.67

TableB3 % Elongation at break of PA6/HDPE blends with HDPE-g-MAH (Fusabond®)

HDPE/PA6 80/20		
Compatibilizer Amount (phr)	% Elongation at break (%) without Zinc Oxide	% Elongation at break (%) with Zinc Oxide
0	804.50	804.50
0.1	464.11	337.10
1	590.97	135.09
2.5	430.87	150.44
5	553.11	626.21
10	751.33	791.11
HDPE/PA6 20/80		
Compatibilizer Amount (phr)	% Elongation at break (%) without Zinc Oxide	% Elongation at break (%) with Zinc Oxide
0	22.80	22.80
0.1	35.49	46.80
1	48.79	33.36
2.5	111.83	164.26
5	180.01	195.26
10	263.80	126.03

TableB4 Stress at break of PA6/HDPE blends with HDPE-g-MAH (Fusabond®)

HDPE/PA6 80/20		
Compatibilizer Amount (phr)	Stress at break (MPa) without Zinc Oxide	Stress at break (MPa) with Zinc Oxide
0	3162.61	3162.61
0.1	2637.63	2339.23
1	2816.71	2540.56
2.5	3121.12	3011.85
5	3254.22	3676.11
10	4753.71	4665.56
HDPE/PA6 20/80		
Compatibilizer Amount (phr)	Stress at break (MPa) without Zinc Oxide	Stress at break (MPa) with Zinc Oxide
0	5715.32	5715.32
0.1	5786.46	5762.56
1	6872.12	6397.24
2.5	7342.88	7132.97
5	7204.79	7305.77
10	7435.43	6473.14

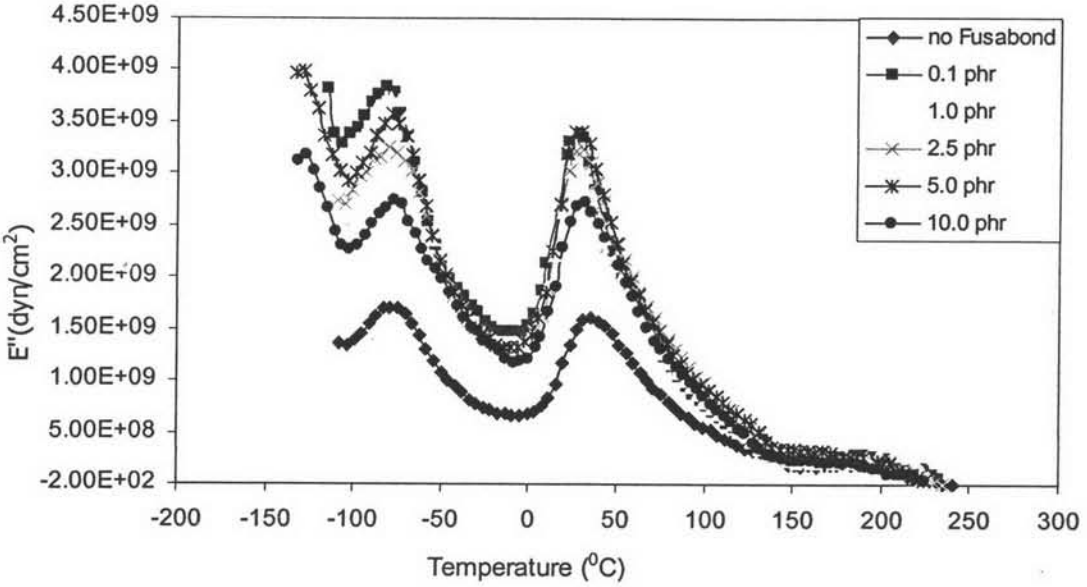
TableB5 Impact strength of PA6/HDPE blends with HDPE-g-MAH (Fusabond®)

HDPE/PA6 80/20		
Compatibilizer Amount (phr)	Impact strength (kJ/m^2) without Zinc Oxide	Impact strength (kJ/m^2) with Zinc Oxide
0	22.68	22.68
0.1	6.78	10.90
1	3.38	3.36
2.5	2.54	3.56
5	11.44	12.16
10	18.52	29.54
HDPE/PA6 20/80		
Compatibilizer Amount (phr)	Impact strength (kJ/m^2) without Zinc Oxide	Impact strength (kJ/m^2) with Zinc Oxide
0	7.30	7.30
0.1	8.51	10.14
1	9.73	6.16
2.5	14.07	11.76
5	13.84	14.46
10	15.24	8.80

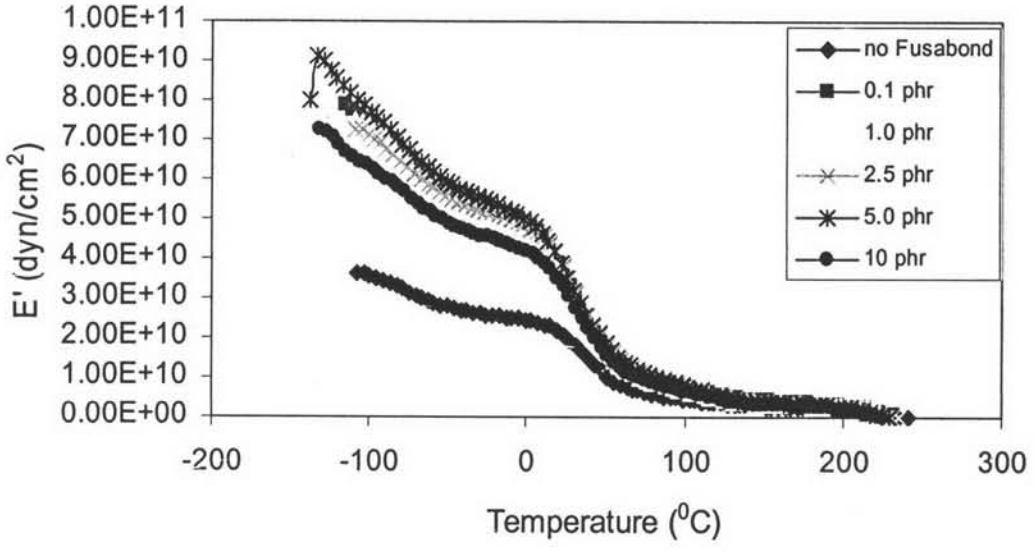
TableB6 Hardness of PA6/HDPE blends with HDPE-g-MAH (Fusabond®)

HDPE/PA6 80/20		
Compatibilizer Amount (phr)	Hardness (Shore D) without Zinc Oxide	Hardness (Shore D) with Zinc Oxide
0	61.30	61.30
0.1	57.36	38.55
1	62.65	40.95
2.5	40.95	39.90
5	44.35	43.25
10	40.25	41.50
HDPE/PA6 20/80		
Compatibilizer Amount (phr)	Hardness (Shore D) without Zinc Oxide	Hardness (Shore D) with Zinc Oxide
0	66.25	66.25
0.1	62.50	76.57
1	64.20	46.55
2.5	57.50	45.80
5	61.00	68.15
10	58.80	62.15

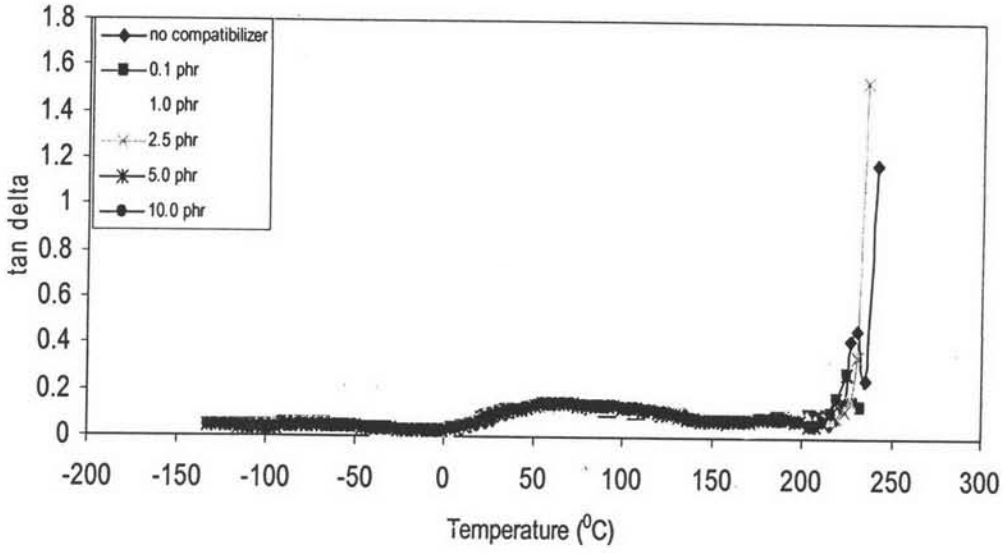
Appendix C Dynamic Mechanical Analysis



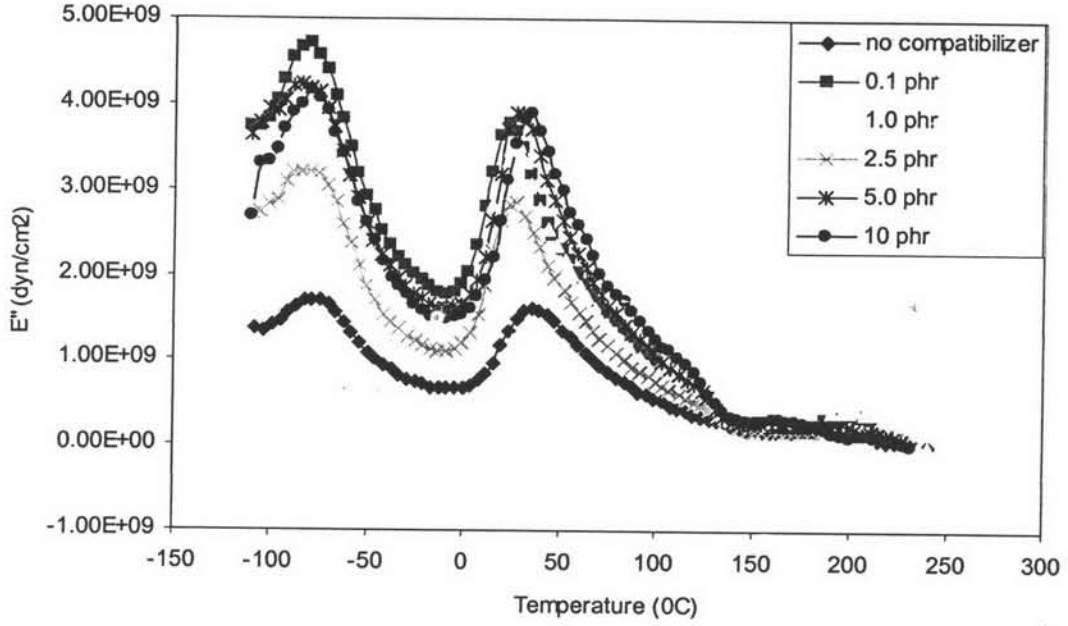
FigureC1 Temperature dependence of loss modulus (E") of PA6/HDPE 80/20 with and without Fusabond.



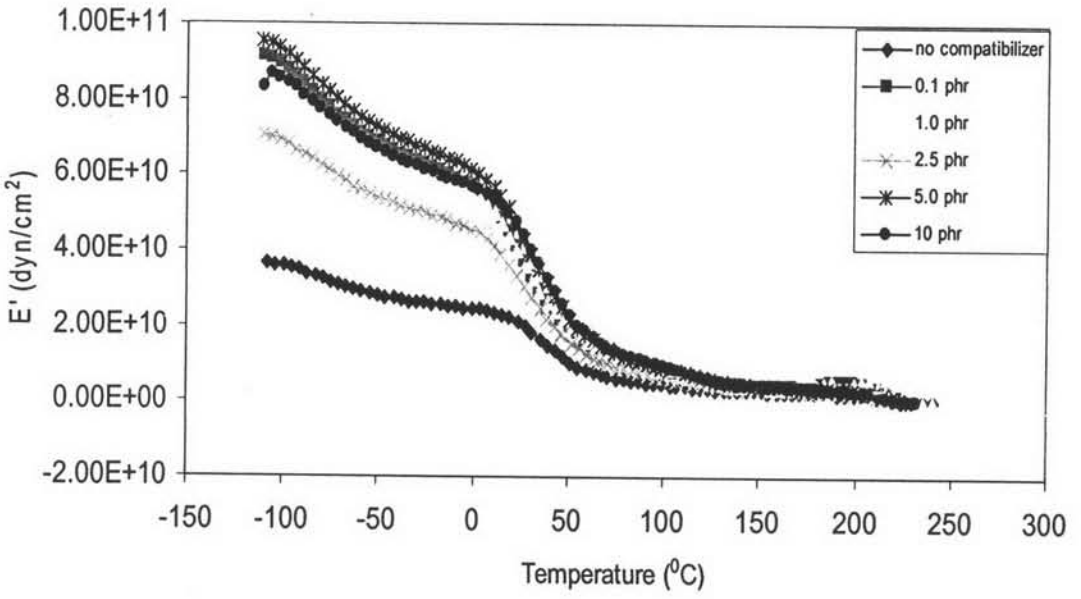
FigureC2 Temperature dependence of storage modulus (E') of PA6/HDPE 80/20 with and without Fusabond.



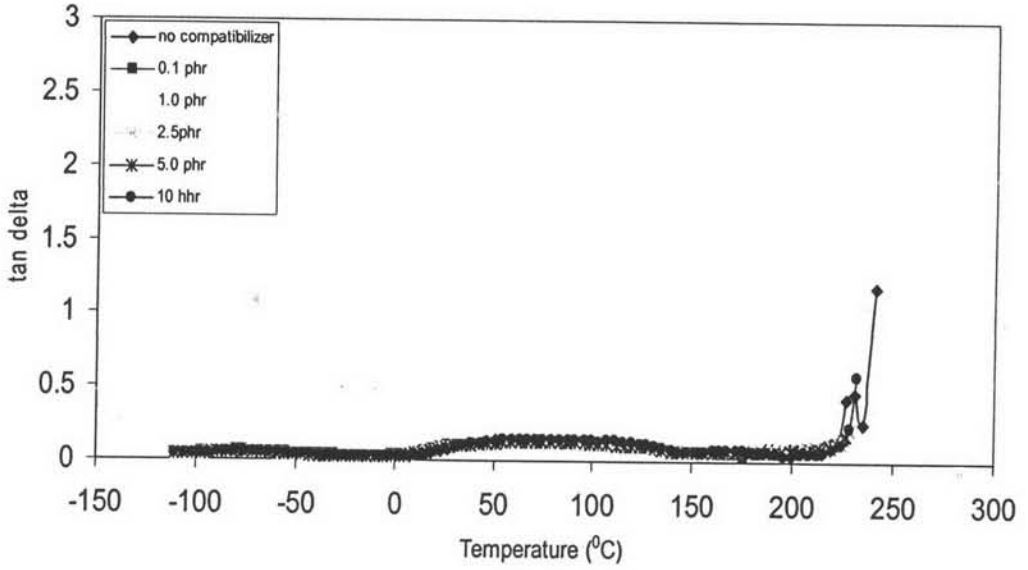
FigureC3 Temperature dependence of tan delta of PA6/HDPE 80/20 with and without Fusabond.



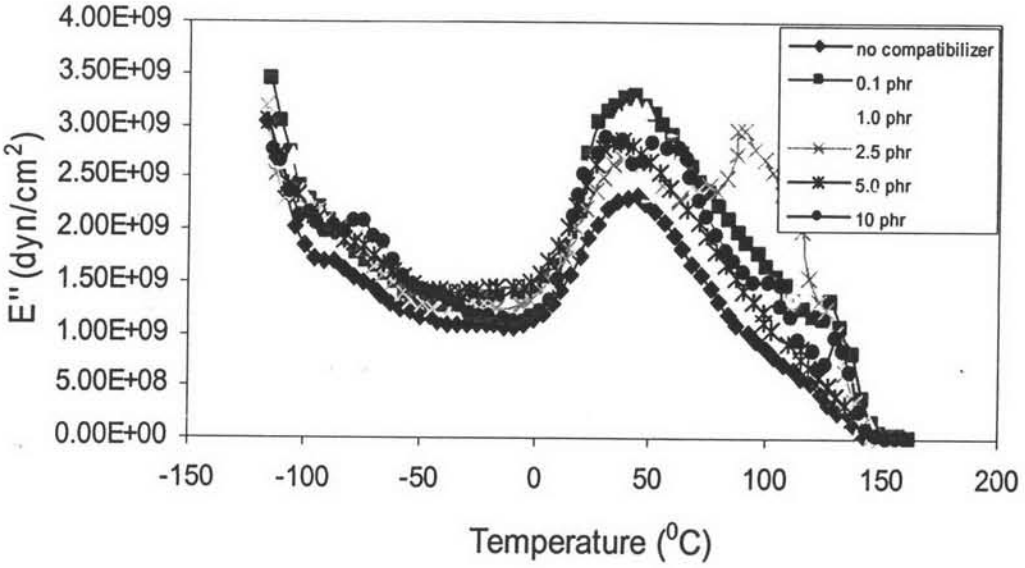
FigureC4 Temperature dependence of loss modulus of PA6/HDPE 80/20 with and without Fusabond, with ZnO.



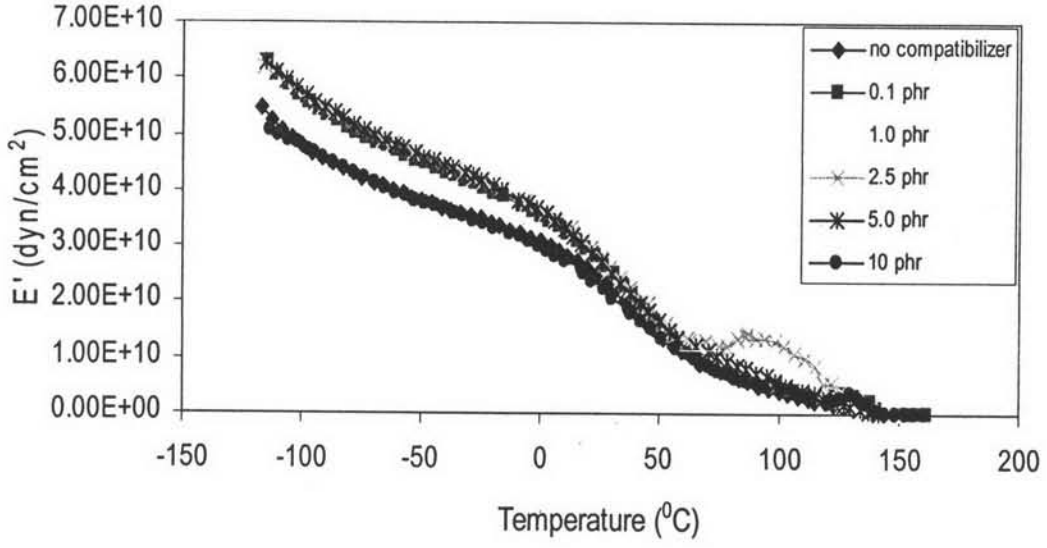
FigureC5 Temperature dependence of storage modulus of PA6/HDPE 80/20 with and without Fusabond, with ZnO.



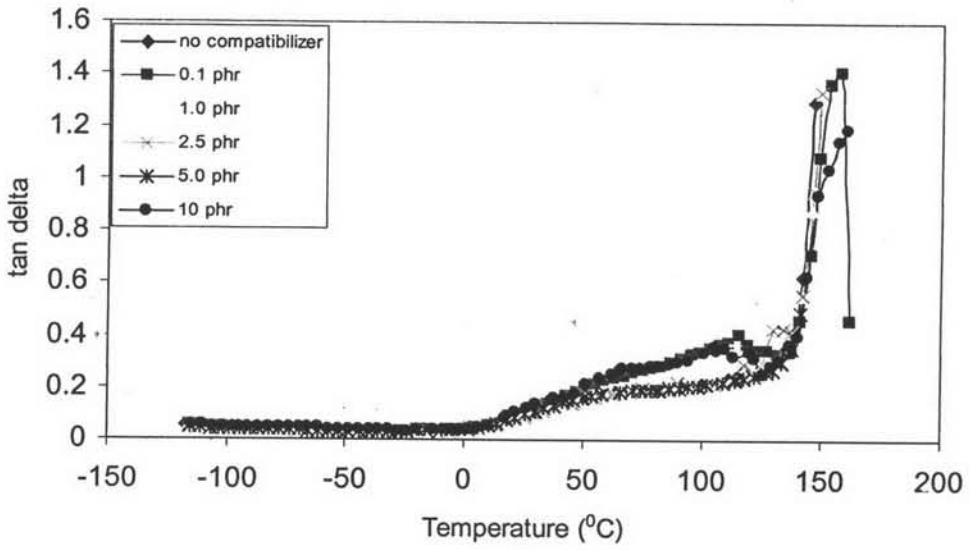
FigureC6 Temperature dependence of tan delta of PA6/HDPE 80/20 with and without Fusabond, with ZnO.



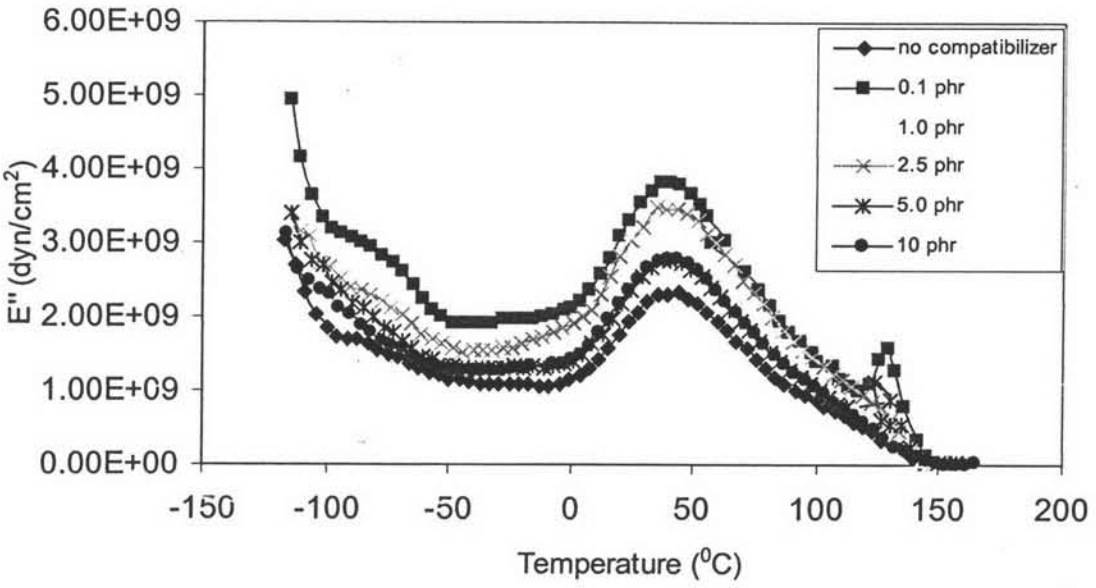
FigureC7 Temperature dependence of loss modulus of PA6/HDPE 20/80 with and without Fusabond.



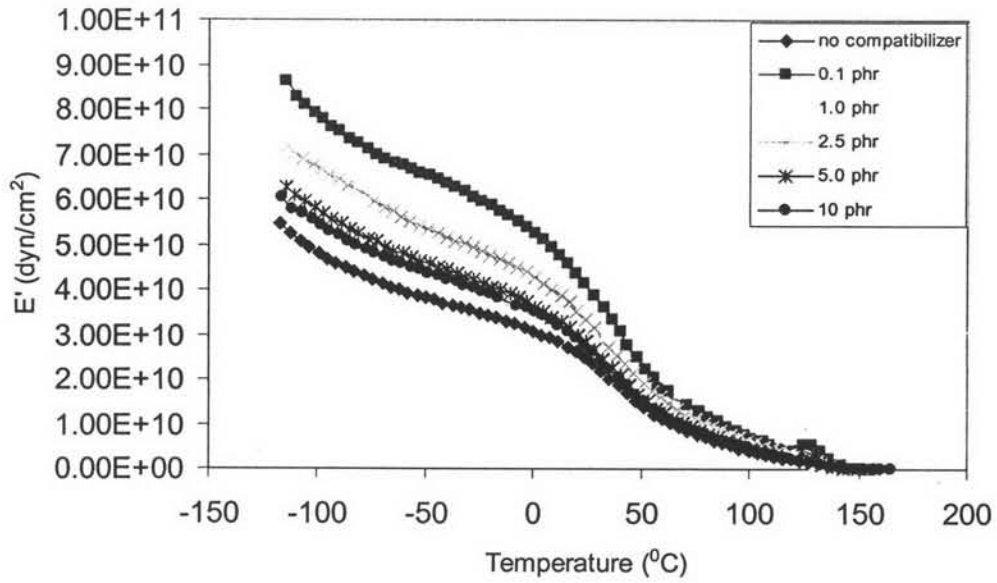
FigureC8 Temperature dependence of storage modulus of PA6/HDPE 20/80 with and without Fusabond.



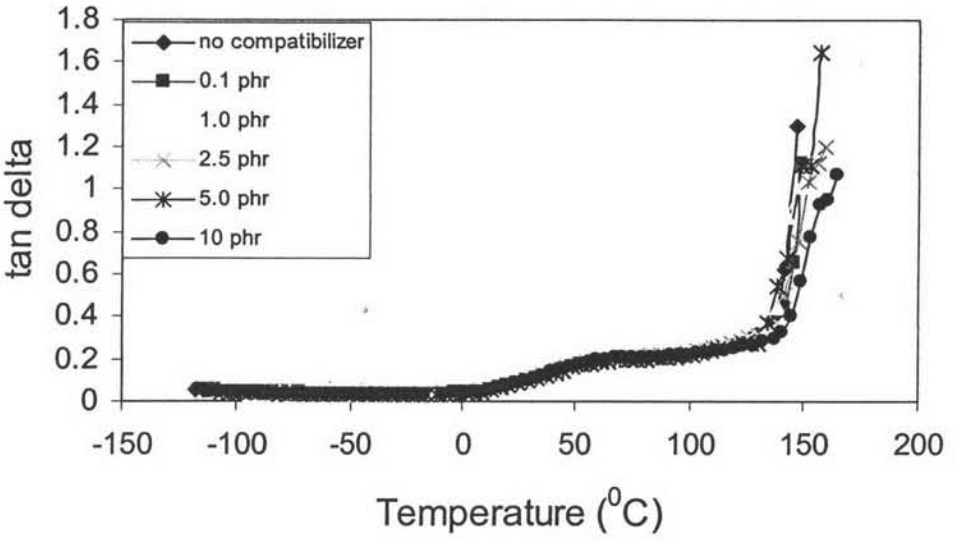
FigureC9 Temperature dependence of tan delta of PA6/HDPE 20/80 with and without Fusabond.



FigureC10 Temperature dependence of loss modulus of PA6/HDPE 20/80 with and without Fusabond, with ZnO.



FigureC11 Temperature dependence of storage modulus of PA6/HDPE 20/80 with and without Fusabond, with ZnO.



FigureC12 Temperature dependence of tan delta of PA6/HDPE 20/80 with and without Fusabond, with ZnO.