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APPENDICES

Appendix A Mechanical Properties

A Universal testing machine was used to measure the tensile strength, Young's modulus, and elongation at break of the blends. The tests were followed according to ASTM D638 test procedure, using a crosshead speed of 50 mm/min. Results were averaged from five specimens per each batch of the blends.

Table A1 Tensile test results of PTT

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.45	4.05	1078.88	60.41
2	12.46	4.06	1065.47	60.29
3	12.56	4.03	1055.43	60.46
4	12.58	4.04	1031.57	59.96
5	12.69	4.02	1052.25	60.16
Mean			1056.72	60.26
S.D.			17.48	0.20

Table A2 Tensile test results of HDPE

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.56	3.97	619.61	24.59
2	12.51	3.98	627.58	24.32
3	12.54	3.99	598.06	24.82
4	12.50	3.99	648.84	25.06
5	12.54	4.01	572.17	23.54
Mean			613.25	24.47
S.D.			26.19	0.52

Table A3 Tensile test results of LLDPE

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.42	3.94	180.08	11.47
2	12.41	3.93	190.53	11.42
3	12.39	3.93	192.34	11.48
4	12.50	3.98	170.03	10.89
5	12.59	4.04	152.70	10.63
Mean			177.14	11.18
S.D.			16.33	0.39

Table A4 Tensile test results of PTT/HDPE 80/20

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.23	3.98	922.68	43.78
2	12.26	3.98	860.79	44.09
3	12.25	3.99	924.59	44.88
4	12.25	3.98	901.49	44.66
5	12.24	3.98	905.04	44.86
Mean			902.92	44.45
S.D.			25.70	0.49

Table A5 Tensile test results of PTT/HDPE 60/40

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.31	3.98	811.55	39.63
2	12.33	4.00	795.99	39.73
3	12.33	3.99	810.31	38.29
4	12.33	3.98	772.64	39.33
5	12.32	3.98	786.23	38.70
Mean			795.34	39.14
S.D.			16.47	0.62

Table A6 Tensile test results of PTT/LLDPE 80/20

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.31	4.01	672.26	38.97
2	12.33	4.01	706.50	40.84
3	4.02	12.35	763.46	40.17
4	12.33	3.99	697.09	40.26
5	12.41	4.00	714.51	38.27
Mean			710.76	39.70
S.D.			33.46	1.05

Table A7 Tensile test results of PTT/LLDPE 60/40

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.39	3.98	543.74	26.66
2	12.46	4.00	551.59	27.38
3	12.36	3.94	560.49	27.71
4	12.41	4.00	530.60	26.82
5	12.39	4.00	556.40	27.08
Mean			548.56	27.13
S.D.			11.82	0.42

Table A8 Tensile test results of PTT/HDPE/MAH-g-HDPE 80/20/0.1

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.29	3.97	838.49	44.31
2	12.27	4.00	912.73	44.14
3	12.26	3.98	940.28	44.58
4	12.24	3.99	946.81	45.40
5	12.30	3.97	935.20	44.39
Mean			914.70	44.56
S.D.			44.49	0.49

Table A9 Tensile test results of PTT/HDPE/MAH-g-HDPE 80/20/0.5

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.27	4.00	931.59	45.21
2	12.30	4.03	835.05	44.89
3	12.26	4.01	942.68	44.85
4	12.40	3.99	905.94	44.33
5	12.31	4.03	884.45	44.28
Mean			899.94	44.71
S.D.			42.76	0.40

Table A10 Tensile test results of PTT/HDPE/MAH-g-HDPE 80/20/1

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.29	3.98	885.65	45.93
2	12.27	3.98	934.64	45.64
3	12.30	4.01	938.51	45.69
4	12.26	4.01	912.56	46.23
5	12.29	3.98	955.83	46.32
Mean			925.44	45.96
S.D.			27.06	0.31

Table A11 Tensile test results of PTT/HDPE/MAH-g-HDPE 80/20/5

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.30	3.98	814.11	43.29
2	12.32	4.00	871.83	43.67
3	12.41	3.99	881.16	42.59
4	12.32	3.98	910.16	43.67
5	12.29	3.99	901.75	43.86
Mean			875.80	43.42
S.D.			37.76	0.51

Table A12 Tensile test results of PTT/HDPE/MAH-g-HDPE 60/40/0.1

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.28	3.93	861.16	40.74
2	12.32	3.97	815.88	40.12
3	12.37	3.98	789.80	38.83
4	12.30	3.96	825.90	40.47
5	12.28	3.98	717.27	38.97
Mean			802.00	39.83
S.D.			53.83	0.87

Table A13 Tensile test results of PTT/HDPE/MAH-g-HDPE 60/40/0.5

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.32	3.96	834.04	40.26
2	12.37	3.95	842.08	40.03
3	12.32	3.97	869.21	40.79
4	12.34	3.95	806.88	40.95
5	12.31	3.98	733.24	40.69
Mean			817.09	40.54
S.D.			51.87	0.38

Table A14 Tensile test results of PTT/HDPE/MAH-g-HDPE 60/40/1

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.38	3.96	817.13	40.16
2	12.29	3.96	825.19	41.19
3	12.30	3.98	847.21	40.44
4	12.40	3.99	817.99	39.89
5	12.33	3.97	787.54	40.10
Mean			819.01	40.36
S.D.			21.38	0.51

Table A15 Tensile test results of PTT/HDPE/MAH-g-HDPE 60/40/5

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.40	3.97	787.77	39.63
2	12.38	3.99	750.40	39.22
3	12.35	3.97	791.79	39.98
4	12.37	3.97	692.73	39.04
5	12.37	3.95	781.73	39.26
Mean			760.88	39.43
S.D.			41.44	0.38

Table A16 Tensile test results of PTT/HDPE/Na-EMAA 80/20/0.1

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.25	3.95	945.37	45.97
2	12.32	3.92	877.00	47.75
3	12.23	3.93	884.79	46.81
4	12.24	3.93	873.03	46.49
5	12.27	3.94	913.76	45.86
Mean			898.79	46.58
S.D.			30.53	0.76

Table A17 Tensile test results of PTT/HDPE/Na-EMAA 80/20/0.5

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.29	3.93	937.62	46.25
2	12.27	3.94	921.97	47.09
3	12.24	3.93	874.04	46.05
4	12.23	3.94	898.20	46.52
5	12.25	3.93	861.71	45.46
Mean			898.71	46.27
S.D.			31.75	0.60

Table A18 Tensile test results of PTT/HDPE/Na-EMAA 80/20/1

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.26	3.93	977.20	47.24
2	12.22	3.93	933.39	46.69
3	12.26	3.93	936.67	46.65
4	12.24	3.92	853.71	46.92
5	12.27	3.93	883.31	46.83
Mean			916.86	46.87
S.D.			48.53	0.24

Table A19 Tensile test results of PTT/HDPE/Na-EMAA 80/20/5

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.38	3.99	781.49	42.03
2	12.29	3.98	788.44	42.73
3	12.32	3.97	822.47	43.31
4	12.29	4.00	814.13	43.05
5	12.34	3.98	889.13	42.51
Mean			819.13	42.73
S.D.			42.70	0.49

Table A20 Tensile test results of PTT/HDPE/Na-EMAA 60/40/0.1

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.27	3.99	829.41	36.56
2	12.36	3.99	825.06	37.93
3	12.33	3.97	789.95	43.6
4	12.35	3.98	851.80	42.26
5	12.35	3.98	852.31	43.03
Mean			829.71	40.68
S.D.			25.50	3.20

Table A21 Tensile test results of PTT/HDPE/Na-EMAA 60/40/0.5

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.31	3.93	827.88	40.98
2	12.30	3.96	840.18	40.92
3	12.31	3.91	849.77	41.40
4	12.27	3.98	807.58	39.87
5	12.33	3.99	796.59	34.46
Mean			824.40	39.53
S.D.			22.14	2.89

Table A22 Tensile test results of PTT/HDPE/Na-EMAA 60/40/1

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.31	3.97	807.53	39.51
2	12.34	3.97	826.86	34.56
3	12.31	3.97	733.26	42.32
4	12.35	3.96	845.70	37.32
5	12.27	3.95	851.36	43.19
Mean			812.94	39.38
S.D.			47.75	3.56

Table A23 Tensile test results of PTT/HDPE/Na-EMAA 60/40/5

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	10.00	4.00	799.49	37.84
2	10.00	4.00	820.82	38.12
3	12.35	3.91	789.71	38.58
4	12.36	3.92	746.58	36.72
5	12.36	3.92	761.93	38.49
Mean			783.71	37.95
S.D.			29.64	0.75

Table A24 Tensile test results of PTT/LLDPE/MAH-g-HDPE 80/20/0.1

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.26	3.96	777.61	41.66
2	12.27	3.95	754.08	41.79
3	12.27	3.96	750.12	41.66
4	12.30	3.99	729.76	41.69
5	12.28	3.98	728.84	41.49
Mean			748.08	41.66
S.D.			20.11	0.11

Table A25 Tensile test results of PTT/LLDPE/MAH-g-HDPE 80/20/0.5

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.31	3.99	748.37	42.29
2	12.33	3.98	744.63	42.85
3	12.32	4.00	783.41	41.60
4	12.31	3.99	766.34	42.26
5	12.34	3.91	775.83	42.93
Mean			763.72	42.39
S.D.			16.89	0.54

Table A26 Tensile test results of PTT/LLDPE/MAH-g-HDPE 80/20/1

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.30	3.98	782.99	41.36
2	12.28	3.97	800.22	42.12
3	12.29	3.99	803.52	40.94
4	12.31	3.99	797.68	40.98
5	12.32	3.98	789.29	41.69
Mean			794.74	41.42
S.D.			8.42	0.50

Table A27 Tensile test results of PTT/LLDPE/MAH-g-HDPE 80/20/5

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.30	3.99	775.42	41.07
2	12.30	4.00	794.03	41.50
3	12.33	4.01	781.02	41.96
4	12.33	4.01	792.32	41.79
5	12.30	3.99	733.83	41.35
Mean			775.32	41.53
S.D.			24.46	0.35

Table A28 Tensile test results of PTT/LLDPE/MAH-g-HDPE 60/40/0.1

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.36	3.98	558.95	26.62
2	12.41	3.99	544.75	27.46
3	12.38	3.97	539.09	27.01
4	12.38	3.94	567.46	26.65
5	12.41	3.96	577.01	27.01
Mean			557.45	26.95
S.D.			15.68	0.34

Table A29 Tensile test results of PTT/LLDPE/MAH-g-HDPE 60/40/0.5

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.40	3.98	562.94	28.00
2	12.46	3.95	538.46	27.28
3	12.44	3.98	553.22	26.64
4	12.37	3.92	580.01	28.55
5	12.35	3.93	573.47	28.29
Mean			561.62	27.75
S.D.			16.49	0.78

Table A30 Tensile test results of PTT/LLDPE/MAH-g-HDPE 60/40/1

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.36	3.97	561.62	27.78
2	12.35	4.00	548.89	28.93
3	12.35	3.99	546.23	26.92
4	12.36	3.98	554.34	27.80
5	12.37	3.99	565.95	27.86
Mean			555.41	27.86
S.D.			8.33	0.71

Table A31 Tensile test results of PTT/LLDPE/MAH-g-HDPE 60/40/5

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.44	3.99	564.19	28.14
2	12.46	4.01	568.24	28.19
3	12.43	4.01	562.91	28.14
4	12.40	3.98	584.57	27.48
5	12.46	3.99	566.09	27.38
Mean			569.20	27.87
S.D.			8.82	0.40

Table A32 Tensile test results of PTT/LLDPE/Na-EMAA 80/20/0.1

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.26	4.00	733.92	40.10
2	12.27	3.99	796.26	39.46
3	12.26	4.00	785.91	41.06
4	12.28	3.99	795.73	39.28
5	12.28	3.99	746.43	40.77
Mean			771.65	40.13
S.D.			29.36	0.78

Table A33 Tensile test results of PTT/LLDPE/Na-EMAA 80/20/0.5

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.28	3.95	796.49	41.87
2	12.27	3.95	826.45	42.01
3	12.28	3.93	767.09	41.82
4	12.28	3.94	818.49	41.43
5	12.31	3.93	796.20	40.67
Mean			800.94	41.56
S.D.			23.17	0.54

Table A34 Tensile test results of PTT/LLDPE/Na-EMAA 80/20/1

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.29	3.98	815.17	41.75
2	12.30	3.97	776.61	41.37
3	12.29	3.97	756.90	41.32
4	12.32	3.99	780.52	41.83
5	12.29	3.99	774.03	41.83
Mean			780.65	41.62
S.D.			21.31	0.25

Table A35 Tensile test results of PTT/LLDPE/Na-EMAA 80/20/5

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.33	3.98	721.69	39.65
2	12.31	3.99	754.04	39.75
3	12.33	3.99	774.25	39.88
4	12.29	3.98	782.04	39.99
5	12.34	3.97	748.20	39.90
Mean			756.04	39.83
S.D.			23.73	0.13

Table A36 Tensile test results of PTT/LLDPE/Na-EMAA 60/40/0.1

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.42	3.96	654.60	28.34
2	12.42	3.96	640.90	30.77
3	12.42	3.97	606.91	30.95
4	12.44	3.97	611.07	32.05
5	12.43	3.97	612.77	30.51
Mean			625.25	30.52
S.D.			21.21	1.35

Table A37 Tensile test results of PTT/LLDPE/Na-EMAA 60/40/0.5

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.43	3.93	554.79	26.15
2	12.40	3.92	510.18	26.08
3	12.43	3.93	541.21	27.19
4	12.41	3.94	546.54	26.99
5	12.41	3.94	539.70	28.98
Mean			538.48	27.08
S.D.			16.89	1.17

Table A38 Tensile test results of PTT/LLDPE/Na-EMAA 60/40/0.1

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.38	3.98	527.70	26.68
2	12.42	3.97	544.19	26.55
3	12.42	3.95	507.79	26.93
4	12.42	3.95	523.18	27.04
5	12.36	3.94	546.08	26.16
Mean			529.79	26.67
S.D.			15.85	0.35

Table A39 Tensile test results of PTT/LLDPE/Na-EMAA 60/40/0.5

No.	Width (mm)	Thickness (mm)	Young's modulus (MPa)	Tensile strength (MPa)
1	12.38	3.95	512.20	25.08
2	12.41	3.94	527.53	25.03
3	12.40	3.93	507.06	25.69
4	12.40	3.96	471.28	24.14
5	12.45	3.96	496.02	25.19
Mean			502.82	25.03
S.D.			20.96	0.56

Izod impact strength was measured using a Zwick impact tester according to ASTM D256 test procedure with a 2.7 J pendulum. Results were averaged from ten specimens per each batch of the blends.

Table A40 Impact strength (KJ/m^2) of PTT, HDPE, and LLDPE

No.	Impact strength (KJ/m^2)		
	PTT	HDPE	LLDPE
1	7.1	12.3	48.0
2	6.6	11.7	43.3
3	7.1	11.5	50.7
4	7.1	11.8	46.6
5	7.1	12.9	48.6
6	6.6	11.8	46.1
7	7.1	11.6	43.5
8	6.7	12.3	46.9
9	7.1	12.3	50.7
10	7.1	11.1	51.8
Mean	7.0	11.9	47.6
S.D.	0.26	0.51	2.3

Table A41 Impact strength (KJ/m^2) of PTT/HDPE and PTT/LLDPE

No.	Impact strength (KJ/m^2)			
	PTT/HDPE		PTT/LLDPE	
	80/20	60/40	80/20	60/40
1	6.9	7.4	7.5	6.7
2	6.8	8.2	6.8	8.1
3	6.8	7.5	7.5	7.3
4	6.9	8.1	7.5	7.2
5	6.8	8.1	6.8	7.9
6	6.9	8.0	7.5	7.9
7	6.9	7.5	7.1	7.9
8	6.9	8.6	8.6	7.3
9	6.8	8.0	6.8	7.3
10	6.9	7.0	8.1	8.0
Mean	6.9	7.8	7.4	7.6
S.D.	0.05	0.47	0.58	0.46

Table A42 Impact strength (KJ/m^2) of PTT/HDPE/MAH-g-HDPE

No.	Impact strength (KJ/m^2)							
	PTT/HDPE/MAH-g-HDPE							
	80/20/0.1	80/20/0.5	80/20/1	80/20/5	60/40/0.1	60/40/0.5	60/40/1	60/40/5
1	7.5	7.5	6.8	7.4	7.9	7.9	7.6	7.6
2	7.6	6.8	6.9	7.5	8.0	7.8	8.6	7.5
3	6.9	7.4	7.4	7.1	7.5	8.0	8.1	7.5
4	7.5	6.8	7.4	7.1	7.9	8.0	7.6	8.2
5	7.5	7.5	7.4	7.1	7.5	8.0	8.1	7.5
6	6.9	7.4	7.5	7.5	7.9	8.6	8.0	7.5
7	6.6	7.4	7.4	7.4	7.5	7.6	7.6	7.5
8	6.9	7.5	7.4	7.1	7.9	8.0	7.6	7.5
9	6.9	7.5	7.4	7.5	7.9	8.0	7.5	8.4
10	7.5	7.4	7.4	7.4	7.9	8.0	7.6	7.5
Mean	7.2	7.3	7.3	7.3	7.8	8.0	7.8	7.7
S.D.	0.35	0.26	0.23	0.18	0.19	0.24	0.34	0.32

Table A43 Impact strength (KJ/m^2) of PTT/HDPE/Na-EMAA

No.	Impact strength (KJ/m^2)							
	PTT/HDPE/Na-EMAA							
	80/20/0.1	80/20/0.5	80/20/1	80/20/5	60/40/0.1	60/40/0.5	60/40/1	60/40/5
1	7.5	7.5	7.5	7.6	8.2	8.1	7.5	8.1
2	7.3	7.5	7.5	7.5	8.1	8.2	8.1	8.0
3	7.5	7.5	7.6	7.5	7.5	8.6	8.1	8.0
4	7.6	7.5	7.4	7.5	8.8	8.1	8.1	8.0
5	7.4	7.5	7.6	7.6	7.5	8.2	8.1	8.0
6	7.5	7.5	7.5	7.4	8.1	8.1	8.0	8.0
7	7.5	7.4	7.5	7.4	7.5	8.7	8.1	8.0
8	7.4	7.6	7.6	7.5	7.5	8.1	8.0	7.3
9	7.5	7.6	7.6	7.4	7.5	8.1	8.1	8.0
10	7.4	7.5	7.6	7.5	8.7	8.1	7.5	7.4
Mean	7.5	7.5	7.5	7.5	7.9	8.2	7.9	7.9
S.D.	0.08	0.05	0.07	0.07	0.52	0.25	0.23	0.27

Table A44 Impact strength (KJ/m^2) of PTT/LLDPE/MAH-g-HDPE

No.	Impact strength (KJ/m^2)							
	PTT/LLDPE/MAH-g-HDPE							
	80/20/0.1	80/20/0.5	80/20/1	80/20/5	60/40/0.1	60/40/0.5	60/40/1	60/40/5
1	7.5	7.5	8.2	7.5	7.4	8.2	7.3	7.9
2	8.2	8.1	8.8	8.8	7.4	7.5	7.4	7.3
3	7.5	7.5	8.2	7.5	8.6	8.1	7.3	7.9
4	8.2	8.1	7.6	7.9	8.0	7.9	8.6	7.3
5	8.7	8.1	8.8	7.5	7.4	8.6	7.3	8.0
6	8.7	7.5	8.7	7.6	8.0	7.5	7.3	7.3
7	8.7	8.1	8.8	8.1	8.0	7.5	8.1	7.3
8	8.7	7.5	7.6	8.8	8.1	8.1	7.9	7.3
9	7.5	8.6	7.6	8.1	8.0	8.1	7.3	7.3
10	7.4	8.7	8.1	7.5	8.0	7.5	7.3	8.6
Mean	8.1	8.0	8.2	7.9	7.9	7.9	7.6	7.6
S.D.	0.59	0.47	0.53	0.53	0.37	0.37	0.46	0.46

Table A45 Impact strength (KJ/m^2) of PTT/LLDPE/Na-EMAA

No.	Impact strength (KJ/m^2)							
	PTT/LLDPE/Na-EMAA							
	80/20/0.1	80/20/0.5	80/20/1	80/20/5	60/40/0.1	60/40/0.5	60/40/1	60/40/5
1	6.9	7.2	8.7	7.4	8.6	7.8	7.5	8.6
2	7.5	8.8	8.1	8.1	8.0	6.6	8.0	8.0
3	8.7	6.9	7.5	7.4	7.3	7.8	8.1	8.0
4	8.1	7.5	7.5	8.8	8.6	8.4	8.0	8.0
5	7.4	6.9	7.5	7.5	8.6	7.8	8.1	8.0
6	8.7	8.7	8.1	8.1	8.6	7.3	8.0	6.5
7	6.9	7.4	7.5	7.5	7.9	9.0	7.4	8.0
8	6.9	8.1	8.1	7.5	8.0	8.4	8.0	8.0
9	8.8	8.7	6.9	8.7	6.9	7.8	8.1	8.0
10	6.8	8.6	8.6	7.3	8.0	9.0	8.0	8.0
Mean	7.7	7.9	7.8	7.8	8.0	8.0	7.9	7.9
S.D.	0.83	0.77	0.57	0.57	0.59	0.75	0.25	0.52

Appendix B Rheological Properties

All blends are measured for the shear viscosity by the capillary rheometer (CEAST Rheolgic 5000). The investigation is recorded at temperature 250°C with a temperature tolerance is set at ±0.5°C. The inner diameter of the barrel is 15 mm, while the inner diameter and the length of the die were 1 and 20 mm (i.e. L/D = 20), respectively. Approximately 50 ml pellets were inserted to the bore and pressed well. After preheating 300 seconds, an automatic data collection system is used to analyze the test results.

Table B1 Melt viscosity of pure polymer

shear rate (s^{-1})	Apparent Viscosity (Pa.s)		
	PTT	HDPE	LLDPE
50	183.75	622.25	183.75
100	176.75	502.13	169.75
200	155.56	374.88	145.00
400	141.47	272.31	120.25
800	120.25	190.98	95.48
1200	104.92	153.84	81.93
1600	94.16	131.30	72.95
3200	71.62	87.09	52.83
6400	49.96	56.37	36.36

Table B2 Melt viscosity of uncompatibilized blends

shear rate (s^{-1})	Apparent Viscosity (Pa.s)			
	PTT/HDPE 80/20	PTT/HDPE 60/40	PTT/LLDPE 80/20	PTT/LLDPE 60/40
50	325.25	353.50	239.50	190.25
100	254.63	290.00	194.52	166.00
200	198.00	251.06	157.18	133.81
400	160.91	196.28	123.50	108.53
800	122.02	147.66	87.32	84.76
1200	100.79	120.25	70.69	70.38
1600	85.77	101.68	60.81	61.34
3200	58.57	68.08	41.32	42.00
6400	39.01	45.09	27.76	27.60

Table B3 Melt viscosity of PTT/HDPE : 80/20 blends with different MAH-g-HDPE content

shear rate (s^{-1})	Apparent Viscosity (Pa.s) of PTT/HDPE : 80/20 with MAH-g-HDPE				
	0 phr	0.1 phr	0.5 phr	1 phr	5 phr
50	325.25	367.75	396.00	410.25	594.00
100	254.63	311.13	325.38	346.50	466.75
200	198.00	254.63	265.25	286.44	360.75
400	160.91	201.59	208.66	222.81	268.78
800	122.02	146.77	152.08	160.03	192.75
1200	100.79	120.25	123.19	129.68	153.84
1600	85.77	102.56	105.22	110.08	130.41
3200	58.57	68.52	70.29	73.61	85.98
6400	39.01	45.09	46.42	48.30	56.04

Table B4 Melt viscosity of PTT/HDPE : 60/40 blends with different MAH-g-HDPE content

shear rate	Apparent Viscosity (Pa.s) of PTT/HDPE : 60/40 with MAH-g-HDPE				
(s^{-1})	0 phr	0.1 phr	0.5 phr	1 phr	5 phr
50	353.50	375.00	410.25	424.25	594.00
100	290.00	311.13	339.50	353.63	473.88
200	251.06	244.00	268.75	272.31	350.13
400	196.28	187.44	201.59	206.88	256.41
800	147.66	137.92	145.00	147.66	178.59
1200	120.25	113.17	117.89	121.43	142.65
1600	101.68	96.38	99.47	103.45	120.69
3200	68.08	63.88	66.75	68.97	79.57
6400	45.09	42.00	43.77	45.09	51.61

Table B5 Melt viscosity of PTT/LLDPE : 80/20 blends with different MAH-g-HDPE content

shear rate	Apparent Viscosity (Pa.s) of PTT/LLDPE : 80/20 with MAH-g-HDPE				
(s^{-1})	0 phr	0.1 phr	0.5 phr	1 phr	5 phr
50	239.50	226.25	339.50	311.00	466.75
100	194.52	205.13	282.88	261.63	353.63
200	157.18	173.25	226.31	208.63	282.94
400	123.50	148.53	176.81	166.22	212.19
800	87.32	116.70	127.31	122.89	153.84
1200	70.69	94.31	103.74	99.02	123.78
1600	60.81	80.46	87.98	84.44	106.10
3200	41.32	53.93	60.13	57.25	72.50
6400	27.76	36.25	39.90	38.35	47.97

Table B6 Melt viscosity of PTT/LLDPE : 60/40 blends with different MAH-g-HDPE content

shear rate	Apparent Viscosity (Pa.s) of PTT/LLDPE : 60/40 with MAH-g-HDPE				
(s^{-1})	0 phr	0.1 phr	0.5 phr	1 phr	5 phr
50	190.25	212.00	226.25	240.00	367.75
100	166.00	176.75	190.88	198.00	290.00
200	133.81	141.44	155.56	159.13	229.88
400	108.53	114.94	120.25	130.84	176.81
800	84.76	91.06	91.95	101.67	128.20
1200	70.38	77.22	78.98	84.29	104.92
1600	61.34	67.20	70.73	73.83	90.19
3200	42.00	46.86	49.07	50.84	61.01
6400	27.60	31.17	33.05	33.93	41.11

Table B7 Melt viscosity of PTT/HDPE : 80/20 blends with different Na-EMAA content

shear rate	Apparent Viscosity (Pa.s) of PTT/HDPE : 80/20 with Na-EMAA				
(s^{-1})	0 phr	0.1 phr	0.5 phr	1 phr	5 phr
50	325.25	367.75	410.25	424.25	381.75
100	254.63	304.13	332.38	332.38	318.25
200	198.00	251.06	265.25	268.75	247.56
400	160.91	196.28	208.66	210.44	192.75
800	122.02	147.66	151.19	151.19	142.34
1200	100.79	119.06	124.38	123.19	113.76
1600	85.77	102.12	105.22	105.22	98.14
3200	58.57	69.19	70.95	70.73	67.64
6400	39.01	46.20	46.75	46.75	45.09

Table B8 Melt viscosity of PTT/HDPE : 60/40 blends with different Na-EMAA content

shear rate	Apparent Viscosity (Pa.s) of PTT/HDPE : 60/40 with Na-EMAA				
(s^{-1})	0 phr	0.1 phr	0.5 phr	1 phr	5 phr
50	353.50	353.50	380.00	438.50	438.50
100	290.00	275.75	297.00	332.38	346.50
200	251.06	219.25	240.50	258.13	272.31
400	196.28	171.53	182.13	198.03	203.34
800	147.66	127.31	134.39	143.23	145.89
1200	120.25	104.92	109.64	116.12	116.71
1600	101.68	89.74	94.16	99.02	100.35
3200	68.08	61.67	63.22	66.31	66.98
6400	45.09	41.23	41.67	43.55	44.10

Table B9 Melt viscosity of PTT/LLDPE : 80/20 blends with different Na-EMAA content

shear rate	Apparent Viscosity (Pa.s) of PTT/LLDPE : 80/20 with Na-EMAA				
(s^{-1})	0 phr	0.1 phr	0.5 phr	1 phr	5 phr
50	239.50	198.00	254.50	297.00	297.00
100	194.52	198.00	233.38	254.63	254.63
200	157.18	176.81	187.44	208.63	201.56
400	123.50	150.31	150.31	169.75	175.06
800	87.32	115.83	116.70	122.89	126.44
1200	70.69	93.72	94.90	100.79	101.97
1600	60.81	80.46	80.90	85.32	85.77
3200	41.32	54.60	55.70	57.91	57.91
6400	27.76	37.14	37.47	38.68	38.68

Table B10 Melt viscosity of PTT/LLDPE : 60/40 blends with different Na-EMAA content

shear rate (s^{-1})	Apparent Viscosity (Pa.s) of PTT/LLDPE : 60/40 with Na-EMAA				
	0 phr	0.1 phr	0.5 phr	1 phr	5 phr
50	190.25	254.50	254.50	212.00	240.50
100	166.00	205.13	205.13	190.88	198.00
200	133.81	166.19	166.19	162.69	166.19
400	108.53	136.16	137.91	130.84	136.16
800	84.76	102.56	104.33	101.67	103.44
1200	70.38	87.82	86.65	84.29	86.05
1600	61.34	75.59	74.71	73.83	73.83
3200	42.00	52.16	51.50	50.62	50.84
6400	27.60	34.37	34.48	33.82	34.37

The weight of the polymer flow for 10 min was measured by a melt flow indexer under a 2.16-kg load at 250 °C according to ASTM D1238 test procedure.

Table B11 Melt flow index

No.	Formulas	ratio	Weight of pellets (g)	Weight of extrudates (g/30s)			MFI (g/10min)				
				1	2	3	1	2	3	average	S.D.
1	PTT/HDPE	80/20	6.80	0.94	0.92	0.96	18.80	18.40	19.20	18.80	0.40
2.	PTT/LLDPE	80/20	6.89	1.15	1.19	1.17	23.00	23.80	23.40	23.40	0.40
3.	PTT/HDPE	60/40	6.58	0.69	0.71	0.72	13.80	14.20	14.40	14.13	0.31
4.	PTT/LLDPE	60/40	6.48	1.59	1.62	1.60	31.80	32.40	32.00	32.07	0.31
5	PTT/HDPE/MAH-g-HDPE	80/20/0.1	6.72	0.93	1.04	1.00	18.60	20.80	20.00	19.80	1.11
6	PTT/HDPE/MAH-g-HDPE	80/20/0.5	6.56	0.87	0.94	0.96	17.40	18.80	19.20	18.47	0.95
7.	PTT/HDPE/MAH-g-HDPE	80/20/1	6.95	0.80	0.86	0.85	16.00	17.20	17.00	16.73	0.64
8.	PTT/HDPE/MAH-g-HDPE	80/20/5	6.61	0.50	0.52	0.51	10.00	10.40	10.20	10.20	0.20
9	PTT/HDPE/MAH-g-HDPE	60/40/0.1	6.85	0.71	0.67	0.70	14.20	13.40	14.00	13.87	0.42
10.	PTT/HDPE/MAH-g-HDPE	60/40/0.5	6.45	0.69	0.69	0.68	13.80	13.80	13.60	13.73	0.12
11.	PTT/HDPE/MAH-g-HDPE	60/40/1	6.30	0.58	0.60	0.60	11.60	12.00	12.00	11.87	0.23
12.	PTT/HDPE/MAH-g-HDPE	60/40/5	6.39	0.24	0.27	0.25	4.80	5.40	5.00	5.07	0.31
13.	PTT/HDPE/Na-EMAA	80/20/0.1	6.55	1.02	1.05	1.07	20.40	21.00	21.40	20.93	0.50
14.	PTT/HDPE/ Na-EMAA	80/20/0.5	6.84	0.94	0.95	0.94	18.80	19.00	18.80	18.87	0.12
15.	PTT/HDPE/ Na-EMAA	80/20/1	7.24	0.82	0.82	0.80	16.40	16.40	16.00	16.27	0.23
16.	PTT/HDPE/ Na-EMAA	80/20/5	6.86	0.66	0.67	0.68	13.20	13.40	13.60	13.40	0.20
17.	PTT/HDPE/ Na-EMAA	60/40/0.1	6.46	0.72	0.72	0.72	14.40	14.40	14.40	14.40	0.00
18.	PTT/HDPE/ Na-EMAA	60/40/0.5	6.25	0.69	0.66	0.68	13.80	13.20	13.60	13.53	0.31
19.	PTT/HDPE/ Na-EMAA	60/40/1	6.20	0.61	0.60	0.60	12.20	12.00	12.00	12.07	0.12
20.	PTT/HDPE/ Na-EMAA	60/40/5	6.23	0.54	0.53	0.55	10.80	10.60	11.00	10.80	0.20
21.	PTT/LLDPE/MAH-g-HDPE	80/20/0.1	6.58	1.24	1.22	1.26	24.80	24.40	25.20	24.80	0.40
22.	PTT/LLDPE/MAH-g-HDPE	80/20/0.5	6.65	1.15	1.20	1.17	23.00	24.00	23.40	23.47	0.50
23.	PTT/LLDPE/MAH-g-HDPE	80/20/1	6.58	1.05	1.06	1.06	21.00	21.20	21.20	21.13	0.12
24.	PTT/LLDPE/MAH-g-HDPE	80/20/5	6.66	0.75	0.74	0.77	15.00	14.80	15.40	15.07	0.31
25.	PTT/LLDPE/MAH-g-HDPE	60/40/0.1	6.49	1.71	1.73	1.74	34.20	34.60	34.80	34.53	0.31
26.	PTT/LLDPE/MAH-g-HDPE	60/40/0.5	6.36	1.35	1.34	1.38	27.00	26.80	27.60	27.13	0.42
27.	PTT/LLDPE/MAH-g-HDPE	60/40/1	6.43	1.20	1.21	1.25	24.00	24.20	25.00	24.40	0.53
28.	PTT/LLDPE/MAH-g-HDPE	60/40/5	6.37	0.70	0.72	0.74	14.00	14.40	14.80	14.40	0.40
29.	PTT/LLDPE/Na-EMAA	80/20/0.1	6.50	1.23	1.27	1.24	24.60	25.40	24.80	24.93	0.42
30.	PTT/LLDPE/ Na-EMAA	80/20/0.5	6.60	1.05	1.09	1.08	21.00	21.80	21.60	21.47	0.42
31.	PTT/LLDPE/ Na-EMAA	80/20/1	6.77	0.99	1.05	1.04	19.80	21.00	20.80	20.53	0.64
32.	PTT/LLDPE/ Na-EMAA	80/20/5	6.82	0.86	0.87	0.88	17.20	17.40	17.60	17.40	0.20
33.	PTT/LLDPE/ Na-EMAA	60/40/0.1	6.35	1.52	1.54	1.56	30.40	30.80	31.20	30.80	0.40
34.	PTT/LLDPE/ Na-EMAA	60/40/0.5	6.49	1.54	1.52	1.53	30.80	30.40	30.60	30.60	0.20
35.	PTT/LLDPE/ Na-EMAA	60/40/1	6.42	1.33	1.37	1.39	26.60	27.40	27.80	27.27	0.61
36.	PTT/LLDPE/ Na-EMAA	60/40/5	6.34	1.26	1.21	1.24	25.20	24.20	24.80	24.73	0.50
37.	Pure PTT	100	7.07	1.43	1.23	1.34	28.60	24.60	26.80	26.67	2.00
38.	Pure HDPE	100	6.05	0.26	0.29	0.30	5.20	5.80	6.00	5.67	0.42
39.	Pure LLDPE	100	6.49	1.70	1.81	1.76	34.00	36.20	35.20	35.13	1.10

Appendix C Thermal Properties

Thermal analysis was carried out on a differential scanning calorimeter, DSC Q1000. All scans were made under nitrogen atmosphere to minimize oxidative degradation. The temperature calibration of the DSC was obtained by measuring the melting temperature of indium as a standard. 10 mg of samples were encapsulated in an aluminum pan, heated from -85°C to 275°C at a heating rate of 10°C/min, held for 1 min at this temperature to remove their thermal history, followed by cooling to -85°C at 10°C/min, and held for 5 min again. After that, samples reheat to 275°C with heating rate of 10°C/min. The crystallinity of the sample was also determined from a knowledge of the ratio of the melting enthalpy for 100% crystallinity of pure components. The absolute crystallinity of the blend was calculated using equation;

$$\chi_c = \frac{\Delta H \times 100\%}{\Delta H_f \times \text{wt.fraction}}$$

where; χ_c is the % weight fractional crystallinity, ΔH is the melting enthalpy of the component present in the blends, ΔHf is the heat o fusion for the 100% crystallinity of the pure component, (145 J/g for PTT, and 293 J/g for HDPE and LLDPE) (Piorkowska *et al.*, 2013).

Table C1 Summary of DSC results of PTT/HDPE/MAH-g-HDPE blends

Systems	ratio	Cooling						Heating							
		PE			PTT			PE				PTT			
		Onset (°C)	T_c (°C)	ΔH_c (J/g)	Onset (°C)	T_c (°C)	ΔH_c (J/g)	Onset (°C)	T_m (°C)	ΔH_m (J/g)	χ_c (%)	Onset (°C)	T_m (°C)	ΔH_m (J/g)	χ_c (%)
PTT	100	-	-	-	187.4	180.0	46.9	-	-	-	-	218.8	227.7	48.0	33.1
HDPE	100	120.2	118.7	191.1	-	-	-	123.7	132.4	208.9	71.3	-	-	-	-
PTT/HDPE	80/20	119.7	117.0	37.1	185.1	180.1	34.7	123.3	129.8	39.0	66.6	224.3	227.5	34.6	29.8
PTT/HDPE/MAH-g-HDPE	80/20/0.1	120.0	118.4	40.0	186.3	179.5	32.9	123.4	130.4	34.7	59.1	219.3	227.6	35.4	30.5
PTT/HDPE/MAH-g-HDPE	80/20/0.5	120.1	118.0	41.5	186.4	180.5	33.9	123.2	130.2	37.9	64.7	219.3	227.3	35.8	30.8
PTT/HDPE/MAH-g-HDPE	80/20/1	119.9	117.3	40.0	186.4	179.0	33.6	123.3	130.0	36.3	61.9	219.8	227.6	35.3	30.5
PTT/HDPE/MAH-g-HDPE	80/20/5	120.5	118.9	44.6	186.2	177.7	31.5	123.8	130.7	39.0	66.6	219.9	227.6	35.1	30.3
PTT/HDPE	60/40	119.7	118.5	76.6	183.1	177.0	25.9	124.5	130.8	81.3	69.4	222.3	227.3	24.7	28.4
PTT/HDPE/MAH-g-HDPE	60/40/0.1	119.9	118.7	78.7	182.6	177.1	24.2	124.4	130.9	76.1	65.0	220.3	227.5	26.1	30.0
PTT/HDPE/MAH-g-HDPE	60/40/0.5	120.0	1178.7	73.2	183.4	178.4	24.9	124.2	131.2	72.2	61.6	220.1	227.7	25.4	29.2
PTT/HDPE/MAH-g-HDPE	60/40/1	120.1	118.9	77.3	183.6	177.7	23.9	124.3	131.2	75.6	64.5	220.2	227.5	26.0	29.9
PTT/HDPE/MAH-g-HDPE	60/40/5	120.6	119.4	80.4	184.6	175.3	22.3	124.4	131.3	80.1	68.3	220.2	227.3	25.4	29.2

Table C2 Summary of DSC results of PTT/LLDPE/MAH-g-HDPE blends

Systems	ratio	Cooling						Heating							
		PE			PTT			PE				PTT			
		Onset (°C)	T_c (°C)	ΔH_c (J/g)	Onset (°C)	T_c (°C)	ΔH_c (J/g)	Onset (°C)	T_m (°C)	ΔH_m (J/g)	χ_c (%)	Onset (°C)	T_m (°C)	ΔH_m (J/g)	χ_c (%)
PTT	100	-	-	-	187.4	180.0	46.9	-	-	-	-	218.8	227.7	48.0	33.1
LLDPE	100	112.5	110.5	118.1	-	-	-	118.3	122.1	98.5	33.6	-	-	-	-
PTT/LLDPE	80/20	112.7	107.3	17.5	186.3	178.8	33.7	114.7	123.5	19.5	33.3	219.8	227.5	34.4	29.7
PTT/LLDPE/MAH-g-HDPE	80/20/0.1	113.7	110.3	17.7	185.7	178.5	35.4	116.1	122.8	15.8	27.0	219.7	227.4	35.9	31.0
PTT/LLDPE/MAH-g-HDPE	80/20/0.5	114.7	112.2	19.6	185.3	179.1	35.2	119.1	123.2	16.8	28.7	219.8	227.6	37.0	31.9
PTT/LLDPE/MAH-g-HDPE	80/20/1	115.3	112.8	20.8	186.1	179.1	34.2	119.7	123.5	18.2	31.1	219.7	227.4	35.5	30.6
PTT/LLDPE/MAH-g-HDPE	80/20/5	117.2	115.0	29.5	186.0	177.4	31.6	121.3	125.2	23.6	40.2	219.9	227.5	35.1	30.3
PTT/LLDPE	60/40	112.8	110.5	48.0	183.3	175.8	24.6	114.7	123.5	19.5	33.3	220.6	227.4	24.1	27.7
PTT/LLDPE/MAH-g-HDPE	60/40/0.1	114.1	112.3	48.8	184.3	173.9	23.4	119.4	122.7	36.7	31.3	220.6	227.3	25.4	29.2
PTT/LLDPE/MAH-g-HDPE	60/40/0.5	114.8	113.1	45.9	184.4	173.7	23.8	120.0	123.2	37.0	31.6	220.5	227.2	26.0	29.9
PTT/LLDPE/MAH-g-HDPE	60/40/1	115.2	113.4	46.7	180.2	170.4	23.5	120.1	123.4	36.7	31.3	220.6	227.2	25.1	28.8
PTT/LLDPE/MAH-g-HDPE	60/40/5	116.9	114.8	49.1	182.6	171.3	15.8	121.0	124.6	37.1	31.6	220.2	227.1	24.1	27.7

Table C3 Summary of DSC results of PTT/HDPE/Na-EMAA blends

Systems	ratio	Cooling						Heating							
		PE			PTT			PE				PTT			
		Onset (°C)	T_c (°C)	ΔH_c (J/g)	Onset (°C)	T_c (°C)	ΔH_c (J/g)	Onset (°C)	T_m (°C)	ΔH_m (J/g)	χ_c (%)	Onset (°C)	T_m (°C)	ΔH_m (J/g)	χ_c (%)
PTT	100	-	-	-	187.4	180.0	46.9	-	-	-	-	218.8	227.7	48.0	33.1
HDPE	100	120.2	118.7	191.1	-	-	-	123.7	132.4	208.9	71.3	-	-	-	-
PTT/HDPE	80/20	119.7	117.0	37.1	185.1	180.1	34.7	123.3	129.8	39.0	66.6	224.3	227.5	34.6	29.8
PTT/HDPE/Na-EMAA	80/20/0.1	118.9	114.0	32.5	187.1	180.0	35.0	123.4	128.9	34.2	58.4	219.7	227.4	36.8	31.8
PTT/HDPE/ Na-EMAA	80/20/0.5	118.9	115.1	34.8	188.0	182.1	35.6	123.4	129.3	36.0	61.4	218.9	227.5	35.8	30.9
PTT/HDPE/ Na-EMAA	80/20/1	119.0	115.4	34.3	188.7	184.4	35.6	123.4	129.3	34.8	59.3	217.7	227.3	37.5	32.3
PTT/HDPE/ Na-EMAA	80/20/5	119.7	116.6	33.2	194.2	190.8	36.0	123.1	129.9	32.8	55.9	219.9	226.5	37.7	32.5
PTT/HDPE	60/40	119.7	118.5	76.6	183.1	177.0	25.9	124.5	130.8	81.3	69.4	222.3	227.3	24.7	28.4
PTT/HDPE/ Na-EMAA	60/40/0.1	119.6	118.4	76.9	183.8	178.5	24.5	124.6	130.8	74.8	63.8	220.1	227.4	25.6	29.4
PTT/HDPE/ Na-EMAA	60/40/0.5	119.6	118.7	79.2	185.8	181.4	24.7	124.1	130.5	78.7	67.2	219.6	227.2	24.8	28.5
PTT/HDPE/ Na-EMAA	60/40/1	120.0	118.5	75.9	186.9	181.6	25.6	123.9	130.4	74.4	63.5	219.3	227.2	26.2	30.1
PTT/HDPE/ Na-EMAA	60/40/5	119.4	117.8	69.7	195.2	191.1	23.9	124.8	131.9	70.2	59.9	220.8	227.0	23.7	27.2

Table C4 Summary of DSC results of PTT/LLDPE/Na-EMAA blends

Systems	ratio	Cooling						Heating							
		PE			PTT			PE				PTT			
		Onset (°C)	T_c (°C)	ΔH_c (J/g)	Onset (°C)	T_c (°C)	ΔH_c (J/g)	Onset (°C)	T_m (°C)	ΔH_m (J/g)	χ_c (%)	Onset (°C)	T_m (°C)	ΔH_m (J/g)	χ_c (%)
PTT	100	-	-	-	187.4	180.0	46.9	-	-	-	-	218.8	227.7	48.0	33.1
LLDPE	100	112.5	110.5	118.1	-	-	-	118.3	122.1	98.5	33.6	-	-	-	-
PTT/LLDPE	80/20	112.7	107.3	17.5	186.3	178.8	33.7	114.7	123.5	19.5	33.3	219.8	227.5	34.4	29.7
PTT/LLDPE/Na-EMAA	80/20/0.1	112.7	102.8	19.0	186.1	178.0	34.2	114.2	123.4	16.3	27.7	219.8	227.6	36.8	31.7
PTT/LLDPE/ Na-EMAA	80/20/0.5	112.4	105.8	17.4	186.7	182.3	35.0	113.6	123.3	15.1	25.8	218.8	227.3	36.5	31.5
PTT/LLDPE/ Na-EMAA	80/20/1	108.3	101.1	15.9	187.9	182.4	36.6	114.8	123.0	13.8	23.6	218.8	227.4	37.3	32.1
PTT/LLDPE/ Na-EMAA	80/20/5	112.5	105.1	19.7	195.0	190.8	35.0	112.7	123.4	15.6	26.7	220.0	226.7	36.0	31.0
PTT/LLDPE	60/40	112.8	110.5	48.0	183.3	175.8	24.6	117.9	121.7	39.0	33.3	220.6	227.4	24.1	27.7
PTT/LLDPE/ Na-EMAA	60/40/0.1	117.1	111.1	50.1	183.6	174.1	24.2	117.4	124.1	38.8	33.1	220.6	227.3	26.1	30.0
PTT/LLDPE/ Na-EMAA	60/40/0.5	112.7	110.0	47.2	185.4	176.1	24.6	117.4	121.5	36.0	30.7	220.4	227.4	26.3	30.3
PTT/LLDPE/ Na-EMAA	60/40/1	112.8	110.2	46.2	187.9	183.9	25.9	117.6	121.6	33.1	28.2	218.2	227.1	27.5	31.6
PTT/LLDPE/ Na-EMAA	60/40/5	112.4	108.7	45.6	196.0	192.1	25.7	177.1	121.1	31.6	27.0	220.5	226.2	25.6	29.4

Appendix D Morphological Properties

Fracture micrographs were studies using a scanning electron microscope (JEOL, JSM-S410LV), operated at 15 kV. The sample fractured under liquid nitrogen. The specimens were then coated with gold to make samples electrically conductive. The number average diameter (d_n) was calculated using

$$d_n = \Sigma(n_i d_i)/\Sigma n_i$$

where; n_i is the number of droplet and d_i is the diameter of the ith droplet.

Table D1 The number average diameter (d_n) of dispersed phase of PTT/PE/MAH-g-HDPE

MAH-g-HDPE content (phr)	PTT/HDPE ratio		PTT/LLDPE ratio	
	80/20	60/40	80/20	60/40
0	2.99	3.57	2.13	3.43
0.1	1.07	2.57	1.73	1.62
0.5	1.79	1.17	1.36	2.18
1	2.27	1.22	1.77	1.29
5	2.06	1.07	1.31	1.66

Table D2 The number average diameter (d_n) of dispersed phase of PTT/PE/Na-EMAA

Na-EMAA content (phr)	PTT/HDPE ratio		PTT/LLDPE ratio	
	80/20	60/40	80/20	60/40
0	2.99	3.57	2.13	3.43
0.1	1.84	0.85	1.80	1.20
0.5	2.63	1.42	1.76	2.10
1	1.61	1.37	1.27	1.77
5	0.86	1.26	1.59	1.82

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Proceedings:

1. Chayapanja, W; Nithitanakul, M; and Grady, B.P. (2014, February 27) Mechanical and Rheological Properties of Poly(trimethylene terephthalate) (PTT)/Polyethylene Blend using Carboxylate as Compatibilizer. Proceedings of the 5th Research Symposium on Petrochemical and Materials Technology and the 20th PPC Symposium on Petroleum, Petrochemical, and Polymer, Bangkok, Thailand.

Presentations:

1. Chayapanja, W; Nithitanakul, M; and Grady, B.P. (2014, February 27) Investigation of Mechanical and Rheological Properties of Poly(trimethylene terephthalate)(PTT)/Polyethylene Blend using Carboxylate and Ionomer as compatibilizers. Paper presented at International Conference on Chemical and Environmental Engineering (2014), Barcelona, Spain.
2. Chayapanja, W; Nithitanakul, M; and Grady, B.P. (2014, February 27) Mechanical and Rheological Properties of Poly(trimethylene terephthalate) (PTT)/Polyethylene Blend using Carboxylate as Compatibilizer. Paper presented at the 5th Research Symposium on Petrochemical and Materials Technology and the 20th PPC Symposium on Petroleum, Petrochemical, and Polymer, Bangkok, Thailand.