

LAMPIRAN

Lampiran 1

Hasil Perhitungan Kerapatan Massa

Sampel F2:

F2	Mu (g)	Ma (g)	ρ (g/cm³)
1	4,05	3,53	1,124936
2	4,12	3,6	1,122128
3	4,06	3,54	1,124528
4	4,08	3,56	1,123719
5	4,02	3,5	1,126174
Max:	1,126174	Mean:	1,124297
Min:	1,122128	Std. :	0,001502

Sampel F3:

F3	Mu (g)	Ma (g)	ρ (g/cm³)
1	4,08	3,56	1,123719
2	4,17	3,65	1,120188
3	4,21	3,69	1,118673
4	4,06	3,54	1,124528
5	4,13	3,61	1,121735
Max:	1,124528	Mean:	1,121769
Min:	1,118673	Std. :	0,002424

Sampel F4:

F4	Mu (g)	Ma (g)	ρ (g/cm³)
1	5,4	3,67	1,442698
2	5,64	3,91	1,414327
3	5,38	3,65	1,44523
4	5,54	3,81	1,425714
5	5,41	3,68	1,441442
Max:	1,44523	Mean:	1,433882
Min:	1,414327	Std. :	0,013349

Sampel F5:

F5	Mu (g)	Ma (g)	ρ (g/cm³)
1	5,76	4,03	1,401409
2	5,67	3,94	1,411024
3	5,51	3,78	1,429247
4	5,62	3,89	1,416558
5	5,56	3,83	1,423389
Max:	1,429247	Mean:	1,416326
Min:	1,401409	Std. :	0,010811

Lampiran 2 Hasil Uji Tarik

Sampel F1:

Test Certificate

Plastics Tensile Test

Order No.....J1080466
 Teststandard.....ASTM D638typeIV
 Tester.....abd

Material.....PP
 Tested on.....2008-12-10
 Kondisi Uji.....24.1oC , RH 56%

Testing machine.....AGS-G
 Pretension.....0.01 N
 Gripped length.....65 mm
 Test speed 1.....0 % -> 5 mm/min

Directory.....J1080466pttePP C pvdf
 Parameterset.....ASTM D638 IV

Legend

BNo.....Batch number
 a.....Thickness
 b.....Width
 E.....E-Modulus
 "M".....Tensile strength

"Y".....Yield stress
 "Y".....Yield strain
 "B".....Strain at Break
 Comment.....Comment

Test No	BNo	a mm	b mm	E GPa	"M MPa	"Y MPa	"Y %	"B %	Comment
34	PP - 1	3.090	5.940	0.767	23.44	23.44	7.680	568.1	
91	PP-3	2.900	5.800	0.825	25.16	25.16	7.735	476.9	
92	PP-4	2.860	5.800	0.862	25.67	25.67	7.246	587.8	
93	PP-5	2.870	5.800	0.837	26.57	25.71	7.476	697.3	
Mean:		2.930	5.835	0.823	25.21	24.99	7.534	582.5	
Minimum:		2.860	5.800	0.767	23.44	23.44	7.246	476.9	
Maximum:		3.090	5.940	0.862	26.57	25.71	7.735	697.3	
Std.dev.:		0.108	0.070	0.040	1.316	1.066	0.222	90.49	
W(0.95) %:		5.865	1.909	7.781	8.306	6.788	4.691	24.72	
Values:		4	4	4	4	4	4	4	

Sampel F2:

Test Certificate

Plastics Tensile Test

Order No.....J1080115
 Teststandard.....ASTM D638typeIV
 Tester.....abd

Material.....PP EPDM C
 Tested on.....2008-11-27
 Kondisi Uji.....23.4oC , RH 62%

Testing machine.....AGS-G
 Pretension.....0.01 N
 Gripped length.....65 mm
 Test speed 1.....0 % -> 5 mm/min

Directory.....J1080466ptePP C pdf
 Parameterset.....ASTM D638 IV

Legend

BNo.....Batch number
 a.....Thickness
 b.....Width
 E.....E-Modulus
 "M.....Tensile strength

"Y.....Yield stress
 "Y.....Yield strain
 "B.....Strain at Break
 Fmax.....Maximum load
 Comment.....Comment

Test No	BNo	a mm	b mm	E GPa	"M MPa	"Y MPa	"Y %	"B %	Fmax kN	Comment
23	PP50% EPDM C-2	2.000	6.170	1.224	10.92	10.92	2.160	3.845		
24	PP50% EPDM C-3	1.980	6.130	1.402	13.18	13.18	2.100	3.066	0.135	
25	PP50% EPDM C-4	1.960	6.080	1.153	10.28	10.28	2.428	2.769	0.122	
26	PP50% EPDM C-5	2.010	6.080	1.265	11.09	11.09	2.428	4.091	0.135	
27	PP50% EPDM C-6	1.940	6.090	1.403	11.80	11.80	2.172	3.054	0.139	
Mean:		1.978	6.110	1.289	11.45	11.45	2.258	3.365	0.138	
Minimum:		1.940	6.080	1.153	10.28	10.28	2.100	2.769	0.122	
Maximum:		2.010	6.170	1.403	13.18	13.18	2.428	4.091	0.160	
Std.dev.:		0.029	0.039	0.111	1.106	1.106	0.158	0.570	0.014	
W(0.95) %:		1.797	0.800	10.66	11.99	11.99	8.684	21.02	12.25	
Values:		5	5	5	5	5	5	5	5	

Sampel F3:

Test Certificate

Plastics Tensile Test

Order No.....J1080115
 Teststandard.....ASTM D638typeIV
 Tester.....abd

Material.....PP EPDM C
 Tested on.....2008-11-27
 Kondisi Uji.....23.4oC , RH 62%

Testing machine.....AGS-G
 Pretension.....0.01 N
 Gripped length.....65 mm
 Test speed 1.....0 % -> 5 mm/min

Directory.....J1080466pttePP C pvdf
 Parameterset.....ASTM D638 IV

Legend

BNo.....Batch number
 a.....Thickness
 b.....Width
 E.....E-Modulus
 "M.....Tensile strength

"Y.....Yield stress
 "Y.....Yield strain
 "B.....Strain at Break
 Fmax.....Maximum load
 Comment.....Comment

Test No	BNo	a mm	b mm	E GPa	"M MPa	"Y MPa	"Y %	"B %	Fmax kN	Comment
28	PP50% EPDMC2-1	1.890	6.100	1.456	13.63	13.63	2.481	4.229	0.157	
29	PP50% EPDMC2-2	1.820	6.050	1.377	12.94	12.94	2.286	3.670	0.142	
31	PP50% EPDMC2-4	1.870	6.110	1.435	13.59	13.59	2.197	3.001	0.155	
32	PP50% EPDMC2-5	1.860	6.020	1.363	13.19	13.19	2.335	3.994	0.148	
33	PP50% EPDMC2-6	1.890	6.090	1.366	12.86	12.86	2.423	3.466	0.148	
Mean:		1.866	6.074	1.399	13.24	13.24	2.344	3.672	0.150	
Minimum:		1.820	6.020	1.363	12.86	12.86	2.197	3.001	0.142	
Maximum:		1.890	6.110	1.456	13.63	13.63	2.481	4.229	0.157	
Std.dev.:		0.029	0.038	0.043	0.358	0.358	0.112	0.476	6.03E-3	
W(0.95) %:		1.917	0.773	3.819	3.352	3.352	5.924	16.10	4.990	
Values:		5	5	5	5	5	5	5	5	

Sampel F4:

Test Certificate

Plastics Tensile Test

Order No.....J1080466
 Teststandard.....ASTM D638typeIV
 Tester.....abd

Material.....PP EPDM C3
 Tested on.....2008-04-03 11:28
 Kondisi Uji.....22.1oC , RH 62%

Testing machine.....AGS-G
 Pretension.....0.01 N
 Gripped length.....65 mm
 Test speed 1.....0 % -> 5 mm/min

Directory.....J1080466pttePP C pvdf
 Parameterset.....ASTM D638 IV

Legend

BNo.....Batch number
 a.....Thickness
 b.....Width
 E.....E-Modulus

"M.....Tensile strength
 "B.....Strain at Break
 Fmax.....Maximum load
 Comment.....Comment

Test No	BNo	a mm	b mm	E GPa	"M MPa	"B %	Fmax kN	Comment
35	PP14%EPDMC3-1	2.020	6.540	1.449	7.971	1.308	0.105	
36	PP14%EPDMC3-2	1.880	6.710	1.480	8.922	1.307	0.113	
37	PP14%EPDMC3-3	1.990	6.090	1.631	8.540	1.159	0.103	
39	PP14%EPDMC3-5	1.960	6.510	1.604	8.390	1.073	0.107	
40	PP14%EPDMC3-6	1.950	6.830	1.405	8.120	1.320	0.108	
Mean:		1.960	6.536	1.514	8.389	1.233	0.107	
Minimum:		1.880	6.090	1.405	7.971	1.073	0.103	
Maximum:		2.020	6.830	1.631	8.922	1.320	0.113	
Std.dev.:		0.052	0.281	0.099	0.372	0.112	3.44E-3	
W(0.95) %:		3.322	5.341	8.103	5.508	11.22	3.980	
Values:		5	5	5	5	5	5	

Sampel F5:

Test Certificate

Plastics Tensile Test

Order No.....J1080466
 Teststandard.....ASTM D638typeIV
 Tester.....abd

Material.....PP EPDM C4
 Tested on.....2008-04-03 11-28
 Kondisi Uji.....22.1oC , RH 62%

Testing machine.....AGS-G
 Pretension.....0.01 N
 Gripped length.....65 mm
 Test speed 1.....0 % -> 5 mm/min

Directory.....J1080466pttePP C pvdf
 Parameterset.....ASTM D638 IV

Legend

BNo.....Batch number
 a.....Thickness
 b.....Width
 E.....E-Modulus

"M.....Tensile strength
 "B.....Strain at Break
 Fmax.....Maximum load
 Comment.....Comment

Test No	BNo	a mm	b mm	E GPa	"M MPa	"B %	Fmax kN	Comment
41PP14%EPDMC4-1		2.010	6.930	1.410	7.868	1.362	0.110	
43PP14%EPDMC4-3		1.940	6.450	1.297	7.536	1.232	0.094	
44PP14%EPDMC4-4		2.000	6.720	1.471	7.634	1.214	0.103	
45PP14%EPDMC4-5		2.040	6.380	1.471	7.714	1.116	0.100	
46PP14%EPDMC4-6		2.060	6.630	1.434	7.552	1.043	0.103	
Mean:		2.010	6.622	1.417	7.661	1.193	0.102	
Minimum:		1.940	6.380	1.297	7.536	1.043	0.094	
Maximum:		2.060	6.930	1.471	7.868	1.362	0.110	
Std.dev.:		0.046	0.219	0.072	0.136	0.121	5.51E-3	
W(0.95) %:		2.830	4.115	6.284	2.203	12.63	6.704	
Values:		5	5	5	5	5	5	

Lampiran 3

Hasil Uji Tekuk

Sampel F1:

Test Certificate

Flexural Test

Order No.....J1080466
 Test Standard.....ASTM D790
 Tester.....abd

Material.....PP
 Tested on.....2008-12-10
 Kondisi Uji.....24oC,RH56%

Testing machine.....AGS-G
 Test speed 1.....0 % -> 1.729 mm/min

Directory.....J1080466ftPP C pvd
 Parameterset.....astm d790

Legend

BNo.....Batch number
 a.....Thickness
 b.....Width

Ls.....Support span
 Ef.....E-Modulus
 "fM.....Flexural strength

Test No	BNo	a mm	b mm	Ls mm	Ef GPa	"fM MPa
87	PP -1	4.070	12.23	65.12	1.126	40.33
88	PP -2	4.070	12.07	65.12	1.233	41.84
89	PP -3	4.050	11.72	64.80	1.131	40.45
90	PP -4	4.050	12.04	64.80	1.177	41.76
91	PP -5	4.050	11.86	64.80	1.123	41.80
Mean:		4.058	11.98	64.93	1.158	41.24
Minimum:		4.050	11.72	64.80	1.123	40.33
Maximum:		4.070	12.23	65.12	1.233	41.84
Std.dev.:		0.011	0.198	0.175	0.047	0.774
W(0.95) %:		0.335	2.047	0.335	5.075	2.330
Values:		5	5	5	5	5

Sampel F2:

Test Certificate

Flexural Test

Order No.....J1080466
 Test Standard.....ASTM D790
 Tester.....abd

Material.....PP C EPDM
 Tested on.....2008-11-27
 Kondisi Uji.....23oC,RH61%

Testing machine.....AGS-G
 Test speed 1.....0 % -> 1.708 mm/min

Directory.....J1080466ftPP C pvdf
 Parameterset.....astm d790

Legend

BNo.....Batch number
 a.....Thickness
 b.....Width

Ls.....Support span
 Ef.....E-Modulus
 "fM.....Flexural strength

Test No	BNo	a mm	b mm	Ls mm	Ef GPa	"fM MPa
22	PP50EPDM C-1	4.000	11.71	64.00	1.483	23.97
23	PP50EPDM C-1	4.000	12.01	64.00	2.030	24.32
24	PP50EPDM C-3	4.000	11.07	64.00	1.606	25.12
25	PP50EPDM C-4	4.000	11.95	64.00	1.730	25.03
26	PP50EPDM C-5	4.000	11.80	64.00	1.947	23.96
Mean:		4.000	11.71	64.00	1.759	24.48
Minimum:		4.000	11.07	64.00	1.483	23.96
Maximum:		4.000	12.01	64.00	2.030	25.12
Std.dev.:		0.000	0.376	0.000	0.229	0.563
W(0.95) %:		0.000	3.986	0.000	16.14	2.856
Values:		5	5	5	5	5

Sampel F3:

Test Certificate

Flexural Test

Order No.....J1080466
 Test Standard.....ASTM D790
 Tester.....abd

Material.....PP50 EPDM C2
 Tested on.....2008-11-28
 Kondisi Uji.....23.3oC,RH60%

Testing machine.....AGS-G
 Test speed 1.....0 % -> 1.674 mm/min

Directory.....J1080466ftPP C pvdf
 Parameterset.....astm d790

Legend

BNo.....Batch number
 a.....Thickness
 b.....Width

Ls.....Support span
 Ef.....E-Modulus
 "fM.....Flexural strength

Test No	BNo	a mm	b mm	Ls mm	Ef GPa	"fM MPa
32	PP50EPDMC2-1	3.930	11.86	62.88	1.904	20.17
33	PP50EPDMC2-2	3.920	11.99	62.72	2.229	21.25
34	PP50EPDMC2-3	3.920	12.04	62.72	1.962	18.92
35	PP50EPDMC2-4	3.920	11.87	62.72	1.632	18.94
36	PP50EPDMC2-5	3.920	12.08	62.72	1.671	18.21
Mean:		3.922	11.97	62.75	1.880	19.50
Minimum:		3.920	11.86	62.72	1.632	18.21
Maximum:		3.930	12.08	62.88	2.229	21.25
Std.dev.:		4.47E-3	0.099	0.072	0.242	1.207
W(0.95) %:		0.142	1.031	0.142	15.98	7.684
Values:		5	5	5	5	5

Sampel F4:

Test Certificate

Flexural Test

Order No.....J1080466
 Test Standard.....ASTM D790
 Tester.....abd

Material.....PP50 EPDM C3
 Tested on.....2008-11-28
 Kondisi Uji.....23.3oC,RH60%

Testing machine.....AGS-G
 Test speed 1.....0 % -> 1.725 mm/min

Directory.....J1080466fPP C pvdf
 Parameterset.....astm d790

Legend

BNo.....Batch number
 a.....Thickness
 b.....Width

Ls.....Support span
 Ef.....E-Modulus
 "fM.....Flexural strength

Test No	BNo	a mm	b mm	Ls mm	Ef GPa	"fM MPa
37	PP50EPDMC3-1	4.020	12.32	64.32	1.543	9.219
38	PP50EPDMC3-2	4.040	12.42	64.64	1.878	9.542
39	PP50EPDMC3-3	4.040	11.75	64.64	1.843	11.78
40	PP50EPDMC3-4	4.040	12.23	64.64	1.587	9.217
41	PP50EPDMC3-5	4.040	11.87	64.64	1.663	9.584
Mean:		4.036	12.12	64.58	1.703	9.868
Minimum:		4.020	11.75	64.32	1.543	9.217
Maximum:		4.040	12.42	64.64	1.878	11.78
Std.dev.:		8.94E-3	0.292	0.143	0.151	1.083
W(0.95) %:		0.275	2.993	0.275	10.99	13.62
Values:		5	5	5	5	5

Sampel F5:

Test Certificate

Flexural Test

Order No.....J1080466
 Test Standard.....ASTM D790
 Tester.....abd

Material.....PP C EPDM
 Tested on.....2008-11-27
 Kondisi Uji.....23oC,RH61%

Testing machine.....AGS-G
 Test speed 1.....0 % -> 1.704 mm/min

Directory.....J1080466ftPP C pvdf
 Parameterset.....astm d790

Legend

BNo.....Batch number
 a.....Thickness
 b.....Width

Ls.....Support span
 Ef.....E-Modulus
 "fM.....Flexural strength

Test No	BNo	a mm	b mm	Ls mm	Ef GPa	"fM MPa
27	PP50EPDM C7-1	4.030	12.56	64.48	2.376	16.32
28	PP50EPDM C7-2	4.060	12.38	64.96	2.878	17.55
29	PP50EPDM C7-3	4.120	11.84	65.92	2.647	17.50
30	PP50EPDM C7-4	4.020	12.18	64.32	1.375	17.47
31	PP50EPDM C7-5	3.990	11.54	63.84	2.760	18.05
Mean:		4.044	12.10	64.70	2.407	17.38
Minimum:		3.990	11.54	63.84	1.375	16.32
Maximum:		4.120	12.56	65.92	2.878	18.05
Std.dev.:		0.049	0.412	0.789	0.606	0.637
W(0.95) %:		1.513	4.223	1.513	31.26	4.552
Values:		5	5	5	5	5

Lampiran 4

Hasil Uji Konduktivitas Listrik

Data konduktivitas listrik:

Frekuensi (Hz)	σ (S/cm), S = Siemen = 1/Ohm			
	F2	F3	F4	F5
0.1	1.450E-02	6.588E-04	1.467E+01	2.500E+00
1	1.450E-02	6.600E-04	1.208E+01	2.472E+00
10	1.450E-02	6.599E-04	1.142E+01	2.468E+00
20	1.450E-02	6.629E-04	1.093E+01	2.464E+00
30	1.451E-02	6.614E-04	1.041E+01	2.465E+00
40	1.450E-02	6.612E-04	1.009E+01	2.444E+00
50	1.451E-02	6.607E-04	1.007E+01	2.450E+00
60	1.451E-02	6.616E-04	9.827E+00	2.447E+00
70	1.451E-02	6.614E-04	9.662E+00	2.408E+00
80	1.452E-02	6.620E-04	9.505E+00	2.409E+00
90	1.452E-02	6.622E-04	9.016E+00	2.418E+00
100	1.452E-02	6.616E-04	8.909E+00	2.423E+00
200	1.453E-02	6.632E-04	8.976E+00	2.413E+00
300	1.454E-02	6.643E-04	8.875E+00	2.402E+00
400	1.454E-02	6.637E-04	8.626E+00	2.394E+00
500	1.454E-02	6.637E-04	8.472E+00	2.398E+00
600	1.454E-02	6.641E-04	8.360E+00	2.396E+00
700	1.455E-02	6.638E-04	8.238E+00	2.394E+00
800	1.456E-02	6.641E-04	8.220E+00	2.397E+00
900	1.456E-02	6.644E-04	8.124E+00	2.393E+00
1000	1.456E-02	6.643E-04	8.049E+00	2.393E+00
2000	1.456E-02	6.638E-04	8.009E+00	2.394E+00
3000	1.457E-02	6.652E-04	7.888E+00	2.441E+00
4000	1.457E-02	6.659E-04	7.812E+00	2.437E+00
5000	1.457E-02	6.655E-04	7.746E+00	2.440E+00
6000	1.458E-02	6.650E-04	7.686E+00	2.440E+00
7000	1.458E-02	6.667E-04	7.636E+00	2.441E+00
8000	1.458E-02	6.645E-04	7.578E+00	2.439E+00
9000	1.459E-02	6.658E-04	7.509E+00	2.442E+00
10000	1.459E-02	6.663E-04	7.448E+00	2.438E+00
20000	1.461E-02	6.669E-04	7.456E+00	2.445E+00

Data konduktivitas listrik (*lanjutan*):

Frekuensi (Hz)	σ (S/cm), S = Siemen = 1/Ohm			
	F2	F3	F4	F6
30000	1.460E-02	6.672E-04	7.349E+00	2.437E+00
40000	1.460E-02	6.680E-04	7.356E+00	2.422E+00
50000	1.461E-02	6.693E-04	7.259E+00	2.398E+00
60000	1.462E-02	6.695E-04	7.205E+00	2.379E+00
70000	1.462E-02	6.696E-04	7.122E+00	2.344E+00
80000	1.462E-02	6.695E-04	6.976E+00	2.311E+00
90000	1.463E-02	6.709E-04	6.558E+00	2.276E+00
100000	1.463E-02	6.711E-04	6.570E+00	2.236E+00
σ (S/cm) rata-rata	1.456E-02	6.646E-04	8.607E+00	2.413E+00

Konduktivitas listrik rata-rata:

σ (S/cm)			
F2	F3	F4	F5
0.01456	0.0006646	8.607	2.413

Kurva hubungan konduktivitas dengan frekuensi:

