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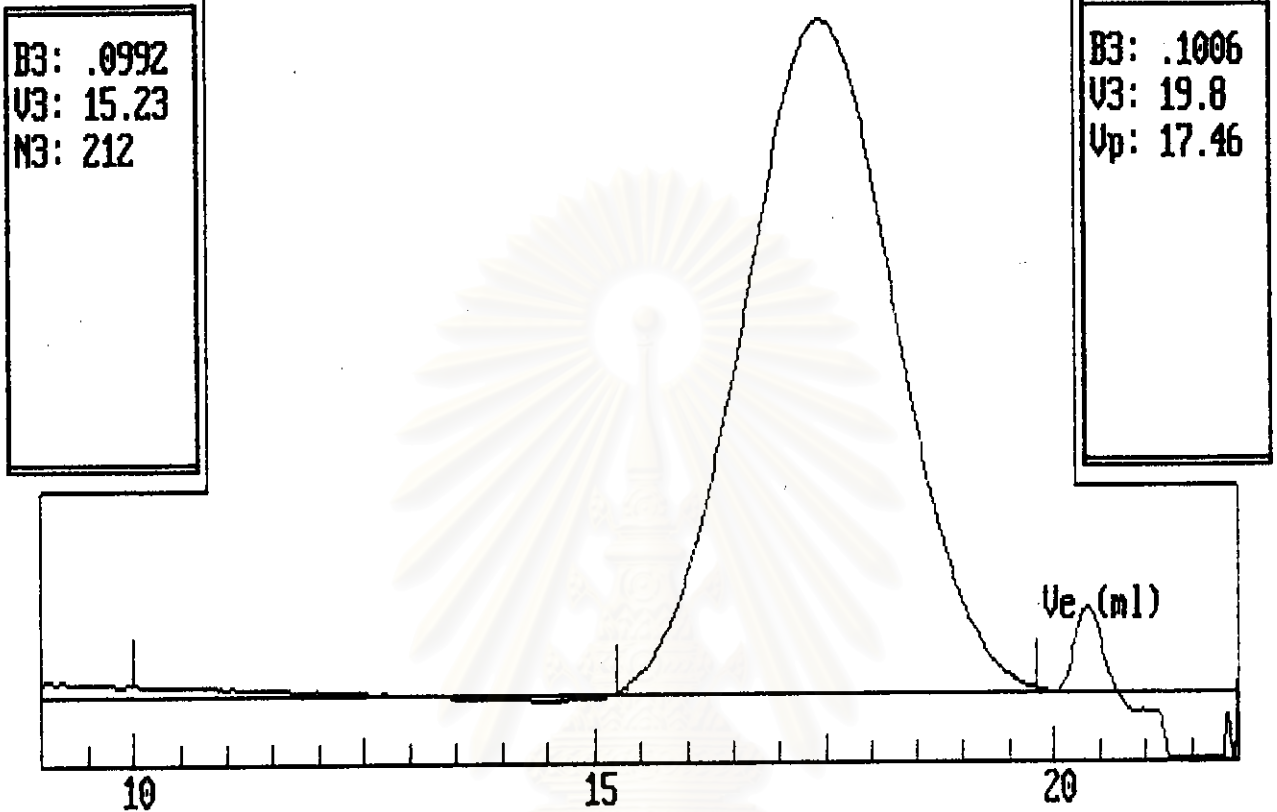
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Appendix A

HTPB

DETECTORS

Wed 01 OCT 1997 10:40:17



GPC Analysis

สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย

TECHNICAL SERVICE, NATIONAL METAL AND MATERIALS TECHNOLOGY CENTER

Version 3.00a - MULTIDETECTOR GPC SOFTWARE - revised 03/17/93 J.Lesec

HTPB

RESULTS

Wed 01 OCT 1997 10:13:18

Polystyrene - 2 # 1

RUN # 5 Inj # 1

CODE : INJ 32

DATE : Tue 30 SEP 1997

TIME : 13:48:42

Manual integration

Calibration # 1.003

Number of points: 227

Axial dispersion: NO

MOLECULAR WEIGHTS

UNIVERSAL

Peak mol. wt Mp : 4853

Number aver. Mn : 3244

Viscos. aver. Mv : 6123

Weight averag. Mw : 7538

Z average Mz : 16070

Polydispersity : 2.32

[n] (ml/g) : 18.36

Log(K) (M-H) : -.6305

Alpha (M-H) : .5

REFRACTOMETER C/c : 1

Peak elution : 17.473

Baseline : .099889

Area constant : 3.496

Conc. (g/ml) : .002828

dn/dc : 0

VISCOMETER Mn : 3116

Peak elution : 17.106

Baseline : .90016

[n]area (ml/g): 18.4

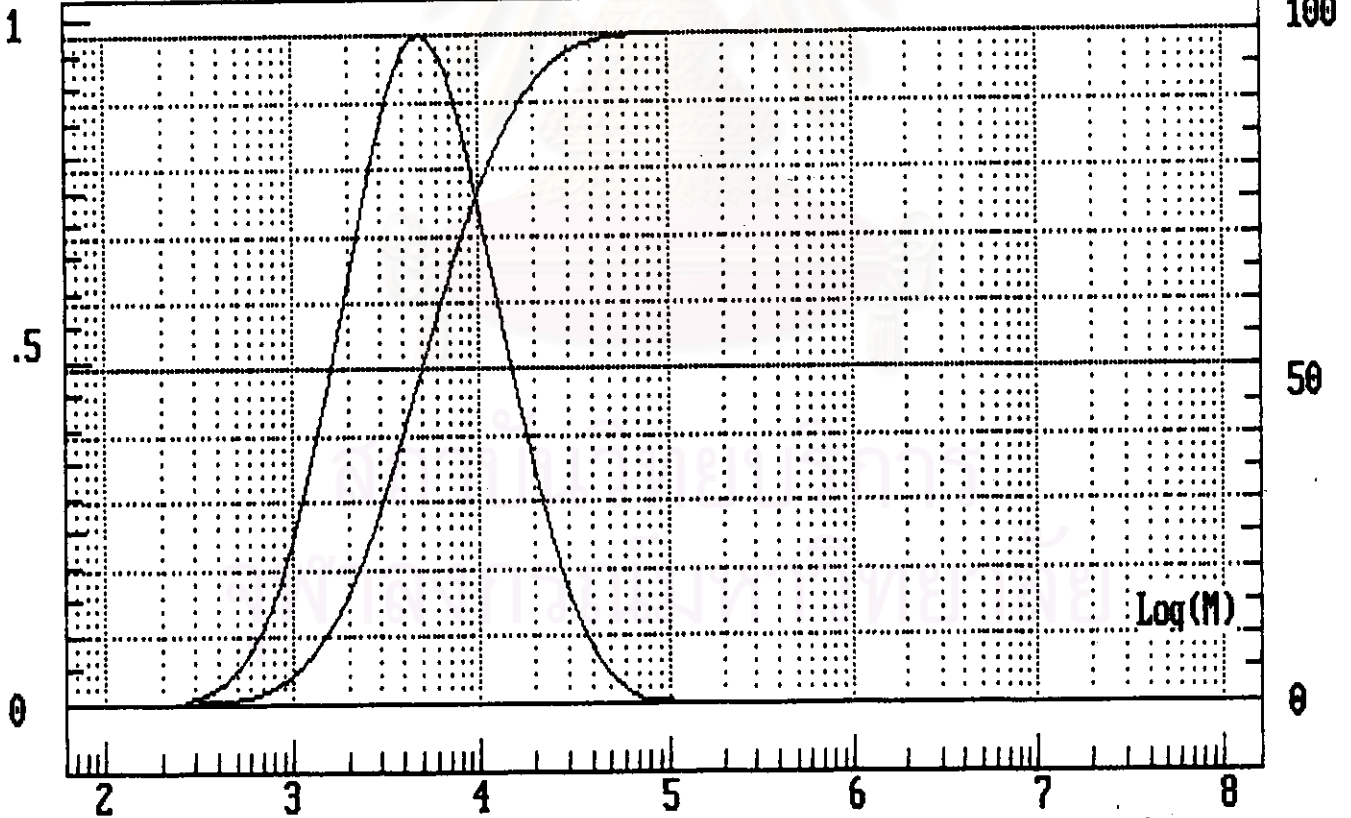
[n]peak(ml/g): 20.43

[n]exp (ml/g): 18.36

HTPB

DISTRIBUTION CURVE

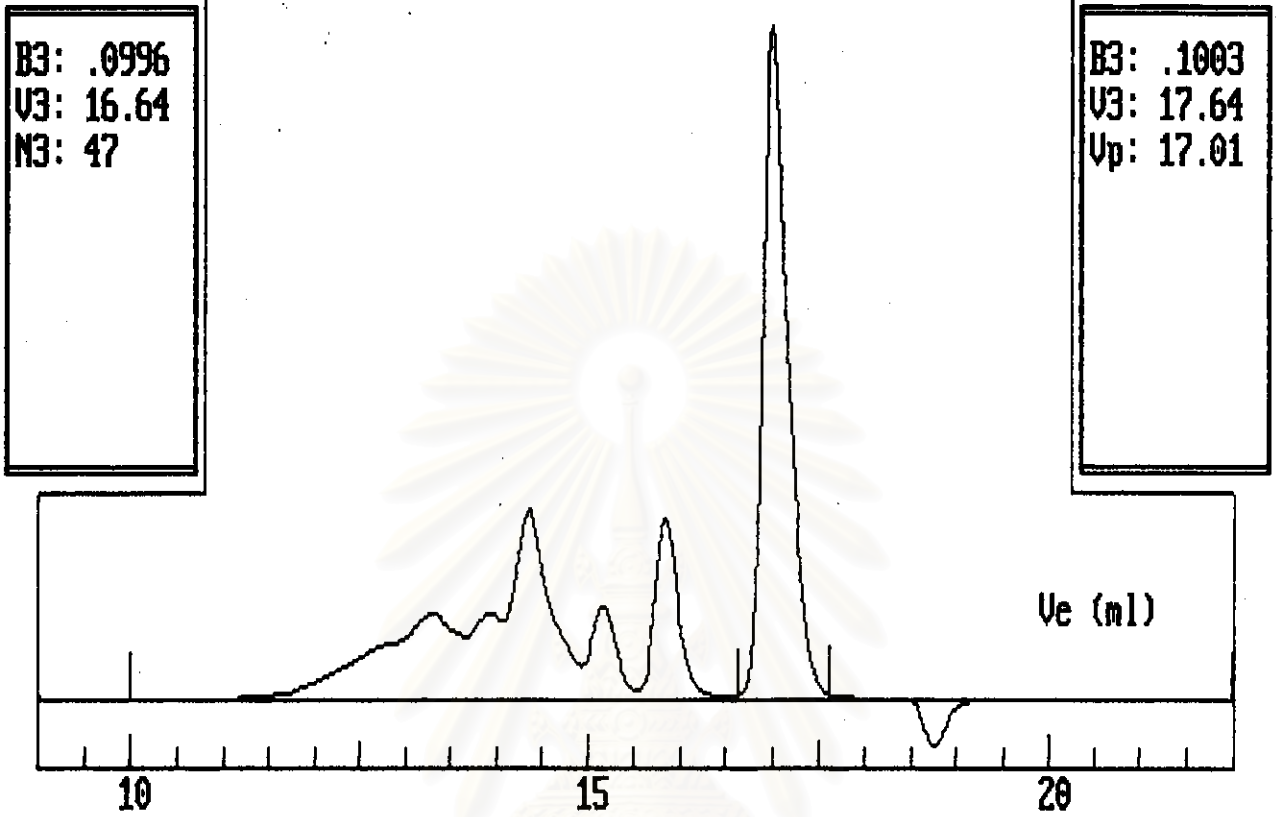
Wed 01 OCT 1997 10:13:21



MDI

DETECTORS

Mon 27 OCT 1997 09:56:55



สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย

TECHNICAL SERVICE, NATIONAL METAL AND MATERIALS TECHNOLOGY CENTER

Version 3.00a - MULTIDETECTOR GPC SOFTWARE - revised 03/17/93 J.Lesec

MDI

RESULTS

Mon 27 OCT 1997 10:01:54

Polystyrene - 2 # 1 RUN # 21 Inj # 13

CODE : INJ 134

DATE : Mon 20 OCT 1997 TIME : 22:02:44

Manual integration

Calibration # 1.003 Number of points: 48

Axial dispersion: NO

MOLECULAR WEIGHTS

STANDARD

UNIVERSAL

Peak mol. wt Mp : 223.1 223.1

Number aver. Mn : 218.4 218.4

Viscos. aver. Mv : 219.3 219.3

Weight averag. Mw : 219.4 219.4

Z average Mz : 220.4 220.4

Polydispersity : 1 1

[n] (ml/g) : 0 0

Log(K) (M-H) : 0 0

Alpha (M-H) : .7 .7

REFRACTOMETER C/c : 1

Peak elution : 17.015

Baseline : .1007

Area constant : .05256

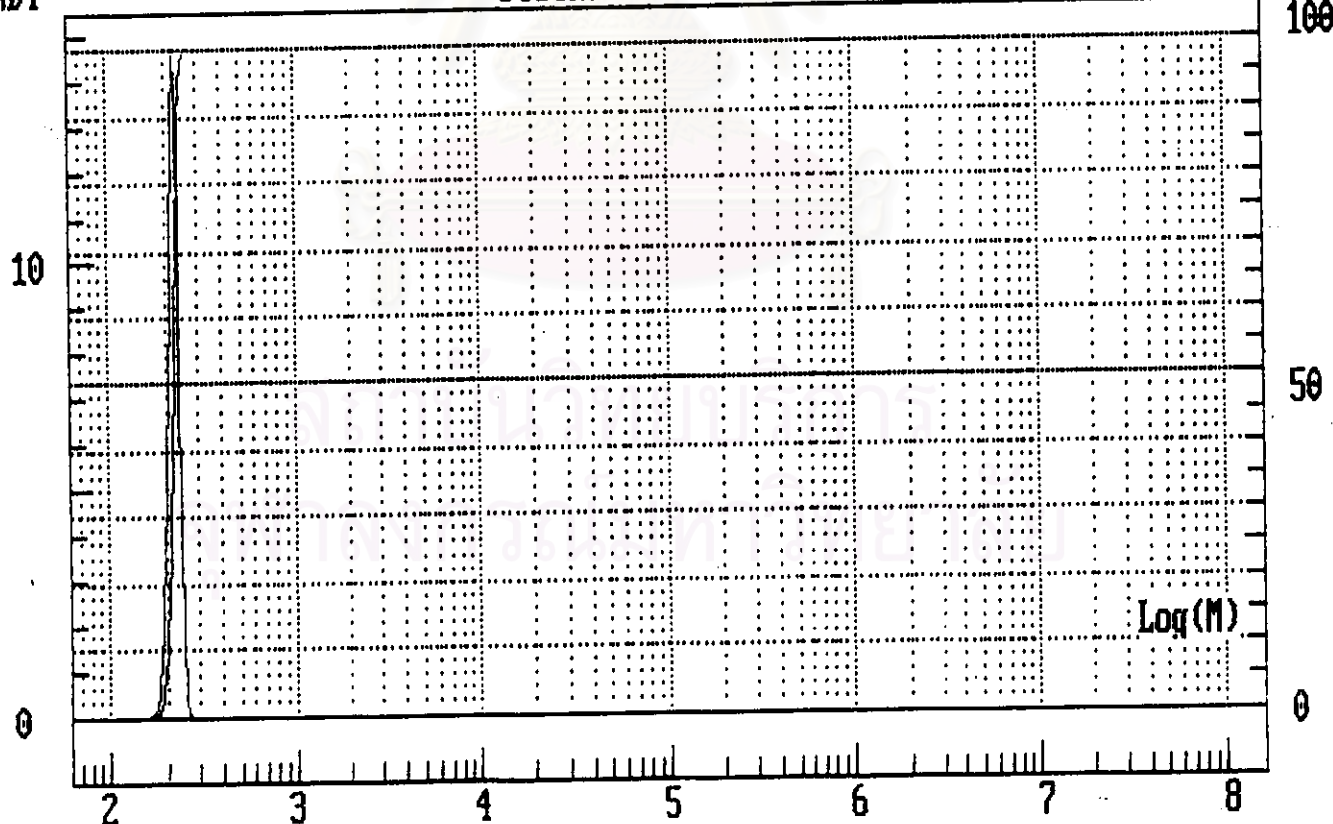
Conc. (g/ml) : .3

dn/dc : 0

MDI

DISTRIBUTION CURVE

Mon 27 OCT 1997 10:02:43



Appendix(B)

Weight ratio,OH:NCO	3:1	4:1	5:1	6:1	7:1	8:1	9:1	10:1	11:1
Series 1,2,3 and 4									
Modulus,N/mm ²	4.33	7.15	5.48	4.38	2.12	0.69	0.31	0.10	-
M _c ,10 ⁴	0.88	0.49	0.82	1.39	3.03	12.43	31.65	57.28	-
Modulus,N/mm ²	4.33	3.50	2.74	2.58	2.13	1.95	1.38	0.91	0.78
M _c ,10 ⁴	0.74	1.41	2.18	2.71	7.92	15.05	23.30	37.92	67.12
Modulus,N/mm ²	-	7.64	7.39	3.87	2.24	0.66	0.15	0.11	-
M _c ,10 ⁴	-	0.49	0.80	1.88	3.79	11.67	40.72	63.71	-
Modulus,N/mm ²	-	8.74	6.60	4.35	2.07	1.12	0.42	0.32	-
M _c ,10 ⁴	-	0.60	1.30	2.70	6.30	14.81	17.72	49.03	-
Tensile strength, N/mm ²									
1	2.77	4.72	3.76	2.98	2.34	1.72	1.37	0.81	-
2	1.70	1.30	0.99	0.91	0.86	0.73	0.66	0.47	0.45
3	-	2.35	1.85	1.63	1.30	0.85	0.50	0.31	-
4	-	2.27	1.75	1.43	1.07	0.82	0.76	0.67	-
% elongation at break									
1	90.82	89.99	87.53	81.56	127.00	224.00	326.00	444.00	-
2	39.43	28.34	27.40	25.04	56.32	59.92	61.53	54.99	489.33
3	-	39.12	30.97	55.25	91.48	148.54	234.00	288.00	-
4	-	36.74	32.20	37.96	59.58	89.80	147.70	151.26	-
Peel strength,N/mm ²									
1	1.54	1.16	1.31	0.71	0.65	0.46	0.58	0.34	-
2	1.73	1.89	1.20	1.03	0.94	0.50	0.38	0.35	0.23
3	-	1.16	1.03	1.06	0.75	0.39	0.33	0.20	-
4	-	1.75	1.90	1.41	1.21	1.05	0.61	0.52	-

Weight ratio OH:NCO 1,2,3,4	3:1	4:1	5:1	6:1	7:1	8:1	9:1	10:1	11:1
Shear strength (N/mm ²)									
1	1.05	0.75	0.68	0.55	0.59	0.72	0.69	0.26	-
2	0.99	0.75	0.66	0.58	0.49	0.45	0.35	0.27	0.014
3	-	1.31	1.04	0.72	0.53	0.43	0.49	0.34	-
4	-	0.86	0.96	0.75	0.65	0.57	0.33	0.37	-
Stiffness	0.33	0.72	0.56	0.33	0.29	0.14	0.24	0.20	-
V _c (10 ⁻⁵)	14.50	24.40	15.10	9.25	4.29	1.09	0.44	0.24	-
Stiffness	0.065	0.059	0.051	0.043	0.04	0.04	0.031	0.03	0.02
V _c (10 ⁻⁵)	11.70	6.75	4.52	3.56	1.21	0.64	0.41	0.27	0.14
Stiffness	-	0.138	0.11	0.101	0.078	0.067	0.051	0.011	-
V _c (10 ⁻⁵)	-	21.00	14.20	6.30	2.94	0.96	0.29	0.18	-
Stiffness	-	0.09	0.068	0.06	0.049	0.05	0.045	0.043	-
V _c (10 ⁻⁵)	-	16.00	8.78	4.45	1.88	0.82	0.67	0.25	-

สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย

Name of Person : Chee
 Sample Description : 3 Dec 23 97 Polyols
 Sample Form : Rectangular Shear test
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	469.7	0.8005	12.86	0.0222	52.07	17.29	23.1000	25.4000
2	766.8	1.130	24.37	1.127	22.13	30.37	26.0000	26.1000
3	638.4	1.044	14.15	0.0077	53.05	23.71	25.8000	23.7000
4	632.3	1.017	15.41	0.0444	64.57	31.76	21.3000	29.2000
5	711.6	1.138	22.61	0.0099	73.21	18.74	25.0000	25.0000
6	804.2	1.176	16.83	0.0263	54.16	28.53	26.1000	26.2000
mean	670.5	1.051	17.70	0.2063	53.20	25.06	24.5500	25.9333
Std dev	119.7	0.137	4.70	0.4513	17.31	6.12	1.9460	1.8392

231000 261000 258000 237000 213000 292000 250000 250000

Name of Person : Chee
 Sample Description : 4 Dec 23 97 Polyols
 Sample Form : Rectangular Shear test
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	463.9	0.6707	16.24	0.6625	12.56	21.72	26.3000	26.3000
2	631.9	0.8864	17.76	0.7307	6.887	29.78	25.1000	28.4000
3	644.5	0.8472	41.30	0.7694	18.42	26.66	25.7000	29.6000
4	519.2	0.6540	28.85	0.5589	10.94	24.47	27.0000	29.4000
5	557.3	0.7252	8.407	0.0327	28.43	24.48	26.5000	29.0000
6	489.5	0.7361	18.51	0.0575	75.50	23.82	26.6000	25.0000
mean	551.1	0.7533	21.84	0.4686	25.45	25.15	26.2000	27.9500
Std dev	74.4	0.0941	11.55	0.3358	25.63	2.76	0.6870	1.8738

Name of Person : Chee
 Sample Description : 5 Dec 23 97 Polyols
 Sample Form : Rectangular Shear test
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	454.6	0.6526	5.849	0.0206	39.62	26.86	25.8000	27.0000
2	542.9	0.7401	10.15	0.0220	43.61	23.70	26.2000	28.0000
3	380.4	0.5738	8.546	0.0179	51.46	24.50	25.4000	26.1000
4	509.6	0.7000	23.35	0.6890	16.47	25.09	26.0000	28.0000
5	469.3	0.6841	13.85	0.0468	50.35	26.23	24.5000	28.0000
6	491.0	0.7301	13.02	0.0289	68.23	23.77	25.0000	26.9000
mean	474.6	0.6801	12.46	0.1376	44.96	25.02	25.4833	27.3333
Std dev	55.6	0.0609	6.09	0.2703	17.06	1.30	0.6463	0.7941

Name of Person : Chee
 Sample Description : 6 Dec 23 97 Polyols
 Sample Form : Rectangular Shear test
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	414.7	0.5906	2.617	0.0251	26.89	21.30	26.3000	26.7000
2	386.2	0.5985	6.801	0.0315	52.39	22.39	25.4000	25.4000
3	289.2	0.4042	3.888	0.0293	41.18	21.16	26.4000	27.1000
4	382.1	0.5556	5.652	0.0252	24.72	21.62	25.1000	27.4000
5	416.2	0.5952	6.186	0.0388	33.09	20.55	25.9000	27.0000
6	339.7	0.5834	5.316	0.0340	54.63	21.90	25.3000	26.4000
mean	379.7	0.5546	6.077	0.0306	38.82	21.50	25.7333	26.6667
Std dev	46.7	0.0753	1.584	0.0053	12.75	0.64	0.5465	0.7090

Name of Person : Chee
 Sample Description : 7 Dec 23 97 Polyols
 Sample Form : Rectangular Shear test
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	360.9	0.5780	8.122	0.0355	58.22	19.80	25.7000	24.3000
2	373.5	0.5776	7.321	0.0307	31.81	14.95	26.5000	24.4000
3	421.3	0.6566	8.410	0.0175	72.28	19.22	26.3000	24.4000
4	403.4	0.6180	13.02	0.0237	58.95	18.46	25.7000	25.4000
5	416.9	0.6214	10.09	0.0300	41.47	16.29	26.0000	25.8000
6	357.0	0.5384	6.951	0.0263	37.84	15.70	26.0000	25.5000
mean	388.8	0.5983	8.985	0.0273	50.09	17.40	26.0333	24.9667
Std dev	28.6	0.0418	2.257	0.0063	15.46	2.02	0.3204	0.6713

Name of Person : Chee
 Sample Description : 8 Dec 23 97 Polyols
 Sample Form : Rectangular Shear test
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	515.9	0.7632	16.82	0.0431	52.63	14.65	26.0000	26.0000
2	435.2	0.6442	17.37	0.4377	79.45	17.33	27.7000	24.4000
3	469.1	0.6860	27.53	0.6625	13.29	19.54	26.3000	26.0000
4	506.5	0.7850	13.17	0.7827	12.05	18.88	25.4000	25.4000
5	432.8	0.7437	8.330	0.0271	50.92	18.26	25.3000	23.0000
6	434.8	0.7472	16.95	0.0352	65.47	15.47	25.3000	23.0000
mean	465.2	0.7283	16.70	0.3314	45.64	17.35	26.0000	24.6333
Std dev	37.8	0.0525	6.33	0.3429	27.53	1.94	0.9295	1.3938

Name of Person : Chee
 Sample Description : 9 Dec 23 97 Polyols
 Sample Form : Rectangular Shear test
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	412.3	0.6447	12.31	0.0565	46.43	11.49	26.1000	24.5000
2	478.8	0.7957	19.81	0.0318	44.16	9.599	25.5000	23.6000
3	419.9	0.7215	12.59	0.0300	58.38	11.97	26.1000	22.3000
4	396.4	0.6145	17.13	0.0261	44.89	10.77	25.6000	25.2000
5	472.3	0.7180	25.77	0.7157	24.97	10.21	26.0000	25.3000
6	344.9	0.6538	11.75	0.0413	34.00	8.911	25.0000	21.1000
mean	420.8	0.6914	16.57	0.1503	42.14	10.49	25.7167	23.6667
Std dev	49.9	0.0663	5.53	0.2772	11.45	1.15	0.4355	1.6836

Name of Person : Chee
 Sample Description : 10 Dec 23 97 Polyols
 Sample Form : Rectangular Shear test
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	186.7	0.3086	25.03	0.3029	22.47	3.511	25.1000	24.1000
2	176.0	0.2910	24.72	0.2872	23.01	3.138	25.1000	24.1000
3	161.3	0.2792	25.12	0.2772	24.26	2.848	24.8000	23.3000
4	120.6	0.1734	14.91	0.0023	118.1	2.548	25.4000	27.4000
mean	161.2	0.2630	22.47	0.2176	47.11	3.011	25.1000	24.7250
Std dev	28.9	0.0610	5.05	0.1435	47.34	0.411	0.2449	1.8228

Name of Person : Chee
 Sample Description : 3 Dec 23 97 Polyols
 Sample Form : Rectangular Adhesive test
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	173.0	1.502	29.58	1.078	59.18	23.88	20.2000	5.70000
2	187.7	1.706	21.57	0.0000	0.0000	30.20	20.0000	5.50000
3	219.0	1.991	36.18	1.981	34.90	25.09	20.0000	5.50000
④ final.	7.989	0.0798	0.4336	0.0000	0.0000	0.0000	20.0000	5.00000
mean	146.9	1.320	21.94	0.7647	23.52	19.79	20.0500	5.42500
Std dev	94.6	0.851	15.53	0.9568	28.91	13.48	0.1000	0.29861

Name of Person : Chee
 Sample Description : 4 Dec 23 97 Polyols
 Sample Form : Rectangular Adhesive test
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	128.4	1.153	8.632	0.1908	24.16	19.15	19.2000	5.80000
2	113.3	0.9913	8.220	0.1466	15.74	16.91	19.7000	5.80000
3	146.8	1.203	11.59	0.1935	30.00	18.71	20.0000	6.10000
4	150.4	1.297	12.05	0.1251	51.44	19.50	18.7000	6.20000
mean	134.7	1.161	10.12	0.1790	30.33	18.57	19.4000	5.97500
Std dev	17.2	0.128	1.98	0.0219	15.24	1.15	0.5715	0.20616

Name of Person : Chee
 Sample Description : 5 Dec 23 97 Polyols
 Sample Form : Rectangular Adhesive test
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	161.2	1.428	14.49	0.1401	38.81	16.88	19.8000	5.70000
2	136.5	1.238	10.78	0.1621	15.26	18.48	19.7000	5.60000
3	160.0	1.494	16.28	0.1509	18.69	17.68	20.2000	5.30000
4	137.3	1.236	11.99	0.1409	13.72	17.36	20.2000	5.50000
5	127.5	1.168	8.555	0.1301	21.84	20.64	19.5000	5.60000
6	143.4	1.317	11.24	0.1289	33.48	19.43	19.8000	5.50000
mean	144.3	1.313	12.22	0.1522	24.47	18.41	19.8667	5.53333
Std dev	13.6	0.126	2.76	0.0210	9.44	1.41	0.2805	0.13663

Name of Person : Chee
 Sample Description : 6 Dec 23 97 Polyols
 Sample Form : Rectangular Adhesive test
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	74.07	0.7576	4.459	0.1279	22.38	18.11	18.8000	5.20000
2	63.33	0.5952	4.890	0.2151	6.014	12.92	19.0000	5.60000
3	67.35	0.6688	5.857	0.1422	30.82	12.91	19.0000	5.30000
4	53.45	0.5303	3.597	0.2277	5.038	14.10	19.0000	5.30000
5	92.84	0.9219	5.739	0.1757	18.86	18.54	19.0000	5.30000
6	90.23	0.8285	6.828	0.1700	27.15	15.50	19.8000	5.50000
mean	73.54	0.7171	5.229	0.1264	18.38	15.35	19.1000	5.36667
Std dev	15.48	0.1469	1.143	0.0312	10.76	2.50	0.3521	0.15055

Name of Person : Chee
 Sample Description : 7 Dec 23 97 Polyols
 Sample Form : Rectangular Adhesive test
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	128.5	1.224	14.17	0.4972	29.03	13.17	20.2000	5.20000
2	43.82	0.4911	7.179	0.1235	17.89	0.0000	19.4000	4.60000
3	81.72	0.7446	10.65	0.1468	26.17	9.187	19.6000	5.60000
4	77.93	0.6637	8.064	0.1861	25.19	9.547	19.9000	5.90000
5	75.44	0.6985	14.18	0.1228	27.15	6.457	20.0000	5.40000
mean	81.49	0.7643	10.85	0.2153	25.09	7.673	19.8200	5.34000
Std dev	30.33	0.2740	3.29	0.1597	4.27	4.910	0.3194	0.48785

Name of Person : Chee
 Sample Description : 8 Dec 23 97 Polyols
 Sample Form : Rectangular Adhesive test
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	52.88	0.5114	14.20	0.1462	39.33	3.581	18.8000	5.50000
2	40.28	0.3711	10.07	0.0628	28.78	0.0000	20.1000	5.40000
3	49.29	0.4165	9.897	0.0812	22.70	0.0000	19.4000	6.10000
4	53.24	0.4670	13.39	0.1224	27.63	3.344	19.0000	6.00000
5	53.78	0.5082	15.02	0.0828	34.06	3.357	19.6000	5.40000
6	57.02	0.5280	11.05	0.1041	52.33	4.861	20.0000	5.40000
mean	51.08	0.4670	12.27	0.1009	34.14	2.524	19.4833	5.63333
Std dev	5.84	0.0619	2.21	0.0292	10.58	2.034	0.5231	0.32660

Name of Person : Chee
 Sample Description : 9 Dec 23 97 Polyols
 Sample Form : Rectangular Adhesive test
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	52.57	0.5139	18.17	0.1522	51.45	2.576	19.3000	5.30000
2	69.37	0.6912	47.60	0.6722	45.04	1.842	19.3000	5.20000
3	52.28	0.4990	18.97	0.1567	34.01	2.510	19.4000	5.40000
4	49.22	0.4530	22.83	0.3793	14.35	0.0000	19.4000	5.60000
5	66.58	0.6794	22.12	0.2979	35.73	5.914	19.6000	5.00000
6	72.99	0.6576	21.31	0.1799	52.03	5.614	18.5000	6.00000
mean	60.50	0.5824	25.17	0.3064	38.77	3.076	19.2500	5.41667
Std dev	10.29	0.1051	11.14	0.2007	14.17	2.282	0.3834	0.34833

Name of Person : Chee
 Sample Description : 10Dec 23 97 Polyols
 Sample Form : Rectangular Adhesive test
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	39.88	0.3600	50.25	0.3222	33.29	0.0000	19.1000	5.80000
2	37.17	0.3954	44.57	0.2533	7.934	0.0000	18.2000	5.00000
3	30.55	0.3025	52.08	0.1779	15.92	0.0000	18.7000	5.40000
4	28.20	0.2502	39.49	0.2198	29.41	0.0000	19.1000	5.90000
5	37.27	0.3733	70.44	0.3198	41.64	0.0000	19.2000	5.20000
6	36.78	0.3331	77.42	0.1604	10.22	0.0000	18.4000	6.00000
mean	34.97	0.3358	55.71	0.2422	23.07	0.0000	18.8833	5.55000
Std dev	4.54	0.0529	14.96	0.0691	13.67	0.0000	0.3061	0.40867

Name of Person : Chee
 Sample Description : 3 Dec 17 97, *Polys*
 Sample Form : Tension, Dumbells
 Temperature : 28.5

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Break (N/mm ²)	Strain @ Break (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)
1	146.8	3.230	108.4	0.0000	0.0000	0.3930	117.2	4.571
2	129.8	2.855	110.3	0.0000	0.0000	0.3621	121.8	3.934
3	135.5	2.879	97.61	0.0000	0.0000	0.0999	108.8	4.061
4	114.1	2.527	81.20	0.0000	0.0000	0.2542	83.92	4.130
5	115.3	2.554	81.42	0.0000	0.0000	0.2222	84.47	4.305
6	92.29	1.906	53.20	0.0000	0.0000	0.1727	54.81	4.308
7	173.1	3.575	122.4	0.0000	0.0000	0.3131	125.3	4.542
8	126.6	2.620	72.03	0.0000	0.0000	0.2353	86.76	4.789
mean	129.2	2.768	90.82	0.0000	0.0000	0.2566	97.89	4.330
Std dev	24.1	0.500	22.94	0.0000	0.0000	0.0972	24.42	0.289

Name of Person : Chee
 Sample Description : 4 Dec 17 97, *Polys*
 Sample Form : Tension, Dumbells
 Temperature : 28.5

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Break (N/mm ²)	Strain @ Break (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)
1	92.29	4.716	95.17	0.0000	0.0000	4.521	88.45	6.936
2	96.12	4.401	94.51	0.0000	0.0000	4.052	83.79	6.408
3	88.59	4.712	83.22	0.0000	0.0000	4.266	71.54	7.357
4	99.54	4.480	83.04	0.0000	0.0000	0.3765	84.00	7.294
5	104.6	5.393	98.80	0.0000	0.0000	0.1822	108.2	7.698
6	94.91	4.625	85.19	0.0000	0.0000	0.2009	86.79	7.243
mean	96.01	4.721	89.99	0.0000	0.0000	2.266	87.14	7.158
Std dev	5.60	0.353	6.96	0.0000	0.0000	2.211	11.93	2.440

Name of Person : Chee
 Sample Description : 5 Dec 17 97 *Polys*
 Sample Form : Tension, Dumbbells
 Temperature : 28.5

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Break (N/mm ²)	Strain @ Break (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)
1	99.41	4.387	104.5	0.0000	0.0000	0.2794	106.2	5.794
2	77.43	3.687	77.44	0.0000	0.0000	0.3813	82.88	5.990
3	65.68	3.724	89.74	0.0000	0.0000	0.9123	10.25	4.994
4	67.45	3.088	66.34	0.0000	0.0000	0.0489	83.46	5.295
5	99.16	4.419	115.2	0.0000	0.0000	2.600	52.84	5.386
6	70.18	3.289	71.96	0.0000	0.0000	0.2854	74.84	5.464
mean	79.88	3.766	87.53	0.0000	0.0000	0.7512	68.42	5.487
Std dev	15.55	0.549	19.25	0.0000	0.0000	0.9500	33.26	0.357

Name of Person : Chee
 Sample Description : 6 Dec 17 97 *Polys*
 Sample Form : Tension, Dumbbells
 Temperature : 28.5

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Break (N/mm ²)	Strain @ Break (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)
1	73.30	3.293	86.83	0.0000	0.0000	0.2941	98.52	4.848
2	61.01	2.859	83.25	0.0000	0.0000	1.947	46.61	4.145
3	70.25	3.070	86.13	0.0000	0.0000	2.036	47.09	4.490
4	47.99	2.285	62.84	0.0000	0.0000	0.9228	15.80	3.732
5	74.42	3.349	90.98	0.0000	0.0000	2.868	73.06	4.604
6	67.26	3.057	79.33	0.0000	0.0000	1.341	73.06	4.501
mean	65.70	2.986	81.56	0.0000	0.0000	1.568	59.02	4.387
Std dev	9.93	0.326	9.96	0.0000	0.0000	0.910	28.70	0.393

Name of Person : Chee
 Sample Description : 7 Dec 17 97 *Polys*
 Sample Form : Tension, Dumbells
 Temperature : 28.5

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Break (N/mm ²)	Strain @ Break (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)
1	52.41	2.521	129.7	0.0000	0.0000	1.016	31.78	2.389
2	57.52	2.766	129.2	0.0000	0.0000	0.3628	1.056	2.504
3	42.11	1.868	113.2	0.0000	0.0000	0.6326	21.71	1.691
4	52.89	2.277	127.1	0.0000	0.0000	0.3720	4.222	2.058
5	48.10	2.071	114.2	0.0000	0.0000	0.3134	3.311	2.146
6	33.06	1.657	67.80	0.0000	0.0000	0.3949	3.311	2.133
7	53.87	2.700	153.2	0.0000	0.0000	0.8453	23.94	2.082
8	39.41	2.305	120.2	0.0000	0.0000	0.7209	17.33	1.996
9	58.83	2.942	188.7	0.0000	0.0000	0.5575	11.30	2.046
mean	48.69	2.345	127.0	0.0000	0.0000	0.5795	13.11	2.116
Std dev	8.76	0.429	32.4	0.0000	0.0000	0.2449	11.05	0.232

Name of Person : Chee
 Sample Description : 8 Dec 17 97 *Polys*
 Sample Form : Tension, Dumbells
 Temperature : 28.5

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Break (N/mm ²)	Strain @ Break (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)
1	33.92	1.590	210.5	0.0000	0.0000	0.3205	2.063	0.6777
2	28.21	1.579	162.9	0.0000	0.0000	0.3232	3.924	0.7865
3	39.26	2.198	261.9	0.0000	0.0000	0.3229	2.208	0.7108
4	41.98	2.019	276.9	0.0000	0.0000	0.3127	1.553	0.7797
5	24.41	1.174	135.0	0.0000	0.0000	0.3486	3.120	0.5989
6	35.66	1.698	228.5	0.0000	0.0000	0.2995	1.313	0.7220
7	40.59	1.933	276.2	0.0000	0.0000	0.3524	4.416	0.6777
8	31.14	1.527	172.7	0.0000	0.0000	0.3298	2.923	0.7025
9	37.76	1.798	280.0	0.0000	0.0000	0.3084	1.089	0.5999
mean	34.77	1.724	224.1	0.0000	0.0000	0.3376	2.519	0.6951
Std dev	5.92	0.305	54.0	0.0000	0.0000	0.0311	1.173	0.3666

Name of Person : Chee
 Sample Description : 9 Dec 17 97 Polyols
 Sample Form : Tension, Dumbbells
 Temperature : 28.5

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Break (N/mm ²)	Strain @ Break (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)
1	30.51	1.445	324.1	0.0000	0.0000	0.3247	2.177	0.2873
2	18.00	0.8523	154.5	0.0000	0.0000	0.3105	3.329	0.3490
3	32.73	1.558	421.3	0.0000	0.0000	0.3050	2.287	0.2461
④	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	26.76	1.274	267.8	0.0000	0.0000	0.3662	9.573	0.3131
6	27.54	1.311	288.2	0.0000	0.0000	0.3487	7.904	0.3402
7	35.42	1.687	431.1	0.0000	0.0000	0.3062	1.536	0.2693
8	32.45	1.352	346.4	0.0000	0.0000	0.2711	2.079	0.3435
9	32.41	1.503	378.3	0.0000	0.0000	0.3177	2.161	0.3180
mean	26.20	1.220	290.2	0.0000	0.0000	0.3112	3.449	0.2741
Std dev	11.07	0.514	137.9	0.0000	0.0000	0.1097	3.151	0.1086

Name of Person : Chee
 Sample Description : 5 Dec 11 97 Polyols
 Sample Form : Rectangular, Shear test
 Temperature : 29

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sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Break (N/mm ²)	Ext @ Break (mm)	Strain @ Break (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)
1	715.3	1.208	19.57	0.0000	0.0000	0.0000	1.060	12.69
2	620.2	1.039	5.858	0.0000	0.0000	0.0000	0.0158	41.24
3	714.6	1.146	6.239	0.0000	0.0000	0.0000	0.0276	37.48
4	528.8	0.8484	10.98	0.0000	0.0000	0.0000	0.0362	72.29
5	632.1	1.046	6.418	0.0000	0.0000	0.0000	0.0138	50.92
6	502.2	0.7784	5.880	0.0000	0.0000	0.0000	0.0333	41.90
mean	618.9	1.011	9.157	0.0000	0.0000	0.0000	0.2028	42.75
Std dev	89.9	0.167	5.464	0.0000	0.0000	0.0000	0.4204	19.36

Name of Person
 Sample Description
 Sample Form
 Temperature

: chee
 : 3 4 CCMK 12/1
 : dumbbells
 :

sample	Maximum Load (N)	Maximum Stress (N/mm2)	Strain @ Max Load (%)	Stress @ Break (N/mm2)	Strain @ Break (%)	Stress @ Low Yld (N/mm2)	Strain @ Low Yld (%)	Fixed Strain (%)
1	30.99	1.305	29.36	0.0000	0.0000	0.2610	0.5657	0.0000
2	31.56	1.329	25.24	0.0000	0.0000	0.2529	0.8403	0.0000
3	30.25	1.149	31.97	0.0000	0.0000	0.3231	3.225	0.0000
4	21.86	0.7806	17.12	0.0000	0.0000	0.1948	0.7241	0.0000
5	30.79	1.100	26.97	0.0000	0.0000	0.2005	1.119	0.0000
mean	29.09	1.133	26.13	0.0000	0.0000	0.2465	1.295	0.0000
Std dev	4.07	0.220	5.64	0.0000	0.0000	0.0522	1.098	0.0000

Name of Person
 Sample Description
 Sample Form
 Temperature

: Chee
 : 5 Dec 18 97
 : DumbbellsHTPB
 : 30

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sample	Maximum Load (N)	Maximum Stress (N/mm2)	Strain @ Max Load (%)	Stress @ Break (N/mm2)	Strain @ Break (%)	Stress @ Low Yld (N/mm2)	Strain @ Low Yld (%)	Modulus of Elast (N/mm2)
1	26.28	1.099	32.24	0.0000	0.0000	0.9072	23.92	2.736
2	20.42	0.8330	21.62	0.0000	0.0000	0.7225	18.42	2.614
3	24.85	1.081	29.79	0.0000	0.0000	0.4006	3.872	2.844
4	24.49	1.014	27.57	0.0000	0.0000	0.3032	1.330	2.820
5	29.92	1.239	38.43	0.0000	0.0000	0.2753	43.39	2.916
6	24.53	1.035	27.76	0.0000	0.0000	0.2942	1.681	2.928
7	X 16.56	0.6990	13.76	0.0000	0.0000	0.1354	20.16	-1.223
8	24.11	0.9754	27.34	0.0000	0.0000	0.1576	35.66	2.890
9	19.91	0.8054	24.06	0.0000	0.0000	0.2207	26.30	2.321
10	27.38	1.076	31.39	0.0000	0.0000	0.2217	1.473	2.790
mean	23.25	0.9912	27.43	0.0000	0.0000	0.3225	17.63	2.344
Std dev	3.91	0.1569	6.64	0.0000	0.0000	0.2572	15.21	1.265

Name of Person : Chee
 Sample Description : 6 Dec 18 97
 Sample Form : DumbellsHTPB
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Break (N/mm ²)	Strain @ Break (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)
1	26.11	1.026	30.64	0.0000	0.0000	0.2016	35.76	2.744
2	21.28	0.8487	22.53	0.0000	0.0000	0.1031	32.29	2.525
3	23.81	0.9499	25.41	0.0000	0.0000	0.7977	19.97	2.630
4	20.00	0.8282	21.57	0.0000	0.0000	0.3228	19.97	2.440
mean	22.80	0.9133	25.04	0.0000	0.0000	0.3563	26.99	2.585
Std dev	2.72	0.0922	4.08	0.0000	0.0000	0.3077	8.24	0.132

Name of Person : chee
 Sample Description : 10 HTPB
 Sample Form : dumbells
 Temperature :

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Break (N/mm ²)	Strain @ Break (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Sample Width (mm)
1	10.94	0.5058	63.08	0.0000	0.0000	0.2764	0.4883	9.40000
2	11.12	0.5144	60.11	0.0000	0.0000	0.2673	0.8674	9.40000
3	11.30	0.4853	53.51	0.0000	0.0000	0.2559	1.719	9.70000
4	9.432	0.4711	43.25	0.0000	0.0000	0.2806	0.6992	9.10000
mean	10.70	0.4942	54.99	0.0000	0.0000	0.2701	0.9434	9.40000
Std dev	0.86	0.0196	8.79	0.0000	0.0000	0.0109	0.5397	0.24495

Name of Person : Chee
 Sample Description : 7 Dec 17 97 HTPB
 Sample Form : Rectangular, Adhesive
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Break (N/mm ²)	Strain @ Break (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)
1	100.8	1.045	26.27	0.0000	0.0000	0.7088	46.43	8.033
2	82.92	0.9547	21.32	0.0000	0.0000	0.5858	55.56	6.133
3	107.5	0.9170	27.83	0.0000	0.0000	0.5524	40.84	6.422
4	86.16	0.8127	17.47	0.0000	0.0000	0.6076	31.07	6.345
5	125.7	1.095	30.86	0.0000	0.0000	0.6498	48.78	6.401
6	87.91	0.8639	21.75	0.0000	0.0000	0.6352	33.11	5.341
mean	98.50	0.9480	24.26	0.0000	0.0000	0.6233	42.63	6.453
Std dev	16.33	0.1071	4.93	0.0000	0.0000	0.0545	9.46	0.870

Name of Person : Chee
 Sample Description : 10 Dec 17 97 HTPB
 Sample Form : Rectangular, Adhesive
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Break (N/mm ²)	Strain @ Break (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)
1	33.91	0.3182	155.3	0.0000	0.0000	0.1178	7.488	0.3853
2	40.73	0.3369	98.65	0.0000	0.0000	0.2201	18.82	0.7805
3	37.84	0.3712	72.24	0.0000	0.0000	0.3113	20.56	1.411
4	30.44	0.2876	63.56	0.0000	0.0000	0.2335	23.89	0.7255
5	45.67	0.4527	75.79	0.0000	0.0000	0.3733	35.47	1.625
6	36.52	0.3560	87.58	0.0000	0.0000	0.2742	32.70	0.8362
mean	37.52	0.3537	92.19	0.0000	0.0000	0.2550	23.15	0.9605
Std dev	5.31	0.0566	33.27	0.0000	0.0000	0.0872	10.14	0.4842

Name of Person : Chee
 Sample Description : 2:1:1 Peeling test
 Sample Form : Rectangular
 Temperature : 30 C

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	95.23	0.7805	4.884	0.3084	22.53	32.56	20.0000	6.10000
2	81.11	0.7312	4.581	0.2291	20.93	23.19	18.8000	5.90000
3	32.26	0.3730	6.487	0.3333	2.037	2.183	18.8000	4.60000
4	119.0	1.128	12.58	0.2423	25.79	18.81	19.9000	5.30000
5	101.7	1.037	5.440	0.3406	7.642	29.68	18.5000	5.30000
6	52.51	0.4836	3.932	0.4531	3.282	9.579	19.9000	5.40000
mean	80.30	0.7565	6.318	0.3178	13.70	19.33	19.3167	5.43333
Std dev	32.43	0.2957	3.183	0.0809	10.56	11.72	0.6853	0.52789

Name of Person : Chee
 Sample Description : 3:1:1 Peeling test
 Sample Form : Rectangular
 Temperature : 29 C

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	103.1	0.9516	6.628	0.7826	3.529	42.71	5.50000	19.7000
2	110.4	0.8712	9.504	0.8170	5.005	35.14	6.40000	19.3000
3	154.4	1.401	5.343	1.172	3.795	52.78	5.80000	19.0000
4	161.2	1.234	4.293	0.5802	17.95	47.49	6.50000	20.1000
5	120.0	0.9623	4.855	0.6779	15.95	36.43	6.60000	18.9000
6	165.9	1.455	10.56	1.252	7.058	46.39	6.00000	19.0000
7	128.7	1.204	7.002	0.8010	17.05	50.05	5.40000	19.3000
8	150.5	1.223	6.142	0.9659	3.494	50.67	6.00000	20.3000
mean	136.8	1.163	6.791	0.8219	9.229	45.21	6.02500	19.6000
Std dev	24.3	0.215	2.208	0.2349	6.545	6.57	0.44960	0.5800

Name of Person : Chee
 Sample Description : 4:1:1 Peeling test
 Sample Form : Rectangular
 Temperature : 29 C

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	83.95	0.8877	8.626	0.6537	3.777	35.82	4.90000	19.3000
2	179.9	1.221	8.931	0.7552	24.38	30.03	5.40000	18.3000
3	70.86	0.5867	6.192	0.4919	4.042	12.98	6.60000	18.3000
4	95.33	0.9533	5.915	0.7053	22.71	40.63	5.00000	20.0000
5	81.48	0.7558	6.397	0.6355	3.297	32.98	5.50000	19.6000
6	106.8	0.9934	4.019	0.6777	15.47	46.41	5.60000	19.2000
7	101.2	0.9104	3.144	0.5398	20.00	46.72	5.70000	19.5000
8	144.1	1.352	6.979	0.8370	2.181	50.07	5.70000	18.7000
mean	108.0	1.033	6.275	0.6620	11.98	36.95	5.55000	19.1125
Std dev	36.5	0.386	2.004	0.1109	9.62	12.01	0.52099	0.6221

Name of Person : Chee
 Sample Description : 5:1:1 Peeling test
 Sample Form : Rectangular
 Temperature : 30 C

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	120.1	0.9379	12.30	0.6311	5.006	15.92	19.7000	6.50000
2	125.0	1.062	9.180	0.6017	3.532	21.31	19.3000	6.10000
3	112.7	1.038	9.829	0.2021	1.232	11.11	19.4000	5.60000
4	86.73	0.8721	14.82	0.7839	6.337	21.01	19.5000	5.10000
5	172.5	1.613	8.973	1.605	6.337	38.50	19.1000	5.60000
6	142.0	1.277	10.10	1.240	17.45	24.64	19.5000	5.70000
7	134.5	1.201	9.999	0.7854	3.650	28.64	19.3000	5.85000
mean	127.6	1.143	10.82	0.8356	6.220	23.02	19.4000	5.77143
Std dev	26.5	0.250	2.19	0.4581	5.265	3.82	0.1915	0.43861

Name of Person : Chee
 Sample Description : 8:1:1 Peeling test
 Sample Form : Rectangular
 Temperature : 30 C

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	51.43	0.4767	22.26	0.2186	5.708	3.035	5.80000	18.6000
2	39.34	0.2965	11.31	0.0866	20.11	2.465	6.70000	19.8000
3	38.67	0.3617	9.906	0.3474	9.356	3.408	5.40000	19.8000
4	31.29	0.3018	7.712	0.2613	5.513	3.357	5.40000	19.2000
5	19.55	0.1867	5.830	0.1430	6.779	1.701	5.60000	18.7000
6	28.91	0.3502	19.65	0.2023	4.097	2.533	4.30000	19.2000
mean	34.87	0.3289	12.78	0.2099	8.593	2.750	5.53333	19.2167
Std dev	10.88	0.0953	6.65	0.0910	5.907	0.650	0.77374	0.5154

Name of Person : Chee
 Sample Description : 9:1:1 Peeling test
 Sample Form : Rectangular
 Temperature : 30 C

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	22.31	0.2189	11.84	0.1927	7.589	1.691	5.20000	19.6000
2	19.72	0.1944	10.04	0.1267	2.396	1.224	5.20000	19.3000
3	19.93	0.1706	8.365	0.1412	5.115	1.402	5.70000	20.5000
4	24.59	0.2404	14.10	0.1285	5.115	1.868	5.30000	19.3000
5	23.49	0.1996	13.04	0.1412	5.115	1.439	6.10000	19.3000
6	21.82	0.1794	9.354	0.1606	7.801	1.381	6.30000	19.3000
mean	21.98	0.2006	11.12	0.1485	5.521	1.501	5.63333	19.5833
Std dev	1.93	0.0257	2.24	0.0248	1.987	0.234	0.48028	0.4665

Name of Person : Chee
 Sample Description : 3:1:1 Shear test
 Sample Form : ~~Rectangular~~ Rectangular
 Temperature : 29 C

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick* (mm)
1	295.6	1.422	7.281	-0.0171	43.91	41.13	25.7000	24.5000
2	549.9	0.9715	3.663	-0.0009	38.78	45.69	23.2000	24.4000
3	611.0	1.108	5.391	0.0000	25.71	39.72	24.4000	22.6000
4	627.4	1.008	6.399	-0.0130	62.02	31.28	25.2000	24.7000
5	589.5	0.9531	5.150	0.0000	22.37	31.72	26.1000	23.7000
6	590.6	1.023	5.723	-0.0282	60.34	31.23	25.1000	23.0000
7	684.6	1.034	6.118	0.0000	0.0000	34.48	24.8000	26.7000
8	538.1	0.8215	3.314	-0.0055	69.13	31.73	25.0000	26.2000
mean	635.9	1.043	5.380	-0.0080	40.28	35.87	24.9375	24.4750
Std dev	114.4	0.174	1.341	0.0105	23.54	5.58	0.8749	1.4280

Name of Person : Chee
 Sample Description : 6:1:1 Shear test
 Sample Form : Rectangular
 Temperature : 29 C

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick* (mm)
1	256.8	0.3671	3.203	0.0000	0.0000	17.09	26.5000	26.4000
2	310.3	0.4810	4.032	0.0090	17.04	18.80	25.0000	25.8000
3	258.6	0.4471	3.378	-0.0007	15.69	17.01	24.0000	24.1000
4	293.2	0.4387	4.196	0.0059	17.06	15.51	25.7000	26.0000
5	282.8	0.4236	4.437	0.0000	0.0000	16.11	25.0000	26.7000
6	280.2	0.3965	3.479	0.0133	16.54	16.30	24.8000	28.5000
7	290.1	0.4183	4.589	0.0057	11.20	13.53	25.4000	27.3000
8	303.8	0.4710	3.999	0.0000	0.0000	19.07	25.0000	25.8000
9	290.3	0.4518	3.033	0.0047	8.644	20.00	25.5000	25.2000
10	316.3	0.4770	4.133	-0.0057	13.74	15.74	25.6000	25.9000
mean	288.2	0.4372	3.848	0.0032	9.991	16.92	25.2500	26.1700
Std dev	19.7	0.0366	0.537	0.0057	7.392	1.93	0.6604	1.1851

Name of Person : Chee
 Sample Description : 6:1:1 Peeling test
 Sample Form : Rectangular
 Temperature : 30 C

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick (mm)
1	37.07	0.4064	6.527	0.3102	14.98	4.806	19.0000	4.80000
2	53.70	0.5513	9.137	0.4202	16.98	6.918	19.1000	5.10000
3	142.4	1.272	17.64	0.2668	2.444	7.241	19.3000	5.20000
4	105.7	1.013	10.92	0.8300	5.871	19.71	19.3000	5.70000
5	30.04	0.2824	11.58	0.2573	6.233	3.004	19.0000	5.60000
6	43.17	0.4131	6.187	0.3218	27.04	5.487	19.0000	5.50000
7	47.80	0.4806	3.652	0.1699	19.95	7.010	19.5000	5.10000
8	120.9	1.136	12.43	0.6809	31.18	11.06	19.0000	5.60000
mean	72.59	0.6944	9.760	0.4147	15.58	8.154	19.0250	5.40000
Std dev	43.44	0.3833	4.388	0.2311	10.35	5.215	0.3454	0.35456

Name of Person : Chee
 Sample Description : 5:1:1 Tension
 Sample Form : Dumb-bells
 Temperature : 29.3

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick (mm)
1	64.97	1.401	42.36	0.1672	0.4170	4.180	3.80000	12.2000
2	69.22	1.533	69.39	0.1559	0.4435	4.291	3.70000	12.2000
3	48.87	1.528	47.49	0.2161	0.9939	3.401	2.60000	12.3000
4	43.44	1.498	50.93	0.2350	0.7395	3.439	2.50000	11.6000
5	71.64	1.678	61.25	0.2126	0.7395	4.053	3.50000	12.2000
6	30.28	2.230	55.60	0.2166	0.6589	5.076	3.00000	12.0000
7	54.61	1.463	54.97	0.1862	0.6289	3.364	3.00000	12.4000
8	54.16	1.658	63.04	0.2099	0.8447	3.378	2.70000	12.1000
9	56.34	1.455	51.23	0.1744	0.6841	3.146	3.20000	12.1000
10	52.32	1.804	56.23	0.2519	1.603	4.349	2.50000	11.6000
mean	59.59	1.625	55.25	0.2026	0.7750	3.868	3.05000	12.0700
Std dev	11.49	0.245	7.82	0.0302	0.3365	0.616	0.48819	0.2710

Name of Person : Chee
 Sample Description : 3:1:1 Tension
 Sample Form : Dumb-bells
 Temperature : 29.3

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	50.72	2.045	33.75	0.2917	0.7979	6.646	2.00000	12.4000
2	59.04	2.164	37.55	0.2625	1.354	7.459	2.20000	12.4000
3	47.66	2.207	34.78	0.3344	0.3823	7.397	1.70000	12.7000
4	59.21	2.253	35.37	0.2940	0.7283	7.334	2.30000	11.4000
5	57.54	2.339	38.95	0.2612	0.6035	7.455	2.00000	12.3000
6	50.30	2.262	37.29	0.3062	1.039	7.894	1.90000	11.7000
7	64.53	2.626	41.40	0.8875	7.357	8.330	2.10000	11.7000
8	64.11	2.482	43.30	0.4824	2.654	7.672	2.10000	12.3000
9	74.59	2.772	49.69	1.014	9.243	8.547	2.30000	11.7000
mean	58.63	2.351	39.12	0.4600	2.684	7.637	2.06667	12.0667
Std dev	8.47	0.233	5.02	0.2882	3.285	0.567	0.19365	0.4444

Name of Person : Chee
 Sample Description : 4:1:1 Tension
 Sample Form : Dumb-bells
 Temperature : 29.3

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	62.47	1.953	35.29	0.5936	5.239	6.956	2.60000	12.3000
2	55.63	2.067	46.54	0.7631	8.792	6.064	2.30000	11.7000
3	60.78	2.258	23.72	0.4156	1.424	11.37	2.30000	11.7000
4	67.87	1.870	34.12	0.2513	1.424	6.647	3.00000	12.1000
5	60.89	1.819	30.60	0.2465	0.7493	5.383	2.70000	12.4000
6	58.99	1.442	25.24	0.9942	13.54	6.862	3.30000	12.4000
7	49.44	1.639	24.90	0.2478	0.3989	7.149	2.60000	11.6000
8	61.06	1.577	29.14	0.6312	6.788	6.961	3.20000	12.1000
9	66.07	1.868	29.00	0.4443	2.998	8.352	2.90000	12.2000
10	80.00	1.994	31.19	0.2081	2.998	8.196	3.40000	11.3000
mean	62.32	1.849	30.97	0.4796	4.435	7.394	2.83000	12.0300
Std dev	8.06	0.243	6.67	0.2625	4.218	1.642	0.39455	0.3057

Name of Person : Chee
 Sample Description : 2:2:1 Adhesion test
 Sample Form : Rectangular
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	165.6	1.703	10.45	0.3766	16.45	23.67	5.20000	18.700
2	198.9	1.951	13.00	0.6898	19.91	26.26	5.20000	19.600
3	243.3	2.322	16.15	0.8874	29.26	26.20	5.40000	19.400
4	138.7	1.439	6.922	0.4017	22.42	33.83	5.10000	18.900
5	189.3	1.946	12.64	0.5302	29.54	34.02	5.20000	18.700
6	142.9	1.302	7.283	0.4819	23.54	28.41	5.60000	19.600
7	204.0	1.746	16.03	0.4501	25.63	22.66	5.70000	20.500
8	170.0	1.622	9.833	0.4280	20.49	25.00	5.40000	19.400
mean	181.6	1.754	11.54	0.5307	23.40	27.58	5.35000	19.350
Std dev	34.6	0.321	3.55	0.1742	4.58	4.31	0.21381	0.597

Name of Person : Chee
 Sample Description : 3:2:1 Adhesion test
 Sample Form : Rectangular
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	216.2	1.996	13.32	1.630	10.37	20.09	5.70000	19.0000
2	199.3	1.629	9.782	1.398	7.184	31.72	6.10000	19.4000
3	167.4	1.373	8.038	0.4032	24.69	28.95	6.10000	20.0000
4	242.6	2.106	9.985	1.073	27.24	51.87	6.00000	19.2000
5	216.6	1.851	11.53	0.6205	10.79	32.01	6.00000	19.5000
6	157.7	1.439	9.392	1.181	30.79	25.31	5.80000	18.9000
7	201.1	1.874	12.59	1.242	24.20	26.95	5.80000	18.5000
mean	200.2	1.761	10.73	1.087	19.32	31.06	5.92857	19.2143
Std dev	29.4	0.276	2.01	0.420	9.35	10.03	0.16036	0.481

Name of Person : Chee
 Sample Description : 4:2:1 Adhesion test
 Sample Form : Rectangular
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	93.77	1.039	13.58	0.9842	10.53	13.13	4.80000	18.2000
2	144.4	1.419	10.50	0.7335	31.25	18.97	5.30000	19.2000
3	93.11	0.9326	7.734	0.8638	5.635	22.32	5.20000	19.2000
4	130.3	1.331	10.94	0.6296	20.54	17.73	5.10000	19.2000
5	185.8	1.737	24.59	0.7066	11.59	23.74	5.60000	19.1000
6	136.2	1.235	9.167	0.5074	2.669	23.89	5.30000	20.0000
mean	130.6	1.291	12.75	0.7375	13.70	19.97	5.21667	19.2500
Std dev	34.7	0.286	6.12	0.1627	10.55	4.19	0.26394	0.3987

Name of Person : Chee
 Sample Description : 5:2:1 Adhesion test
 Sample Form : Rectangular
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	91.93	0.9339	11.89	0.3236	21.44	11.73	5.10000	19.3000
2	133.7	1.483	16.12	1.030	21.97	14.62	4.60000	19.6000
3	141.2	1.675	16.47	1.150	31.77	14.66	4.30000	19.6000
4	96.83	1.177	11.60	0.6946	22.35	13.63	4.40000	18.7000
5	120.7	1.238	14.24	0.5412	41.34	13.27	4.90000	19.9000
6	119.6	1.108	13.23	0.4790	20.24	12.61	5.40000	20.3000
7	97.26	0.8952	10.20	0.4598	19.51	11.92	5.30000	20.5000
8	83.20	1.229	12.09	0.7559	27.39	14.30	3.60000	18.2000
mean	110.6	1.217	13.24	0.6269	25.75	13.31	4.70000	19.5300
Std dev	21.1	0.262	2.23	0.2792	7.52	1.23	0.60000	0.6071

Name of Person : Chee
 Sample Description : 6:2:1 Adhesion test
 Sample Form : Rectangular
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	98.69	0.9346	16.85	0.5300	33.85	8.930	5.50000	19.2000
2	103.4	1.039	19.59	0.4525	36.59	8.742	5.10000	19.5000
3	99.39	1.005	13.99	0.5496	25.64	11.80	5.10000	19.4000
4	104.1	1.254	18.12	0.7761	37.82	11.40	4.30000	19.3000
5	110.0	1.164	24.94	1.075	20.79	8.327	5.00000	18.9000
6	87.46	0.9405	12.86	0.6944	27.46	11.61	5.00000	18.6000
7	73.71	0.9642	13.26	0.9243	11.66	11.23	3.90000	19.6000
8	102.2	1.157	18.50	0.5722	38.50	10.02	4.60000	19.2000
mean	97.36	1.057	17.26	0.6975	29.04	10.26	4.81250	19.2125
Std dev	11.51	0.120	4.02	0.2152	9.49	1.43	0.51391	0.3271

Name of Person : Chee
 Sample Description : 7:2:1 Adhesion test
 Sample Form : Rectangular
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	61.77	0.6026	14.26	0.2454	19.75	7.427	5.10000	20.1000
2	68.06	0.6379	24.95	0.1636	19.75	2.250	5.10000	19.4000
3	49.30	0.4930	7.084	0.4091	20.03	12.30	5.00000	20.0000
4	50.96	0.5026	20.36	0.3860	6.011	8.363	5.20000	19.5000
5	32.46	0.3381	8.336	0.3063	6.437	4.925	5.00000	19.2000
6	75.94	0.7751	35.09	0.1041	1.995	2.154	5.00000	19.1000
7	58.43	0.6216	16.05	0.2929	4.105	8.400	5.00000	18.8000
8	54.49	0.5736	21.16	0.4732	6.615	9.071	5.00000	19.0000
mean	56.43	0.5763	18.41	0.2976	10.59	6.862	5.05000	19.3875
Std dev	13.13	0.1374	9.14	0.1250	7.81	3.516	0.07559	0.4643

Name of Person : Chee
 Sample Description : 2:2:1 Shear test
 Sample Form : Rectangular
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	415.3	0.7365	3.623	0.0133	52.04	35.77	22.2000	25.4000
2	572.8	0.8479	4.333	0.0471	44.35	34.32	25.3000	26.7000
3	563.1	0.8559	4.708	0.0232	46.63	29.83	25.5000	25.8000
4	585.7	0.9901	4.076	0.0312	32.90	41.02	25.5000	23.2000
5	511.5	0.8187	17.18	0.3345	6.945	30.40	25.4000	24.6000
6	698.3	0.9439	16.45	0.3390	6.968	29.00	27.5000	26.9000
mean	557.8	0.8655	8.396	0.1314	31.64	33.39	25.2333	25.4333
Std dev	93.0	0.0904	6.537	0.1595	20.11	4.60	1.7037	1.3837

Name of Person : Chee
 Sample Description : 3:2:1 Shear test
 Sample Form : Rectangular
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	779.5	1.138	5.324	0.0225	30.95	35.86	24.9000	27.5000
2	678.7	0.9075	4.889	0.0062	21.96	31.01	25.7000	29.1000
3	665.1	0.8379	4.358	0.0132	18.08	36.55	25.2000	31.5000
4	577.0	0.9612	4.325	0.0060	17.20	36.50	24.3000	24.5000
5	663.3	1.008	4.700	0.0311	18.47	38.03	25.5000	25.2000
6	669.8	0.9500	4.679	0.0318	11.75	34.18	25.0000	28.2000
7	711.1	0.8285	4.845	0.0134	18.27	38.15	25.7000	33.4000
8	830.9	1.093	5.252	0.0031	15.98	34.70	25.5000	29.8000
mean	696.9	0.9657	4.797	0.0159	19.07	35.62	25.0500	28.7250
Std dev	78.0	0.1113	0.365	0.0113	5.57	2.33	0.4276	2.9041

Name of Person : Chee
 Sample Description : 4:2:1 Tension test
 Sample Form : dumb-bells
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick* (mm)
1	44.66	1.464	33.81	0.2259	0.9111	4.161	2.50000	12.2000
2	40.95	1.343	33.70	0.2171	0.5576	4.540	2.50000	12.2000
3	42.17	1.530	44.96	0.2287	0.5181	4.463	2.40000	12.7000
4	42.65	1.514	37.44	0.2317	0.5181	4.762	2.20000	12.8000
5	49.32	1.612	40.45	0.6896	0.952	4.381	2.30000	13.3000
6	32.01	1.216	34.41	0.1543	0.0000	3.865	2.50000	12.5000
7	41.41	1.327	36.39	0.2022	0.7422	4.462	2.40000	13.0000
8	38.51	1.114	37.43	0.1371	0.6389	3.710	2.70000	12.8000
mean	42.96	1.396	37.96	0.2733	1.730	4.355	2.43750	12.6375
Std dev	4.16	0.177	3.53	0.1721	0.333	0.413	0.15059	0.3796

Name of Person : Chee
 Sample Description : 5:2:1 Tension test
 Sample Form : dumb-bells
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick* (mm)
1	32.99	1.038	36.23	0.1932	0.6326	2.264	2.60000	12.8000
2	34.51	1.212	30.43	0.3264	0.6382	1.809	1.70000	11.9000
3	30.16	0.9632	49.33	0.1962	0.4373	1.948	2.30000	12.5000
4	37.44	1.137	41.17	0.1926	0.5722	2.331	2.70000	12.2000
5	32.98	0.8451	42.46	0.2110	2.153	1.376	2.70000	12.7000
6	37.43	1.173	31.33	0.2732	0.7312	2.044	1.80000	13.0000
7	33.07	0.9694	33.25	0.2200	2.502	1.927	2.70000	13.4000
8	31.59	1.173	35.49	0.2331	0.7327	2.373	2.30000	13.4000
mean	32.77	1.021	36.56	0.2343	1.064	2.071	2.34250	12.7375
Std dev	2.00	0.130	6.73	0.0471	0.792	0.2210	0.43336	0.5044

Name of Person : Chee
 Sample Description : 6:2:1 Tension test
 Sample Form : dumb-bells
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick* (mm)
1	31.79	0.8801	84.41	0.1831	0.6611	1.357	2.20000	12.9000
2	26.94	0.8193	97.54	0.1812	0.4419	1.008	2.40000	13.7000
3	25.72	0.8213	81.38	0.2001	1.235	0.9646	2.70000	11.6000
4	34.80	0.9053	93.51	0.1710	0.7632	1.187	3.10000	12.4000
5	28.68	0.7117	74.03	0.1532	0.4321	0.9526	3.10000	13.0000
6	33.98	0.7288	95.34	0.1397	0.8489	1.154	3.70000	12.6000
7	25.11	0.9413	98.49	0.2407	0.5437	1.120	2.30000	11.6000
8	29.60	0.7770	93.69	0.1562	0.5439	1.214	3.00000	12.7000
mean	29.58	0.8231	89.80	0.1781	0.6837	1.120	2.83750	12.5625
Std dev	3.67	0.0823	8.81	0.0318	0.2669	0.139	0.44541	0.7070

Name of Person : Chee
 Sample Description : 7:2:1 Tension test
 Sample Form : dumb-bells
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick* (mm)
1	22.88	0.7944	147.1	0.2116	1.308	0.3751	2.40000	12.0000
2	22.22	0.7121	131.0	0.1986	1.150	0.4285	2.60000	12.0000
3	24.40	0.7820	148.1	0.1829	0.5986	0.4721	2.60000	12.0000
4	21.24	0.7080	119.8	0.1994	0.6375	0.3791	2.50000	12.0000
5	18.98	0.8610	161.0	0.2553	0.5933	0.2612	1.90000	11.6000
6	21.76	0.7754	141.7	0.2044	0.8672	0.5112	2.30000	12.2000
7	21.62	0.7149	118.8	0.1978	0.9080	0.4797	2.50000	12.1000
8	21.94	0.7885	157.2	0.2128	0.6926	0.3236	2.30000	12.1000
mean	21.38	0.7670	140.6	0.2078	0.8443	0.4038	2.38750	12.0000
Std dev	1.53	0.0529	16.0	0.0213	0.2677	0.0852	0.22952	0.1770

Name of Person : Chee
 Sample Description : 4:2:1 Shear test
 Sample Form : Rectangular
 Temperature : 30

sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	560.4	0.7806	4.986	0.0090	23.36	25.84	26.2000	27.4000
2	631.6	0.8302	3.825	-0.0026	19.06	33.36	24.7000	30.8000
3	589.5	0.7670	4.940	0.0249	16.16	23.67	25.2000	30.5000
4	615.5	0.8129	4.895	0.0103	18.02	26.58	26.2000	28.9000
5	544.3	0.6926	4.067	0.0000	0.0000	27.41	25.6000	30.7000
6	425.1	0.5579	3.548	0.0292	7.713	25.04	25.4000	30.0000
7	616.3	0.8392	4.234	-0.0012	20.45	31.60	25.5000	28.8000
8	558.6	0.7499	4.884	-0.0018	19.95	23.71	25.6000	29.1000
mean	567.7	0.7538	4.430	0.0034	15.59	27.15	25.5500	29.3250
Std dev	65.7	0.0923	0.565	0.0125	7.80	3.57	0.4957	1.1329

Name of Person : Chee
 Sample Description : 6:2:1 Shear test
 Sample Form : Rectangular
 Temperature : 30

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sample	Maximum Load (N)	Maximum Stress (N/mm ²)	Strain @ Max Load (%)	Stress @ Low Yld (N/mm ²)	Strain @ Low Yld (%)	Modulus of Elast (N/mm ²)	Sample Width (mm)	Sample Thick' (mm)
1	304.2	0.4930	3.717	-0.0002	22.38	22.75	24.2000	25.3000
2	438.7	0.6883	5.325	0.0095	20.94	25.37	24.8000	25.7000
3	393.1	0.5772	3.793	0.0000	0.0000	25.71	25.6000	26.6000
4	434.8	0.6386	5.036	0.0021	16.45	24.82	25.8000	26.8000
5	408.4	0.6240	5.859	0.0000	14.87	16.23	24.7000	26.5000
6	451.9	0.6815	6.737	0.0020	14.30	15.08	25.5000	26.3000
7	284.4	0.4161	6.502	0.0164	18.71	12.89	25.5000	26.3000
8	282.9	0.4405	4.333	0.0015	14.29	20.68	24.7000	26.3000
mean	374.8	0.5699	5.163	0.0039	15.24	20.44	25.0750	26.2125
Std dev	72.4	0.1072	1.162	0.0060	6.88	5.07	0.5392	0.4764

Series 2	V2	X	Vs	Ve	d2	Mc
3:01	0.374535	0.508426	106.3	0.000117	0.873881	7438.749
4:01	0.320673	0.508426	106.3	6.75E-05	0.954957	14139.37
5:01	0.286314	0.508426	106.3	4.52E-05	0.988305	21848.91
6:01	0.267591	0.508426	106.3	3.56E-05	0.964216	27055.42
7:01	0.196991	0.508426	106.3	1.21E-05	0.960696	79169.09
8:01	0.164417	0.508426	106.3	6.41E-06	0.96543	150513.5
9:01	0.145302	0.508426	106.3	4.14E-06	0.964363	233050.8
10:01	0.128466	0.508426	106.3	2.67E-06	1.010871	379164.6
11:01	0.10693	0.508426	106.3	1.37E-06	0.922723	671216.2
Series 1	V2	X	Vs	Ve	d2	Mc
3:01	0.397326	0.508426	106.3	0.000145	1.278223	8797.314
4:01	0.457844	0.508426	106.3	0.000244	1.205931	4951.685
5:01	0.401621	0.508426	106.3	0.000151	1.235901	8182.075
6:01	0.350299	0.508426	106.3	9.25E-05	1.281788	13860.64
7:01	0.282131	0.508426	106.3	4.29E-05	1.299692	30264.22
8:01	0.190987	0.508426	106.3	1.09E-05	1.352317	124272.3
9:01	0.147317	0.508426	106.3	4.35E-06	1.375496	316520.7
10:01	0.125386	0.508426	106.3	2.44E-06	1.39988	572829.5
Series 3	V2	X	Vs	Ve	d2	Mc
3:01:01	0.43953	0.508426	106.3	0.00021	1.03993	4960.217
4:01:01	0.39508	0.508426	106.3	0.000142	1.14348	8032.58
5:01:01	0.31445	0.508426	106.3	6.3E-05	1.1838	18788.55
6:01:01	0.25332	0.508426	106.3	2.94E-05	1.11543	37958.46
7:01:01	0.18427	0.508426	106.3	9.59E-06	1.11939	116696.4
8:01:01	0.13127	0.508426	106.3	2.88E-06	1.17285	407186.3
9:01:01	0.11544	0.508426	106.3	1.81E-06	1.15618	637127
Series 4	V2	X	Vs	Ve	d2	Mc
2:02:01	0.408079	0.508426	106.3	0.00016	0.96339	6020.362
3:02:01	0.345187	0.508426	106.3	8.78E-05	1.137337	12960.38
4:02:01	0.284933	0.508426	106.3	4.45E-05	1.199562	26975.58
5:02:01	0.223127	0.508426	106.3	1.88E-05	1.185586	63039.28
6:02:01	0.175179	0.508426	106.3	8.02E-06	1.188162	148062.7
7:02:01	0.166203	0.508426	106.3	6.66E-06	1.180583	177157
8:02:01	0.125564	0.508426	106.3	2.46E-06	1.204253	490276

Series 4	Ws	Wds	d1(g/ml)	Q	W2	W1	d2(g/ml)	V2	Vs(ml)
2:2:1	0.398	0.1867	0.867	1.305377	0.433768	0.566232	0.96339	0.408079	106.3
3:2:1	0.3002	0.1332	0.867	1.446083	0.408817	0.591183	1.137337	0.345187	106.3
4:2:1	0.3118	0.1212	0.867	1.813849	0.355385	0.644615	1.199562	0.284933	106.3
5:2:1	0.3246	0.1012	0.867	2.546147	0.281996	0.718004	1.185586	0.223127	106.3
6:2:1	0.4504	0.1132	0.867	3.435754	0.225441	0.774559	1.188162	0.175179	106.3
7:2:1	0.52805	0.1259	0.867	3.6842	0.213484	0.786516	1.180583	0.166203	106.3
8:2:1	0.6411	0.1199	0.867	5.01379	0.166284	0.833716	1.204253	0.125564	106.3
Series 2	B1	Vs	R(J/K.mol)	T(K)	p	s	p-s	(p-s)2	X
3:0:1	0.34	106.3	8.314	303.65	20.3	18.3	2	4	0.508426
4:0:1	0.34	106.3	8.314	303.65	20.3	18.3	2	4	0.508426
5:0:1	0.34	106.3	8.314	303.65	20.3	18.3	2	4	0.508426
6:0:1	0.34	106.3	8.314	303.65	20.3	18.3	2	4	0.508426
7:0:1	0.34	106.3	8.314	303.65	20.3	18.3	2	4	0.508426
8:0:1	0.34	106.3	8.314	303.65	20.3	18.3	2	4	0.508426
9:0:1	0.34	106.3	8.314	303.65	20.3	18.3	2	4	0.508426
10:0:1	0.34	106.3	8.314	303.65	20.3	18.3	2	4	0.508426
11:0:1	0.34	106.3	8.314	303.65	20.3	18.3	2	4	0.508426
Series 1	B1	Vs	R(J/K.mol)	T(K)	p	s	p-s	(p-s)2	X
3:0:1	0.34	106.3	8.314	303.65	20.3	18.3	2	4	0.508426
4:0:1	0.34	106.3	8.314	303.65	20.3	18.3	2	4	0.508426
5:0:1	0.34	106.3	8.314	303.65	20.3	18.3	2	4	0.508426
6:0:1	0.34	106.3	8.314	303.65	20.3	18.3	2	4	0.508426
7:0:1	0.34	106.3	8.314	303.65	20.3	18.3	2	4	0.508426
8:0:1	0.34	106.3	8.314	303.65	20.3	18.3	2	4	0.508426
9:0:1	0.34	106.3	8.314	303.65	20.3	18.3	2	4	0.508426
10:0:1	0.34	106.3	8.314	303.65	20.3	18.3	2	4	0.508426

Determination of the volume fraction and the Polymer-Solvent interaction										
Series 2	Ws	Wds	d1(g/ml)	Q	W2	W1	d2(g/ml)	V2	Vs(ml)	
3:0:1	0.2512	0.1031	0.867	1.656828	0.376389	0.623611	0.873881	0.374535	106.3	
4:0:1	0.26035	0.0976	0.867	1.923322	0.342077	0.657923	0.954957	0.320673	106.3	
5:0:1	0.31985	0.11045	0.867	2.186713	0.313803	0.686197	0.988305	0.286314	106.3	
6:0:1	0.3397	0.1084	0.867	2.461089	0.288926	0.711074	0.964216	0.267591	106.3	
7:0:1	0.4244	0.1013	0.867	3.678819	0.213729	0.786271	0.960696	0.196991	106.3	
8:0:1	0.4491	0.0906	0.867	4.56396	0.179728	0.820272	0.96543	0.164417	106.3	
9:0:1	0.506	0.0906	0.867	5.288338	0.159025	0.840975	0.964363	0.145302	106.3	
10:0:1	0.5537	0.0916	0.867	5.818639	0.146657	0.853343	1.010871	0.128466	106.3	
11:0:1	0.6563	0.0841	0.867	7.847526	0.113026	0.886974	0.922723	0.10693	106.3	
Series 1	Ws	Wds	d1(g/ml)	Q	W2	W1	d2(g/ml)	V2	Vs(ml)	
3:0:1	0.459	0.2426	0.867	1.028839	0.492893	0.507107	1.278223	0.397326	106.3	
4:0:1	0.223	0.1283	0.867	0.851342	0.540149	0.459851	1.205931	0.457844	106.3	
5:0:1	0.2499	0.1311	0.867	1.045189	0.488952	0.511048	1.235901	0.401621	106.3	
6:0:1	0.281	0.1346	0.867	1.254518	0.443554	0.556446	1.281788	0.350299	106.3	
7:0:1	0.3134	0.1268	0.867	1.697357	0.370733	0.629267	1.299692	0.282131	106.3	
8:0:1	0.4106	0.1224	0.867	2.715773	0.269123	0.730877	1.352317	0.190987	106.3	
9:0:1	0.488333	0.1173	0.867	3.648341	0.215131	0.784869	1.375496	0.147317	106.3	
10:0:1	0.5315	0.112	0.867	4.32011	0.187966	0.812034	1.39988	0.125386	106.3	
Series 3	Ws	Wds	d1(g/ml)	Q	W2	W1	d2(g/ml)	V2	Vs(ml)	
3:1:1	0.2283	0.1188	0.867	1.063111	0.484705	0.515295	1.03993	0.43953	106.3	
4:1:1	0.2773	0.1382	0.867	1.160914	0.462767	0.537233	1.14348	0.395082	106.3	
5:1:1	0.3412	0.1431	0.867	1.596709	0.385103	0.614897	1.1838	0.314451	106.3	
6:1:1	0.3945	0.1321	0.867	2.291089	0.303851	0.696149	1.11543	0.25332	106.3	
7:1:1	0.5085	0.128	0.867	3.428669	0.225801	0.774199	1.11939	0.184271	106.3	
8:1:1	0.5996	0.1144	0.867	4.891879	0.169725	0.830275	1.17285	0.131275	106.3	
9:1:1	0.9086	0.1519	0.867	5.745752	0.148241	0.851759	1.15618	0.115444	106.3	

Weigth swell of Polyols-besd,g								
3:01	4:01	5:01	6:01	7:01	8:01	9:01	10:01	
0.504	0.257	0.263	0.297	0.305	0.48	0.522	0.537	
0.453	0.2	0.248	0.263	0.305	0.42	0.516	0.533	
0.454	0.225	0.244	0.268	0.323	0.367	0.467	0.513	
0.487	0.227	0.239	0.28	0.334	0.408	0.478	0.561	
0.485	0.23	0.26	0.278	0.339	0.411	0.471	0.56	
0.479	0.21	0.249	0.28	0.283	0.399	0.47	0.539	
0.417	0.222	0.251	0.274	0.321	0.443	0.475	0.545	
0.509	0.236	0.242	0.293	0.299	0.425	0.523	0.532	
0.43	0.228	0.259	0.291	0.325	0.348	0.475	0.545	
0.441	0.228	0.267	0.286	0.3	0.405	0.49	0.45	
0.441	0.211	0.225				0.433		
0.513	0.212	0.252				0.54		
0.392	0.212							
0.43	0.224							
0.459643	0.223	0.249917	0.281	0.3134	0.4106	0.488333	0.5315	Mean
0.037148	0.01395	0.011658	0.010944	0.01769	0.036749	0.030731	0.031834	Stdev
Weigth deswell of HTPB-based,g								
3:01	4:01	5:01	6:01	7:01	8:01	9:01	10:01	11:01
0.13	0.101	0.117	0.109	0.093	0.09	0.098	0.097	0.079
0.096	0.091	0.105	0.104	0.114	0.092	0.103	0.094	0.085
0.093	0.089	0.112	0.111	0.097	0.09	0.086	0.107	0.098
0.118	0.094	0.109	0.103	0.115	0.09	0.09	0.078	0.08
0.104	0.091	0.117	0.116	0.111	0.096	0.094	0.075	0.083
0.092	0.1	0.11	0.106	0.092	0.088	0.083	0.08	0.084
0.105	0.1	0.105	0.107	0.094	0.091	0.081	0.098	0.081
0.096	0.104	0.108	0.106	0.112	0.091	0.092	0.097	0.076
0.098	0.107	0.106	0.109	0.093	0.092	0.091	0.098	0.093
0.099	0.098	0.109	0.113	0.092	0.086	0.088	0.092	0.082
	0.086	0.119						
0.1031	0.097	0.113	0.1084	0.1013	0.0906	0.0906	0.0916	0.0841
0.012106	0.112	0.105	0.004061	0.01022	0.002633	0.00667	0.010426	0.006641
	0.1	0.116						
	0.088	0.114						
	0.099	0.103						
	0.097	0.113						
	0.092	0.106						
	0.11	0.11						
	0.1	0.112						
	0.0978	0.11045	Mean					
	0.007105	0.004673	Stdev					

Weigh swell of HTPB-based,g									
3:01	4:01	5:01	6:01	7:01	8:01	9:01	10:01	11:01	
0.319	0.274	0.325	0.35	0.383	0.43	0.56	0.561	0.608	
0.239	0.246	0.287	0.315	0.454	0.346	0.561	0.541	0.706	
0.224	0.249	0.292	0.36	0.406	0.475	0.479	0.569	0.8	
0.29	0.258	0.322	0.331	0.488	0.437	0.484	0.464	0.675	
0.255	0.243	0.31	0.329	0.464	0.448	0.557	0.525	0.46	
0.219	0.262	0.314	0.334	0.392	0.461	0.501	0.509	0.75	
0.253	0.269	0.315	0.347	0.404	0.523	0.456	0.64	0.683	
0.231	0.292	0.315	0.338	0.466	0.429	0.513	0.503	0.67	
0.242	0.284	0.315	0.341	0.408	0.467	0.52	0.555	0.635	
0.24	0.251	0.33	0.352	0.399	0.475	0.429	0.67	0.576	
0.2512	0.2628	0.3125	0.3397	0.4244	0.4491	0.506	0.5537	0.6563	Mean
0.031026	0.016645	0.013542	0.013166	0.040426	0.045718	0.045282	0.062238	0.09482	Stdev
Weigh deswell of Polyols besd,g									
3:01	4:01	5:01	6:01	7:01	8:01	9:01	10:01		
0.252	0.145	0.138	0.133	0.126	0.14	0.124	0.115		
0.234	0.114	0.131	0.127	0.124	0.124	0.12	0.109		
0.241	0.127	0.128	0.132	0.132	0.111	0.112	0.122		
0.256	0.13	0.127	0.138	0.136	0.116	0.115	0.112		
0.262	0.13	0.138	0.134	0.138	0.126	0.11	0.116		
0.26	0.119	0.131	0.138	0.114	0.12	0.115	0.112		
0.225	0.128	0.132	0.134	0.129	0.13	0.113	0.108		
0.271	0.138	0.123	0.143	0.115	0.13	0.124	0.112		
0.229	0.13	0.134	0.138	0.132	0.107	0.113	0.113		
0.231	0.131	0.137	0.137	0.122	0.12	0.119	0.101		
0.277	0.122	0.122	0.127			0.109			
0.218	0.125	0.132				0.134			
0.211	0.124								
0.229	0.133								
0.242571	0.128286	0.131083	0.134636	0.1268	0.1224	0.117333	0.112	Mean	
0.02044	0.00771	0.005351	0.004864	0.008189	0.009778	0.00724	0.005497	Stdev	

	3:01:01	4:01:01	5:01:01	6:01:01	7:01:01	8:01:01	9:01:01	
Binder swell sery 3								
1	0.227	0.319	0.371	0.344	0.508	0.636	0.881	
2	0.229	0.245	0.404	0.395	0.548	0.663	1.054	
3	0.24	0.279	0.317	0.433	0.514	0.576	0.754	
4	0.22	0.269	0.338	0.44	0.576	0.557	1.009	
5	0.252	0.314	0.361	0.451	0.512	0.561	0.834	
6	0.237	0.281	0.353	0.388	0.539	0.579	1.019	
7	0.206	0.252	0.287	0.338	0.411	0.698	0.932	
8	0.207	0.256	0.33	0.392	0.509	0.527	0.764	
9	0.217	0.292	0.315	0.399	0.541	0.523	0.846	
10	0.248	0.266	0.336	0.365	0.427	0.676	0.993	
	0.016028	0.02506	0.03289	0.038624	0.051956	0.063498	0.108595	Stdev
	0.2283	0.2773	0.3412	0.3945	0.5085	0.5996	0.9086	Mean
Binderdeswell sery3	3:01:01	4:01:01	5:01:01	6:01:01	7:01:01	8:01:01	9:01:01	
1	0.116	0.163	0.156	0.111	0.127	0.123	0.152	
2	0.119	0.12	0.173	0.134	0.138	0.127	0.171	
3	0.127	0.138	0.133	0.149	0.132	0.11	0.122	
4	0.114	0.132	0.142	0.146	0.145	0.107	0.168	
5	0.134	0.159	0.152	0.149	0.125	0.106	0.147	
6	0.121	0.139	0.146	0.126	0.136	0.112	0.165	
7	0.106	0.125	0.119	0.118	0.104	0.136	0.147	
8	0.106	0.127	0.138	0.132	0.127	0.099	0.129	
9	0.115	0.144	0.132	0.131	0.139	0.096	0.143	
10	0.13	0.135	0.14	0.125	0.107	0.128	0.175	
	0.009438	0.01399	0.014873	0.012914	0.013408	0.013377	0.017873	Stdev
	0.1188	0.1382	0.1431	0.1321	0.128	0.1144	0.1519	Mean
Binder swell sery 4	2:02:01	3:02:01	4:02:01	5:02:01	6:02:01	7:02:01	8:02:01	
1	0.411	0.322	0.323	0.345	0.399	0.635	0.611	
2	0.409	0.315	0.316	0.345	0.415	0.6	0.561	
3	0.368	0.287	0.284	0.292	0.412	0.509	0.677	
4	0.34	0.308	0.316	0.299	0.499	0.688	0.68	
5	0.395	0.293	0.321	0.359	0.411	0.543	0.647	
6	0.382	0.315	0.297	0.29	0.537	0.639	0.692	
7	0.409	0.3	0.33	0.341	0.424	0.675	0.648	
8	0.43	0.276	0.323	0.347	0.427	0.581	0.663	
9	0.421	0.301	0.321	0.328	0.486	0.515	0.631	
10	0.415	0.285	0.287	0.3	0.494	0.672	0.601	
	0.027451	0.014973	0.016308	0.026496	0.04853	0.066742	0.040807	Stdev
	0.398	0.3002	0.3118	0.3246	0.4504	0.52805	0.6411	Mean
Binderdeswell sery4	2:02:01	3:02:01	4:02:01	5:02:01	6:02:01	7:02:01	8:02:01	
1	0.188	0.141	0.125	0.108	0.101	0.134	0.114	
2	0.188	0.141	0.121	0.109	0.104	0.125	0.103	
3	0.169	0.127	0.11	0.09	0.103	0.103	0.127	
4	0.182	0.137	0.123	0.092	0.125	0.143	0.127	
5	0.186	0.131	0.127	0.112	0.103	0.112	0.121	
6	0.179	0.139	0.114	0.09	0.135	0.134	0.133	
7	0.191	0.132	0.127	0.106	0.106	0.142	0.121	
8	0.196	0.122	0.127	0.109	0.107	0.12	0.124	
9	0.195	0.135	0.125	0.103	0.122	0.105	0.117	
10	0.193	0.127	0.113	0.093	0.126	0.141	0.112	
	0.008247	0.006512	0.006477	0.008904	0.012417	0.015279	0.008711	Stdev
	0.1867	0.1332	0.1212	0.1012	0.1132	0.1259	0.1199	Mean

Determination of the swelling coefficient s of Series 1				
n-hexane	Ws	Wds	d1(g/ml)	Q
1	0.167	0.1414	0.66	0.274313
2	0.1167	0.1001	0.66	0.251264
3	0.141	0.12	0.66	0.265152
4	0.1365	0.1173	0.66	0.248004
5	0.1622	0.139	0.66	0.252889
6	0.1605	0.1379	0.66	0.248313
7	0.1183	0.1018	0.66	0.24558
8	0.2085	0.1793	0.66	0.246751
9	0.1392	0.12	0.66	0.242424
10	0.1132	0.098	0.66	0.235003
				0.011257 Stdev
				0.250969 Mean
Carbon te- trachloride	Ws	Wds	d1(g/ml)	Q
1	0.3295	0.1348	1.59	0.908404
2	0.356	0.1463	1.59	0.901482
3	0.328	0.1356	1.59	0.892377
4	0.36	0.1487	1.59	0.893699
5	0.333	0.1387	1.59	0.881047
6	0.338	0.1442	1.59	0.845262
7	0.276	0.1152	1.59	0.877883
8	0.372	0.1579	1.59	0.852781
9	0.352	0.1497	1.59	0.849918
10	0.304	0.1302	1.59	0.839541
				0.025325 Stdev
				0.874239 Mean
Toulene	Ws	Wds	d1(g/ml)	Q
1	0.211	0.1134	0.87	0.989276
2	0.25	0.1348	0.87	0.982298
3	0.252	0.1355	0.87	0.988251
4	0.24	0.1281	0.87	1.004065
5	0.195	0.1044	0.87	0.99749
6	0.259	0.1391	0.87	0.99077
7	0.281	0.1513	0.87	0.98533
8	0.254	0.1357	0.87	1.002041
9	0.255	0.1362	0.87	1.002582
10	0.25	0.1363	0.87	0.958838
				0.013389 Stdev
				0.990094 Mean

2-butanone	Ws	Wds	d1(g/ml)	Q	
1	0.222	0.1495	0.805	0.602422	
2	0.245	0.1671	0.805	0.579115	
3	0.206	0.1378	0.805	0.614808	
4	0.235	0.1515	0.805	0.684665	
5	0.23	0.149	0.805	0.67531	
6	0.215	0.1453	0.805	0.595897	
7	0.219	0.1362	0.805	0.755192	
8	0.219	0.1402	0.805	0.698204	
9	0.22	0.1365	0.805	0.759903	
10	0.205	0.142	0.805	0.551133	
				0.073417	Stdev
				0.651665	Mean
Benzene	Ws	Wds	d1(g/ml)	Q	
1	0.282	0.1495	0.88	1.007145	
2	0.203	0.1071	0.88	1.017528	
3	0.28	0.1478	0.88	1.016423	
4	0.288	0.1515	0.88	1.023852	
5	0.247	0.129	0.88	1.039464	
6	0.221	0.1153	0.88	1.041749	
7	0.242	0.1262	0.88	1.042717	
8	0.264	0.1402	0.88	1.003437	
9	0.263	0.1365	0.88	1.053114	
10	0.261	0.142	0.88	0.952305	
				0.028908	Stdev
				1.019773	Mean
Chloro-hexanone	Ws	Wds	d1(g/ml)	Q	
1	0.299	0.1774	0.946	0.724584	
2	0.284	0.1619	0.946	0.797219	
3	0.273	0.1564	0.946	0.788081	
4	0.268	0.1534	0.946	0.789711	
5	0.305	0.1823	0.946	0.711487	
6	0.238	0.1335	0.946	0.827454	
7	0.318	0.1834	0.946	0.775809	
8	0.263	0.1541	0.946	0.747023	
9	0.275	0.1578	0.946	0.785108	
10	0.261	0.1518	0.946	0.760431	
				0.035151	Stdev
				0.770691	Mean
Chloro-benzene	Ws	Wds	d1(g/ml)	Q	
1	0.295	0.1294	1.106	1.1571	
2	0.315	0.1408	1.106	1.11864	
3	0.303	0.1336	1.106	1.146441	
4	0.307	0.1368	1.106	1.124911	
5	0.276	0.1204	1.106	1.168498	
6	0.262	0.1139	1.106	1.175645	
7	0.312	0.1393	1.106	1.12095	
8	0.283	0.1251	1.106	1.141221	
9	0.235	0.1018	1.106	1.183045	
10	0.287	0.1284	1.106	1.11682	
				0.024881	Stdev
				1.145327	Mean

Acetone	Ws	Wds	d1(g/ml)	Q	
1	0.187	0.1275	0.79	0.590717	
2	0.167	0.1149	0.79	0.573972	
3	0.187	0.1301	0.79	0.553615	
4	0.204	0.1407	0.79	0.569485	
5	0.202	0.1412	0.79	0.545057	
6	0.194	0.1335	0.79	0.57365	
7	0.173	0.1233	0.79	0.51023	
8	0.195	0.1382	0.79	0.520251	
9	0.184	0.1298	0.79	0.528564	
10	0.204	0.146	0.79	0.502861	
				0.03029	Stdev
				0.54684	Mean
THF	Ws	Wds	d1(g/ml)	Q	
1	0.255	0.1165	0.89	1.335777	
2	0.278	0.1286	0.89	1.305328	
3	0.294	0.1353	0.89	1.31792	
4	0.277	0.1269	0.89	1.329012	
5	0.256	0.1201	0.89	1.271412	
6	0.244	0.1177	0.89	1.205693	
7	0.28	0.1293	0.89	1.309558	
8	0.206	0.0988	0.89	1.219124	
9	0.308	0.1495	0.89	1.191237	
10	0.28	0.1364	0.89	1.182906	
				0.060855	Stdev
				1.266797	Mean
Methanol	Ws	Wds	d1(g/ml)	Q	
1	0.147	0.1154	0.79	0.34662	
2	0.152	0.1174	0.79	0.373062	
3	0.192	0.1517	0.79	0.336273	
4	0.166	0.1306	0.79	0.34311	
5	0.186	0.1446	0.79	0.362414	
6	0.185	0.1452	0.79	0.346968	
7	0.156	0.1221	0.79	0.351445	
8	0.19	0.1499	0.79	0.338622	
9	0.131	0.1009	0.79	0.377614	
10	0.165	0.1296	0.79	0.345757	
				0.014168	Stdev
				0.352189	Mean

Determination of the swelling coefficients of Series 2					
Benzene	Ws	Wds	d1(g/ml)	Q	
1	0.381	0.128	0.88	2.2461	
2	0.375	0.1227	0.88	2.3366	
3	0.334	0.1102	0.88	2.3078	
4	0.381	0.112	0.88	2.7293	
5	0.406	0.1237	0.88	2.5933	
6	0.409	0.1275	0.88	2.5089	
7	0.321	0.1062	0.88	2.2984	
8	0.264	0.0847	0.88	2.4055	
9	0.348	0.1172	0.88	2.2378	
10	0.409	0.1279	0.88	2.4975	
11	0.325	0.1119	0.88	2.1641	
12	0.334	0.1121	0.88	2.2494	
13	0.295	0.1031	0.88	2.1151	
14	0.294	0.096	0.88	2.3438	
	0.046528	0.012795		0.1709	Stdev
	0.348286	0.113086	0.88	2.3595	Mean
n-hexane	Ws	Wds	d1(g/ml)	Q	
1	0.192	0.1245	0.66	0.8215	
2	0.168	0.1101	0.66	0.7968	
3	0.18	0.1097	0.66	0.9710	
4	0.195	0.1286	0.66	0.7823	
5	0.149	0.0985	0.66	0.7768	
6	0.167	0.1112	0.66	0.7603	
7	0.179	0.112	0.66	0.9064	
8	0.203	0.1343	0.66	0.7751	
9	0.184	0.1167	0.66	0.8738	
10	0.182	0.1106	0.66	0.9781	
11	0.163	0.11	0.66	0.7300	
12	0.17	0.1158	0.66	0.7092	
13	0.155	0.1082	0.66	0.6554	
14	0.152	0.1069	0.66	0.6392	
	0.016461	0.009378		0.1042	Stdev
	0.174214	0.114079	0.66	0.7983	Mean
THF	Ws	Wds	d1(g/ml)	Q	
1	0.347	0.1015	0.89	2.7177	
2	0.366	0.1099	0.89	2.6183	
3	0.422	0.1065	0.89	3.3286	
4	0.536	0.1224	0.89	3.7967	
5	0.449	0.1183	0.89	3.1409	
6	0.375	0.1076	0.89	2.7923	
7	0.391	0.1017	0.89	3.1962	
8	0.458	0.1045	0.89	3.8009	
9	0.46	0.1236	0.89	3.0581	
10	0.408	0.1158	0.89	2.8352	
11	0.319	0.0972	0.89	2.5639	
12	0.473	0.1214	0.89	3.2542	
13	0.489	0.1302	0.89	3.0964	
14	0.386	0.1157	0.89	2.6250	
	0.060464	0.009887		0.4017	Stdev
	0.419929	0.112593	0.89	3.0589	Mean

Methanol	Ws	Wds	d1(g/ml)	Q	
1	0.13	0.1215	0.79	0.0886	
2	0.131	0.1193	0.79	0.1241	
3	0.109	0.1023	0.79	0.0829	
4	0.113	0.1072	0.79	0.0685	
5	0.101	0.0957	0.79	0.0701	
6	0.131	0.1224	0.79	0.0889	
7	0.106	0.1015	0.79	0.0561	
8	0.133	0.1246	0.79	0.0853	
9	0.113	0.1067	0.79	0.0747	
10	0.137	0.1284	0.79	0.0848	
11	0.149	0.1413	0.79	0.0690	
12	0.124	0.118	0.79	0.0644	
13	0.102	0.0955	0.79	0.0862	
14	0.119	0.1138	0.79	0.0578	
	0.014504	0.013317		0.0172	Stdev
	0.121286	0.114157	0.79	0.0787	Mean
Acetone	Ws	Wds	d1(g/ml)	Q	
1	0.141	0.105	0.79	0.4340	
2	0.149	0.1127	0.79	0.4077	
3	0.171	0.1255	0.79	0.4589	
4	0.161	0.1214	0.79	0.4129	
5	0.17	0.1265	0.79	0.4353	
6	0.137	0.1034	0.79	0.4113	
7	0.152	0.1161	0.79	0.3914	
8	0.133	0.1016	0.79	0.3912	
9	0.136	0.1042	0.79	0.3863	
10	0.15	0.1145	0.79	0.3925	
11	0.165	0.126	0.79	0.3918	
12	0.156	0.1188	0.79	0.3964	
13	0.163	0.1239	0.79	0.3995	
14	0.135	0.1055	0.79	0.3540	
	0.013391	0.009299		0.0256	Stdev
	0.151357	0.11465	0.79	0.4045	Mean
2-butanone	Ws	Wds	d1(g/ml)	Q	
1	0.175	0.1054	0.805	0.8203	
2	0.19	0.1108	0.805	0.8880	
3	0.184	0.1072	0.805	0.8900	
4	0.201	0.1169	0.805	0.8937	
5	0.255	0.1449	0.805	0.9439	
6	0.186	0.1082	0.805	0.8932	
7	0.167	0.098	0.805	0.8746	
8	0.175	0.1056	0.805	0.8164	
9	0.19	0.1086	0.805	0.9311	
10	0.219	0.1251	0.805	0.9324	
11	0.151	0.089	0.805	0.8654	
12	0.178	0.1038	0.805	0.8880	
13	0.159	0.0934	0.805	0.8725	
14	0.189	0.1125	0.805	0.8447	
	0.025907	0.013714		0.0383	Stdev
	0.187071	0.109243	0.805	0.8824	Mean

Cyclo-	Ws	Wds	d1(g/ml)	Q	
hexanone					
1	0.309	0.1023	0.946	2.1359	
2	0.292	0.1041	0.946	1.9080	
3	0.292	0.1004	0.946	2.0173	
4	0.31	0.112	0.946	1.8688	
5	0.407	0.1389	0.946	2.0403	
6	0.316	0.1028	0.946	2.1923	
7	0.323	0.1125	0.946	1.9779	
8	0.296	0.1054	0.946	1.9116	
9	0.36	0.107	0.946	2.4995	
10	0.32	0.1101	0.946	2.0153	
11	0.353	0.1172	0.946	2.1268	
12	0.356	0.124	0.946	1.9778	
13	0.324	0.1046	0.946	2.2172	
14	0.337	0.1135	0.946	2.0816	
	0.031991	0.01033		0.1627	Stdev
	0.328214	0.111057	0.946	2.0693	Mean
Carbonte	Ws	Wds	d1(g/ml)	Q	
trachloride					
1	0.524	0.106	1.59	2.4801	
2	0.483	0.1026	1.59	2.3318	
3	0.677	0.1348	1.59	2.5297	
4	0.557	0.1182	1.59	2.3348	
5	0.561	0.1122	1.59	2.5157	
6	0.479	0.0945	1.59	2.5590	
7	0.591	0.1174	1.59	2.5372	
8	0.556	0.1143	1.59	2.4304	
9	0.548	0.1052	1.59	2.6472	
10	0.567	0.1104	1.59	2.6012	
11	0.507	0.1021	1.59	2.4942	
12	0.704	0.1417	1.59	2.4958	
13	0.672	0.134	1.59	2.5251	
14	0.626	0.129	1.59	2.4231	
	0.071193	0.01418		0.0897	Stdev
	0.575143	0.115886	1.59	2.4932	Mean
Chloro-	Ws	Wds	d1(g/ml)	Q	
benzene					
1	0.54	0.1376	1.106	2.6441	
2	0.441	0.1147	1.106	2.5722	
3	0.48	0.1144	1.106	2.8895	
4	0.514	0.1277	1.106	2.7351	
5	0.579	0.146	1.106	2.6815	
6	0.455	0.1204	1.106	2.5127	
7	0.452	0.1152	1.106	2.6434	
8	0.509	0.1249	1.106	2.7805	
9	0.456	0.1143	1.106	2.7030	
10	0.395	0.0973	1.106	2.7664	
11	0.368	0.0945	1.106	2.6168	
12	0.433	0.1112	1.106	2.6165	
13	0.42	0.1056	1.106	2.6919	
14	0.535	0.1348	1.106	2.6843	
	0.059515	0.014731		0.0942	Stdev
	0.469786	0.118471	1.106	2.6813	Mean

Toluene	Ws	Wds	d1(g/ml)	Q	
1	0.318	0.1047	0.87	2.3417	
2	0.336	0.1046	0.87	2.5428	
3	0.368	0.113	0.87	2.5938	
4	0.356	0.1099	0.87	2.5739	
5	0.403	0.1163	0.87	2.8335	
6	0.416	0.1194	0.87	2.8553	
7	0.339	0.1119	0.87	2.3327	
8	0.364	0.121	0.87	2.3083	
9	0.315	0.1016	0.87	2.4142	
10	0.293	0.0913	0.87	2.5393	
11	0.34	0.1073	0.87	2.4927	
12	0.409	0.1317	0.87	2.4202	
13	0.387	0.1232	0.87	2.4612	
14	0.298	0.0954	0.87	2.4410	
	0.040253	0.011079		0.1669	Stdev
	0.353	0.110807	0.87	2.5108	Mean

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Determination of the swelling coefficients of Series 3					
n-hexane	Ws	Wds	d1(g/ml)	Q	
1	0.2023	0.1543	0.66	0.471337	
2	0.2446	0.1889	0.66	0.446765	
3	0.2374	0.1839	0.66	0.440786	
4	0.1878	0.1458	0.66	0.436463	
5	0.2001	0.1553	0.66	0.437082	
6	0.209	0.1634	0.66	0.422833	
7	0.208	0.1644	0.66	0.401829	
8	0.1957	0.1547	0.66	0.401559	
				0.023325	Stdev
				0.432332	Mean
Carbon te- trachloride	Ws	Wds	d1(g/ml)	Q	
1	0.8162	0.1806	1.59	2.213446	
2	0.8441	0.1844	1.59	2.250031	
3	0.678	0.1465	1.59	2.281752	
4	0.8901	0.2003	1.59	2.165933	
5	0.8671	0.1978	1.59	2.128126	
6	0.787	0.1808	1.59	2.108727	
7	0.7316	0.1612	1.59	2.225448	
8	0.785	0.1773	1.59	2.155675	
				0.060956	Stdev
				2.191142	Mean
Toulene	Ws	Wds	d1(g/ml)	Q	
1	0.4035	0.1316	0.87	2.374838	
2	0.3768	0.1224	0.87	2.389002	
3	0.4399	0.1448	0.87	2.34251	
4	0.4001	0.1319	0.87	2.337194	
5	0.432	0.1418	0.87	2.35235	
6	0.5202	0.1694	0.87	2.380274	
7	0.319	0.1028	0.87	2.417371	
8	0.3506	0.1121	0.87	2.445477	
				0.037405	Stdev
				2.379877	Mean
2-butanone	Ws	Wds	d1(g/ml)	Q	
1	0.4957	0.2119	0.805	1.66374	
2	0.4712	0.1995	0.805	1.691807	
3	0.4436	0.1867	0.805	1.709322	
4	0.496	0.2161	0.805	1.608986	
5	0.532	0.2241	0.805	1.706758	
6	0.4331	0.1809	0.805	1.731851	
7	0.384	0.1646	0.805	1.655812	
8	0.4078	0.1759	0.805	1.637718	
				0.041299	Stdev
				1.675749	Mean

Benzene	Ws	Wds	d1(g/ml)	Q	
1	0.653	0.2055	0.88	2.474563	
2	0.582	0.1806	0.88	2.525672	
3	0.552	0.1716	0.88	2.519072	
4	0.561	0.1727	0.88	2.555009	
5	0.603	0.1883	0.88	2.502655	
6	0.636	0.1967	0.88	2.537898	
7	0.567	0.1793	0.88	2.457157	
8	0.537	0.1671	0.88	2.515505	
				0.032199	Stdev
				2.510941	Mean
Chloro-hexanone	Ws	Wds	d1(g/ml)	Q	
1	0.616	0.1794	0.946	2.572588	
2	0.532	0.1514	0.946	2.657368	
3	0.596	0.1779	0.946	2.484352	
4	0.523	0.1525	0.946	2.56819	
5	0.598	0.1767	0.946	2.520367	
6	0.574	0.1669	0.946	2.57842	
7	0.63	0.1838	0.946	2.566214	
8	0.619	0.1866	0.946	2.449531	
				0.064054	Stdev
				2.549629	Mean
Chloro-benzene	Ws	Wds	d1(g/ml)	Q	
1	0.453	0.1094	1.106	2.839754	
2	0.523	0.1267	1.106	2.828084	
3	0.514	0.1239	1.106	2.846751	
4	0.489	0.1177	1.106	2.852288	
5	0.576	0.1403	1.106	2.807856	
6	0.486	0.1169	1.106	2.854792	
7	0.53	0.1286	1.106	2.822158	
8	0.525	0.1241	1.106	2.920849	
				0.034018	Stdev
				2.846566	Mean
Acetone	Ws	Wds	d1(g/ml)	Q	
1	0.197	0.1104	0.79	0.992937	
2	0.247	0.1354	0.79	1.043322	
3	0.218	0.1185	0.79	1.062864	
4	0.223	0.1225	0.79	1.038491	
5	0.303	0.1706	0.79	0.982385	
6	0.254	0.1409	0.79	1.016072	
7	0.26	0.1457	0.79	0.993024	
8	0.201	0.1155	0.79	0.937038	
				0.040347	Stdev
				1.008267	Mean

THF	Ws	Wds	d1(g/ml)	Q	
1	0.499	0.1284	0.89	3.243026	
2	0.594	0.1487	0.89	3.364742	
3	0.567	0.1461	0.89	3.23697	
4	0.509	0.1309	0.89	3.245466	
5	0.613	0.1602	0.89	3.175806	
6	0.573	0.1458	0.89	3.292181	
7	0.476	0.1248	0.89	3.161913	
8	0.503	0.1307	0.89	3.200571	
				0.065579	Stdev
				3.240084	Mean
Methanol	Ws	Wds	d1(g/ml)	Q	
1	0.166	0.1098	0.79	0.647898	
2	0.21	0.1403	0.79	0.628851	
3	0.195	0.1312	0.79	0.615545	
4	0.183	0.1209	0.79	0.650187	
5	0.193	0.1276	0.79	0.648784	
6	0.211	0.1421	0.79	0.613759	
7	0.171	0.1126	0.79	0.656519	
8	0.192	0.1276	0.79	0.638864	
				0.01639	Stdev
				0.637551	Mean

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Density of Polyols-based					
3:01	w,cm	L,cm	Th,cm	Density,g/cm ²	
0.252	0.72	0.72	0.4	1.215278	
0.234	0.68	0.72	0.38	1.295853	
0.241	0.74	0.69	0.39	1.21024	
0.256	0.72	0.71	0.39	1.284058	
0.262	0.75	0.7	0.39	1.279609	
0.26	0.74	0.69	0.4	1.273012	
0.225	0.7	0.71	0.35	1.293475	
0.271	0.7	0.7	0.41	1.34893	
0.229	0.67	0.69	0.38	1.303551	
0.016138	0.031402	0.012247	0.017159	0.043057	Stdev
0.247778	0.711111	0.703333	0.387778	1.278223	Mean
4:01	w	L	Th	Density	
0.145	0.74	0.73	0.22	1.220087	
0.114	0.69	0.68	0.22	1.104394	
0.127	0.7	0.74	0.2	1.225869	
0.13	0.75	0.68	0.22	1.158645	
0.13	0.73	0.7	0.21	1.211443	
0.119	0.74	0.67	0.21	1.142934	
0.128	0.69	0.73	0.21	1.210093	
0.138	0.72	0.74	0.2	1.295045	
0.13	0.73	0.66	0.21	1.284864	
0.009152	0.022608	0.032016	0.007817	0.062582	Stdev
0.129	0.721111	0.703333	0.211111	1.205931	Mean
5:01	w	L	Th	Density	
0.138	0.72	0.72	0.22	1.210017	
0.131	0.73	0.71	0.21	1.203568	
0.128	0.71	0.7	0.21	1.226406	
0.127	0.73	0.71	0.2	1.225159	
0.138	0.7	0.74	0.21	1.268616	
0.131	0.68	0.75	0.21	1.223156	
0.132	0.68	0.72	0.21	1.283847	
0.123	0.7	0.7	0.21	1.195335	
0.134	0.67	0.74	0.21	1.267001	
0.00495	0.022236	0.018333	0.005	0.034838	Stdev
0.131333	0.702222	0.721111	0.21	1.235901	Mean
6:01	w	L	Th	Density	
0.133	0.7	0.68	0.21	1.330532	
0.127	0.7	0.66	0.21	1.309008	
0.132	0.69	0.72	0.21	1.26524	
0.138	0.68	0.69	0.22	1.338898	
0.134	0.7	0.7	0.22	1.243043	
0.138	0.66	0.73	0.22	1.301936	
0.134	0.67	0.76	0.21	1.253133	
0.143	0.68	0.72	0.24	1.21698	
0.138	0.67	0.7	0.23	1.279318	
0.004604	0.015	0.02958	0.010541	0.040869	Stdev
0.135222	0.683333	0.706667	0.218889	1.281788	Mean
7:01	w	L	Th	Density	
0.126	0.67	0.68	0.21	1.316945	
0.124	0.69	0.67	0.21	1.277258	
0.132	0.69	0.7	0.21	1.30139	
0.136	0.67	0.72	0.21	1.342494	
0.136	0.71	0.68	0.22	1.299239	
0.114	0.68	0.7	0.2	1.197479	
0.129	0.7	0.68	0.21	1.290516	
0.115	0.66	0.71	0.19	1.291641	
0.132	0.66	0.69	0.21	1.380262	
0.0085	0.017638	0.016415	0.008333	0.049654	Stdev
0.127333	0.681111	0.692222	0.207778	1.299892	Mean

8:01	w	L	Th	Density	
0.14		0.67	0.72	0.21	1.381979
0.124		0.65	0.66	0.21	1.376401
0.111		0.69	0.66	0.18	1.354121
0.116		0.63	0.66	0.21	1.328478
0.126		0.68	0.63	0.21	1.40056
0.12		0.68	0.73	0.18	1.343003
0.13		0.68	0.69	0.21	1.319368
0.13		0.69	0.65	0.21	1.380262
0.107		0.63	0.66	0.2	1.286676
0.010332	0.023979	0.033166	0.013017	0.036436	Stdev
0.122667	0.666667	0.673333	0.202222	1.352317	Mean
9:01	w	L	Th	Density	
0.124		0.62	0.67	0.21	1.421464
0.12		0.7	0.6	0.21	1.360544
0.112		0.7	0.62	0.19	1.358234
0.115		0.66	0.65	0.2	1.340326
0.11		0.66	0.61	0.19	1.438021
0.115		0.66	0.64	0.2	1.361269
0.113		0.69	0.62	0.19	1.390222
0.124		0.69	0.65	0.21	1.316558
0.113		0.7	0.61	0.19	1.392826
0.005191	0.027437	0.023452	0.00928	0.038688	Stdev
0.116222	0.675556	0.63	0.198889	1.375496	Mean
10:01	w	L	Th	Density	
0.115		0.64	0.63	0.19	1.501149
0.109		0.64	0.66	0.2	1.290246
0.122		0.62	0.72	0.2	1.366487
0.112		0.62	0.63	0.2	1.433692
0.116		0.64	0.66	0.2	1.373106
0.112		0.6	0.66	0.2	1.414141
0.108		0.63	0.62	0.2	1.382488
0.112		0.63	0.64	0.2	1.388889
0.113		0.65	0.6	0.2	1.448718
0.004147	0.015	0.034278	0.003333	0.059437	Stdev
0.113222	0.63	0.646667	0.198889	1.39988	Mean

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Density of HTPB-based					
3:01	w	L	Th	Density	
0.13	0.76	0.72	0.29	0.819218	
0.096	0.69	0.69	0.23	0.876688	
0.093	0.67	0.65	0.23	0.928468	
0.118	0.71	0.68	0.28	0.872884	
0.104	0.73	0.67	0.24	0.885981	
0.092	0.74	0.65	0.24	0.796951	
0.105	0.62	0.72	0.25	0.94086	
0.096	0.62	0.72	0.25	0.860215	
0.098	0.71	0.71	0.22	0.883663	
0.012749	0.049777	0.029155	0.023333	0.045839	Stdev
0.103556	0.694444	0.69	0.247778	0.873881	Mean
4:01	w	L	Th	Density	
0.101	0.71	0.72	0.22	0.898065	
0.091	0.64	0.71	0.21	0.953638	
0.089	0.68	0.69	0.2	0.948423	
0.094	0.71	0.65	0.21	0.969922	
0.091	0.68	0.69	0.21	0.923558	
0.1	0.69	0.69	0.21	1.00019	
0.1	0.7	0.68	0.23	0.913409	
0.104	0.7	0.69	0.22	0.978731	
0.107	0.65	0.68	0.24	1.008673	
0.006386	0.025055	0.01965	0.012247	0.038265	Stdev
0.097444	0.684444	0.688889	0.216667	0.954957	Mean
5:01	w	L	Th	Density	
0.117	0.74	0.71	0.22	1.012216	
0.105	0.73	0.64	0.23	0.977144	
0.112	0.73	0.7	0.22	0.996264	
0.109	0.66	0.75	0.23	0.9574	
0.117	0.69	0.74	0.22	1.041555	
0.11	0.73	0.71	0.22	0.964692	
0.105	0.7	0.68	0.22	1.002674	
0.108	0.68	0.68	0.23	1.015496	
0.106	0.7	0.71	0.23	0.927303	
0.004649	0.027386	0.033082	0.00527	0.034955	Stdev
0.109889	0.706667	0.702222	0.224444	0.988305	Mean
6:01	w	L	Th	Density	
0.104	0.73	0.73	0.22	0.887084	
0.111	0.72	0.72	0.22	0.973274	
0.103	0.69	0.71	0.22	0.955668	
0.116	0.7	0.73	0.23	0.986982	
0.106	0.7	0.73	0.22	0.942893	
0.107	0.72	0.73	0.22	0.925349	
0.106	0.69	0.72	0.22	0.989843	
0.109	0.71	0.72	0.22	0.969199	
0.113	0.72	0.7	0.21	1.067649	
0.004301	0.01453	0.010541	0.005	0.049172	Stdev
0.108333	0.708889	0.721111	0.22	0.984216	Mean
7:01	w	L	Th	Density	
0.093	0.7	0.7	0.2	0.94898	
0.114	0.66	0.67	0.24	1.074175	
0.097	0.69	0.7	0.21	0.956325	
0.115	0.73	0.7	0.24	0.937704	
0.111	0.71	0.71	0.25	0.880778	
0.092	0.69	0.67	0.2	0.995025	
0.094	0.69	0.7	0.2	0.973085	
0.112	0.73	0.72	0.24	0.887874	
0.093	0.71	0.66	0.2	0.992318	
0.010271	0.022048	0.02048	0.021794	0.05872	Stdev
0.102333	0.701111	0.692222	0.22	0.960696	Mean

8:01 w		L	Th	Density	
0.09	0.68	0.7	0.21	0.90036	
0.092	0.63	0.75	0.2	0.973545	
0.09	0.62	0.73	0.2	0.994255	
0.09	0.65	0.72	0.22	0.874126	
0.096	0.67	0.69	0.2	1.038287	
0.088	0.68	0.67	0.2	0.965759	
0.091	0.67	0.64	0.2	1.061101	
0.091	0.68	0.7	0.2	0.955882	
0.092	0.7	0.71	0.2	0.925553	
0.002205	0.026034	0.032575	0.007071	0.060838	Stdev
0.091111	0.664444	0.701111	0.203333	0.96543	Mean
9:01 w		L	Th	Density	
0.098	0.66	0.68	0.22	0.992546	
0.103	0.67	0.72	0.21	1.016742	
0.086	0.67	0.67	0.2	0.957897	
0.09	0.66	0.64	0.2	1.065341	
0.094	0.68	0.68	0.2	1.016436	
0.083	0.7	0.67	0.2	0.884861	
0.081	0.65	0.67	0.2	0.929966	
0.092	0.7	0.72	0.2	0.912698	
0.091	0.7	0.72	0.2	0.902778	
0.007008	0.019365	0.028333	0.007071	0.061698	Stdev
0.090889	0.676667	0.685556	0.203333	0.964363	Mean
10:01 w		L	Th	Density	
0.097	0.67	0.66	0.21	1.044561	
0.094	0.69	0.63	0.22	0.982914	
0.107	0.66	0.66	0.22	1.116537	
0.078	0.66	0.67	0.2	0.881954	
0.075	0.68	0.63	0.19	0.921421	
0.08	0.63	0.66	0.18	1.06889	
0.098	0.67	0.7	0.2	1.044776	
0.097	0.67	0.67	0.21	1.02897	
0.098	0.65	0.68	0.22	1.007816	
0.011058	0.017401	0.022236	0.01424	0.072934	Stdev
0.091556	0.664444	0.662222	0.205556	1.010871	Mean
11:01 w		L	Th	Density	
0.079	0.63	0.72	0.18	0.967568	
0.085	0.68	0.66	0.22	0.860882	
0.098	0.69	0.69	0.21	0.980186	
0.08	0.69	0.69	0.2	0.84016	
0.083	0.65	0.67	0.2	0.952928	
0.084	0.69	0.7	0.21	0.828157	
0.081	0.67	0.68	0.19	0.935724	
0.076	0.66	0.68	0.19	0.918274	
0.093	0.67	0.68	0.2	1.020632	
0.007	0.020616	0.019365	0.012247	0.066694	Stdev
0.084333	0.67	0.683333	0.2	0.922723	Mean

		Density of Poly:HTPB (series 3)				
	Wt(g)	w(cm)	L(cm)	Th(cm)	Density	
3:1:1	1	0.0992	0.74	0.74	0.18	1.006412
	2	0.1174	0.72	0.72	0.21	1.07841
	3	0.1102	0.75	0.66	0.22	1.011938
	4	0.108	0.74	0.68	0.2	1.073132
	5	0.1126	0.74	0.72	0.21	1.006364
	6	0.1058	0.73	0.68	0.2	1.065673
	7	0.0855	0.74	0.69	0.16	1.046563
	8	0.124	0.74	0.73	0.22	1.043385
	9	0.1071	0.7	0.72	0.2	1.0625
	10	0.1063	0.73	0.69	0.21	1.004944
					0.029942	Stdev
					1.039932	Mean
4:01:01		Wt(g)	w(cm)	L(cm)	Th(cm)	Density
	1	0.1276	0.7	0.74	0.21	1.17301
	2	0.1468	0.77	0.73	0.25	1.044654
	3	0.1246	0.74	0.73	0.21	1.098359
	4	0.1333	0.76	0.74	0.21	1.128666
	5	0.1231	0.78	0.7	0.21	1.073609
	6	0.1286	0.73	0.68	0.22	1.177569
	7	0.1491	0.65	0.73	0.25	1.256902
	8	0.118	0.68	0.66	0.22	1.195106
					0.070171	Stdev
					1.143484	Mean
5:01:01		Wt(g)	w(cm)	L(cm)	Th(cm)	Density
	1	0.1596	0.72	0.7	0.25	1.266667
	2	0.1329	0.77	0.7	0.21	1.174132
	3	0.1382	0.7	0.72	0.23	1.192202
	4	0.1252	0.72	0.66	0.22	1.197582
	5	0.1321	0.67	0.73	0.23	1.174295
	6	0.1429	0.72	0.68	0.25	1.167484
	7	0.1241	0.69	0.7	0.22	1.16789
	8	0.1129	0.67	0.71	0.21	1.130164
					0.03911	Stdev
					1.183802	Mean
6:01:01		Wt(g)	w(cm)	L(cm)	Th(cm)	Density
	1	0.1167	0.7	0.7	0.22	1.08256
	2	0.1447	0.65	0.78	0.25	1.141617
	3	0.1251	0.73	0.68	0.22	1.14552
	4	0.1176	0.7	0.76	0.19	1.163435
	5	0.1273	0.75	0.66	0.21	1.224627
	6	0.124	0.7	0.78	0.19	1.195296
	7	0.1268	0.7	0.66	0.24	1.143579
	8	0.1375	0.69	0.73	0.24	1.137416
					0.042248	Stdev
					1.154256	Mean
7:01:01		Wt(g)	w(cm)	L(cm)	Th(cm)	Density
	1	0.131	0.72	0.68	0.23	1.163328
	2	0.1421	0.75	0.7	0.23	1.176812
	3	0.1331	0.77	0.68	0.21	1.210484
	4	0.1348	0.68	0.69	0.22	1.305898
	5	0.1422	0.7	0.73	0.24	1.159491
	6	0.1476	0.71	0.66	0.26	1.211465
	7	0.1101	0.65	0.7	0.2	1.20989
	8	0.1404	0.72	0.7	0.25	1.114286
					0.056229	Stdev
					1.193957	Mean

8:01:01	Wt(g)	w(cm)	L(cm)	Th(cm)	Density
1	0.147	0.65	0.82	0.23	1.199119
2	0.1295	0.72	0.71	0.22	1.15148
3	0.1278	0.69	0.74	0.2	1.251469
4	0.1192	0.66	0.76	0.2	1.188198
5	0.1495	0.82	0.72	0.22	1.150992
6	0.1401	0.7	0.75	0.24	1.111905
7	0.1195	0.69	0.77	0.2	1.1246
8	0.1534	0.68	0.78	0.24	1.205065
					0.046478 Stdev
					1.172853 Mean
9:01:01	Wt(g)	w(cm)	L(cm)	Th(cm)	Density
1	0.17	0.72	0.74	0.28	1.139532
2	0.1801	0.69	0.74	0.28	1.259722
3	0.1942	0.7	0.74	0.32	1.171573
4	0.1962	0.76	0.75	0.32	1.075658
5	0.2033	0.76	0.78	0.31	1.106286
6	0.1961	0.74	0.78	0.28	1.21337
7	0.1943	0.7	0.75	0.32	1.156548
8	0.1801	0.72	0.74	0.3	1.126752
					0.058974 Stdev
					1.15618 Mean
Density of Poly:HTPB Series 4)					
2:02:01	Wt(g)	w(cm)	L(cm)	Th(cm)	Density
1	0.178	0.66	0.75	0.4	0.89899
2	0.182	0.68	0.67	0.42	0.951127
3	0.181	0.67	0.69	0.4	0.978802
4	0.189	0.7	0.66	0.4	1.022727
5	0.175	0.66	0.68	0.41	0.951046
6	0.165	0.66	0.69	0.37	0.97924
7	0.184	0.67	0.67	0.41	0.999734
8	0.187	0.66	0.74	0.4	0.957207
9	0.19	0.76	0.67	0.4	0.932836
10	0.185	0.68	0.69	0.41	0.961678
					0.034569 Stdev
					0.963339 Mean
3:02:01	Wt(g)	w(cm)	L(cm)	Th(cm)	Density
1	0.129	0.68	0.66	0.24	1.197638
2	0.14	0.67	0.73	0.25	1.14496
3	0.137	0.65	0.72	0.26	1.125904
4	0.121	0.68	0.68	0.24	1.090326
5	0.133	0.65	0.71	0.26	1.108426
6	0.139	0.68	0.73	0.25	1.120064
7	0.131	0.67	0.7	0.24	1.163824
8	0.138	0.68	0.71	0.25	1.143331
9	0.126	0.69	0.64	0.25	1.141304
10	0.126	0.65	0.71	0.24	1.137595
					0.02967 Stdev
					1.137337 Mean

4:02:01	Wt(g)	w(cm)	L(cm)	Th(cm)	Density		
1	0.125	0.65	0.68	0.67	0.22	1.285479	
2	0.123	0.66	0.69	0.22		1.227692	
3	0.127	0.7	0.69	0.25		1.05176	
4	0.126	0.67	0.68	0.21		1.202428	
5	0.113	0.66	0.68	0.21		1.198964	
6	0.124	0.66	0.72	0.22		1.186103	
7	0.115	0.7	0.64	0.22		1.166802	
8	0.128	0.69	0.66	0.23		1.22205	
9	0.127	0.7	0.68	0.23		1.160029	
10	0.111	0.67	0.67	0.64	0.67	0.2	1.29431
						0.068579	Stdev
						1.199562	Mean
5:02:01	Wt(g)	w(cm)	L(cm)	Th(cm)	Density		
1	0.112	0.66	0.63	0.22		1.224365	
2	0.097	0.7	0.67	0.68	0.17	1.198715	
3	0.116	0.66	0.72	0.2		1.220539	
4	0.111	0.68	0.68	0.2		1.20026	
5	0.106	0.66	0.71	0.2		1.131029	
6	0.112	0.7	0.67	0.21		1.137171	
7	0.097	0.67	0.69	0.18		1.165669	
8	0.112	0.66	0.66	0.22		1.168712	
9	0.095	0.71	0.64	0.19		1.100352	
10	0.094	0.64	0.66	0.17		1.309046	
						0.059276	Stdev
						1.185586	Mean
6:02:01	Wt(g)	w(cm)	L(cm)	Th(cm)	Density		
1	0.116	0.7	0.7	0.21		1.127308	
2	0.135	0.65	0.7	0.24		1.236264	
3	0.135	0.65	0.68	0.26		1.17473	
4	0.115	0.71	0.7	0.21		1.101849	
5	0.111	0.67	0.7	0.2		1.183369	
6	0.131	0.62	0.74	0.24		1.189698	
7	0.109	0.66	0.65	0.21		1.209901	
8	0.145	0.7	0.64	0.27		1.198743	
9	0.112	0.64	0.64	0.22		1.242898	
10	0.113	0.66	0.67	0.21		1.216859	
						0.044817	Stdev
						1.188162	Mean
7:02:01	Wt(g)	w(cm)	L(cm)	Th(cm)	Density		
1	0.141	0.71	0.7	0.25		1.134809	
2	0.149	0.7	0.68	0.25		1.252101	
3	0.12	0.66	0.67	0.22		1.233502	
4	0.158	0.73	0.71	0.26		1.172472	
5	0.157	0.71	0.71	0.27		1.153504	
6	0.136	0.68	0.68	0.23		1.278772	
7	0.15	0.7	0.7	0.26		1.177394	
8	0.127	0.66	0.7	0.23		1.195182	
9	0.123	0.77	0.7	0.22		1.037274	
10	0.16	0.72	0.73	0.26		1.170823	
						0.067747	Stdev
						1.180583	Mean
8:02:01	Wt(g)	w(cm)	L(cm)	Th(cm)	Density		
1	0.123	0.71	0.7	0.21		1.1785	
2	0.135	0.73	0.69	0.23		1.16529	
3	0.149	0.65	0.68	0.27		1.248534	
4	0.143	0.62	0.71	0.26		1.249432	
5	0.152	0.62	0.71	0.27		1.27888	
6	0.141	0.67	0.64	0.27		1.217869	
7	0.146	0.7	0.7	0.25		1.191837	
8	0.149	0.74	0.68	0.26		1.138865	
9	0.133	0.6	0.77	0.24		1.199495	
10	0.141	0.6	0.6	0.77	0.26	1.173826	
						0.043863	Stdev
						1.204253	Mean

Appendix (D)

Polyols:HTPB:MDI

0:0:1	0:1:1	0:2:1	0:3:1	0:4:1	0:5:1	0:6:1	0:7:1	0:8:1	0:9:1	0:10:1	0:11:1
1:0:1	1:1:1	1:2:1	1:3:1	1:4:1	1:5:1	1:6:1	1:7:1	1:8:1	1:9:1	1:10:1	1:11:1
2:0:1	2:1:1	2:2:1	2:3:1	2:4:1	2:5:1	2:6:1	2:7:1	2:8:1	2:9:1	2:10:1	2:11:1
3:0:1	3:1:1	3:2:1	3:3:1	3:4:1	3:5:1	3:6:1	3:7:1	3:8:1	3:9:1	3:10:1	3:11:1
4:0:1	4:1:1	4:2:1	4:3:1	4:4:1	4:5:1	4:6:1	4:7:1	4:8:1	4:9:1	4:10:1	4:11:1
5:0:1	5:1:1	5:2:1	5:3:1	5:4:1	5:5:1	5:6:1	5:7:1	5:8:1	5:9:1	5:10:1	5:11:1
6:0:1	6:1:1	6:2:1	6:3:1	6:4:1	6:5:1	6:6:1	6:7:1	6:8:1	6:9:1	6:10:1	6:11:1
7:0:1	7:1:1	7:2:1	7:3:1	7:4:1	7:5:1	7:6:1	7:7:1	7:8:1	7:9:1	7:10:1	7:11:1
8:0:1	8:1:1	8:2:1	8:3:1	8:4:1	8:5:1	8:6:1	8:7:1	8:8:1	8:9:1	8:10:1	8:11:1
9:0:1	9:1:1	9:2:1	9:3:1	9:4:1	9:5:1	9:6:1	9:7:1	9:8:1	9:9:1	9:10:1	9:11:1
10:0:1	10:1:1	10:2:1	10:3:1	10:4:1	10:5:1	10:6:1	10:7:1	10:8:1	10:9:1	10:10:1	10:11:1

Sequence of Weight Ratio Systems

สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย

Appendix (E)

Greek Character	Greek Name	English Equivalent
δ	delta	D
ϵ	epsilon	E
υ	upsilon	Y
ρ	rho	R
χ	chi	CH
λ	lambda	L
ϕ	phi	PH
Δ	delta	D

List of Greek Symbols

สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย

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