

LABORATORIUM MATERIAL JURUSAN TEKNIK MESIN FT UNS

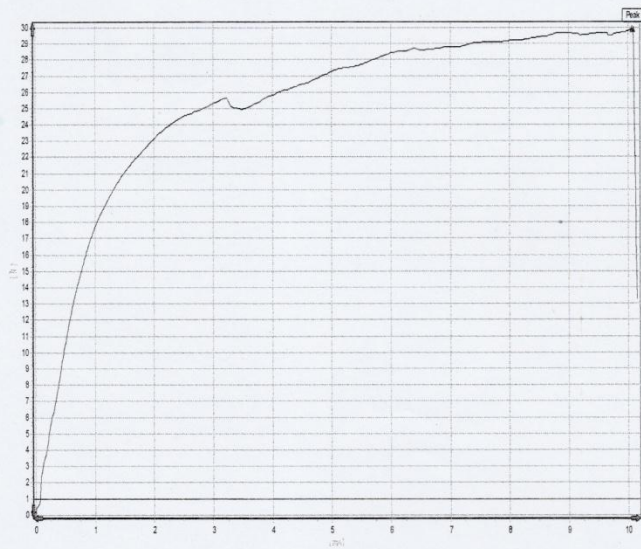
Jl. Ir. Sutami no.36 A Surakarta, Jawa Tengah

TEST REPORT

Test NO. : 2 / 109

Test Description :

Speciment	Area mm ²	Max Force N	Tensile Strenght N/mm ²	Yield Load N	Yield Strenght N/mm ²	Break Force N	Elong. %
		29,95					



Q.C. Dept. : _____

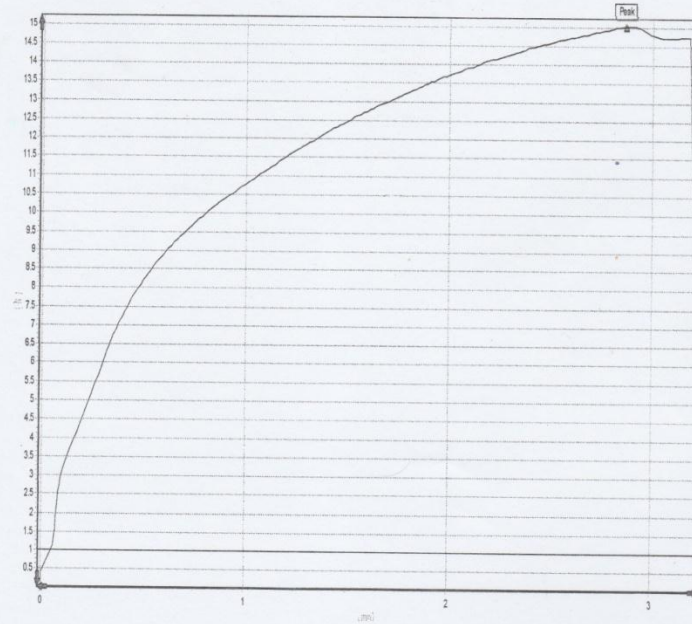
Tester : _____

TEST REPORT

Test NO. : 1/100

Test Description :

Speciment	Area mm ²	Max Force N	Tensile Strenght N/mm ²	Yield Load N	Yield Strenght N/mm ²	Break Force N	Elong. %
		15,04					



Q.C. Dept. : _____

Tester : _____

LABORATORIUM MATERIAL JURUSAN TEKNIK MESIN FT UNS

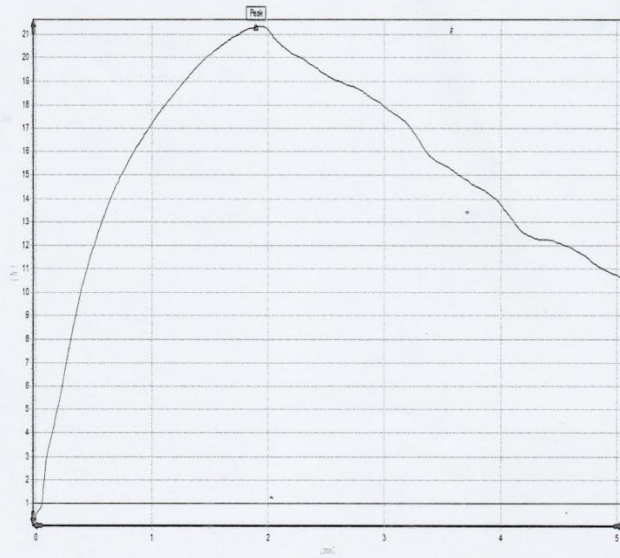
Jl. Ir. Sutami no.36 A Surakarta, Jawa Tengah

TEST REPORT

Test NO. : 7 / 165

Test Description :

Speciment	Area mm ²	Max Force N	Tensile Strenght N/mm ²	Yield Load N	Yield Strenght N/mm ²	Break Force N	Elong. %
		21.34					



Q.C. Dept. : _____

Tester : _____

LABORATORIUM MATERIAL JURUSAN TEKNIK MESIN FT UNS

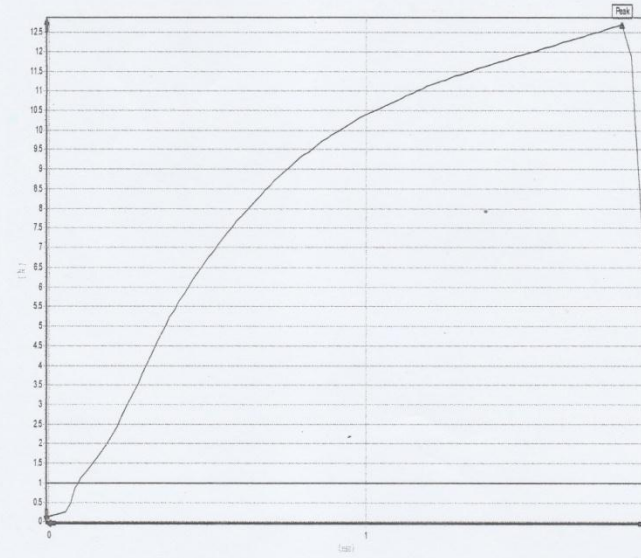
Jl. Ir. Sutami no.36 A Surakarta, Jawa Tengah

TEST REPORT

Test NO. : 3 / 165

Test Description :

Speciment	Area mm ²	Max Force N	Tensile Strenght N/mm ²	Yield Load N	Yield Strenght N/mm ²	Break Force N	Elong. %
		12.70					



Q.C. Dept. : _____

Tester : _____

LABORATORIUM MATERIAL JURUSAN TEKNIK MESIN FT UNS

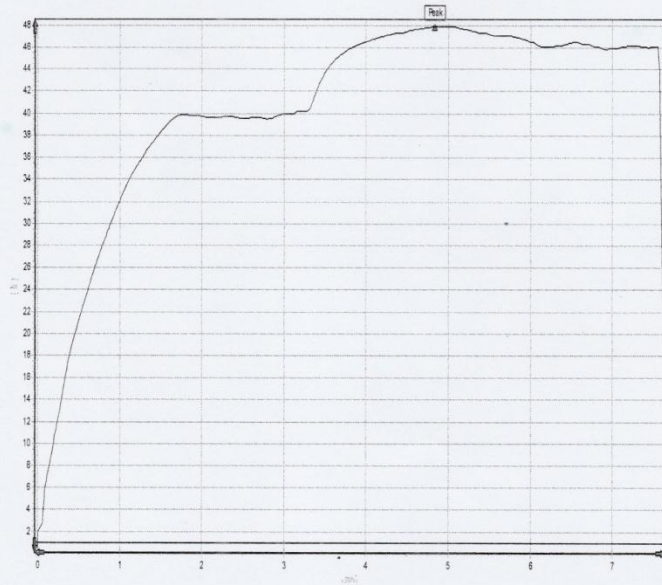
Jl. Ir. Sutami no.36 A Surakarta, Jawa Tengah

TEST REPORT

Test NO. : 7/147

Test Description :

Speciment	Area mm ²	Max Force N	Tensile Strenght N/mm ²	Yield Load N	Yield Strenght N/mm ²	Break Force N	Elong. %
		47.90					



Q.C. Dept. : _____

Tester : _____

LABORATORIUM MATERIAL JURUSAN TEKNIK MESIN FT UNS

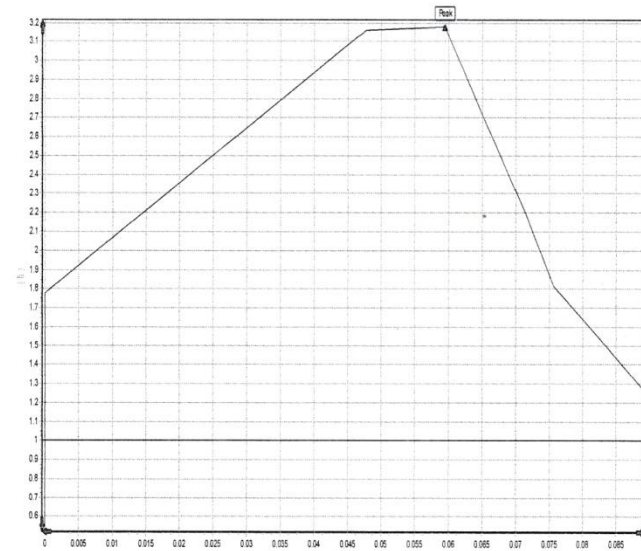
Jl. Ir. Sutami no.36 A Surakarta, Jawa Tengah

TEST REPORT

Test NO. : 6/148

Test Description :

Speciment	Area mm ²	Max Force N	Tensile Strenght N/mm ²	Yield Load N	Yield Strenght N/mm ²	Break Force N	Elong. %
		3.18					



Q.C. Dept. : _____

Tester : _____

LABORATORIUM MATERIAL JURUSAN TEKNIK MESIN FT UNS

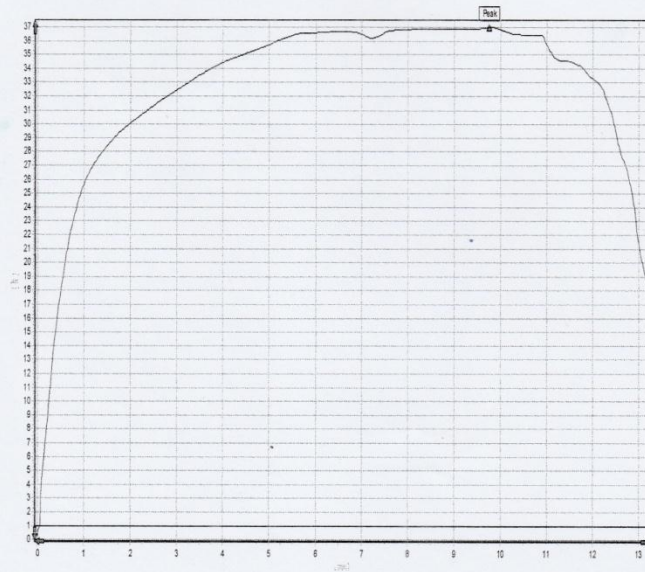
Jl. Ir. Sutami no.36 A Surakarta, Jawa Tengah

TEST REPORT

Test NO. : 5/145

Test Description :

Speciment	Area mm ²	Max Force N	Tensile Strenght N/mm ²	Yield Load N	Yield Strenght N/mm ²	Break Force N	Elong. %
		37,00					



Q.C. Dept. : _____

Tester : _____

LABORATORIUM MATERIAL JURUSAN TEKNIK MESIN FT UNS 13.8

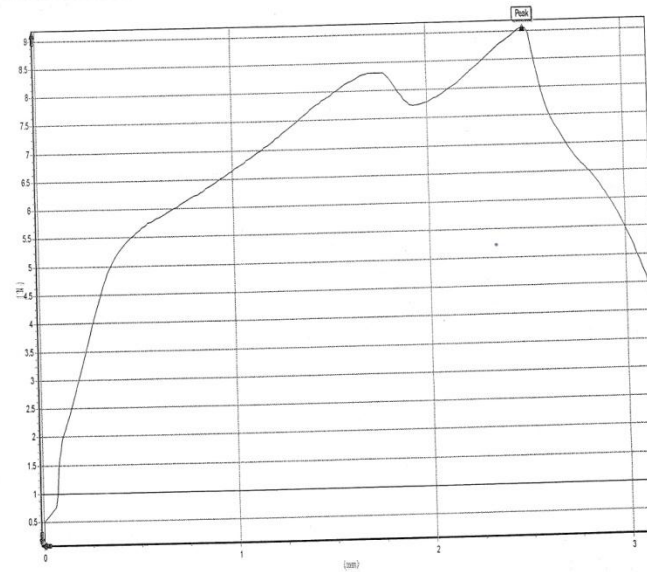
Jl. Ir. Sutami no.36 A Surakarta, Jawa Tengah

TEST REPORT

Test NO. : C1/6mm, 5%, 130

Test Description :

Speciment	Area mm ²	Max Force N	Tensile Strenght N/mm ²	Yield Load N	Yield Strenght N/mm ²	Break Force N	Elong. %
		9,06					



Q.C. Dept. : _____

Tester : _____

LABORATORIUM MATERIAL JURUSAN TEKNIK MESIN FT UNS

136

Jl. Ir. Sutami no.36 A Surakarta, Jawa Tengah

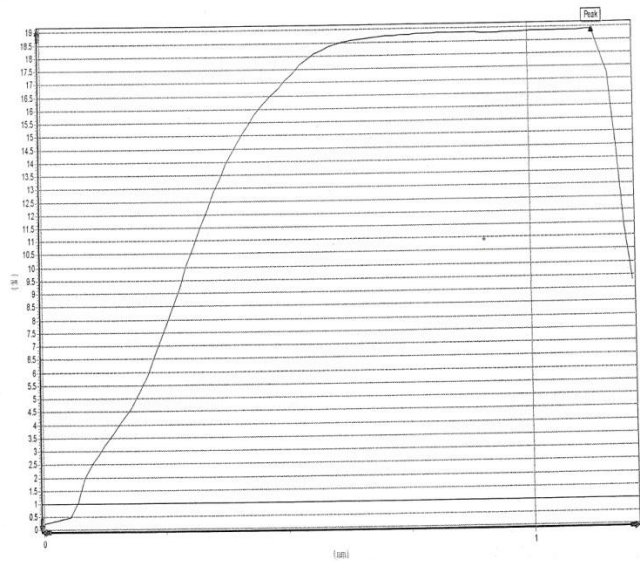
TEST REPORT

Test NO.: 5 / 6 jam 5% 136

Serok kecil

Test Description :

Speciment	Area mm2	Max Force N	Tensile Strenght N/mm2	Yield Load N	Yield Strenght N/mm2	Break Force N	Elong. %
		18.92					



Q.C. Dept. :

[Signature]

Tester :

LABORATORIUM MATERIAL JURUSAN TEKNIK MESIN FT UNS

135

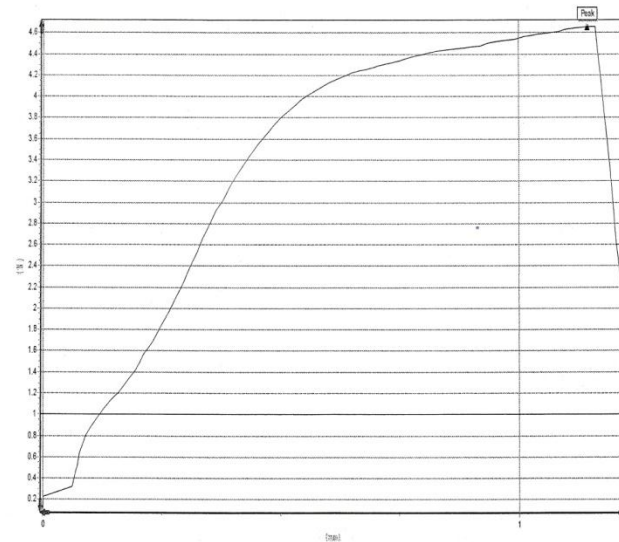
Jl. Ir. Sutami no.36 A Surakarta, Jawa Tengah

TEST REPORT

Test NO. : 49 / 2 jam 5% 135

Test Description :

Speciment	Area mm2	Max Force N	Tensile Strenght N/mm2	Yield Load N	Yield Strenght N/mm2	Break Force N	Elong. %
		4.66					



Q.C. Dept. :

[Signature]

Tester :

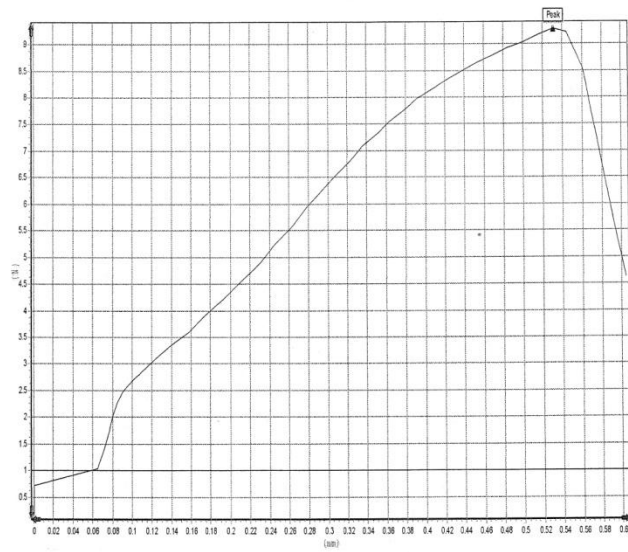
Jl. Ir. Sutami no.36 A Surakarta, Jawa Tengah

TEST REPORT

Test NO. : 32/6 Jan, 5% 137

Test Description :

Speciment	Area mm ²	Max Force N	Tensile Strenght N/mm ²	Yield Load N	Yield Strenght N/mm ²	Break Force N	Elong. %
		9,29					



Q.C. Dept. :

[Signature]

Tester :

Jl. Ir. Sutami no.36 A Surakarta, Jawa Tengah

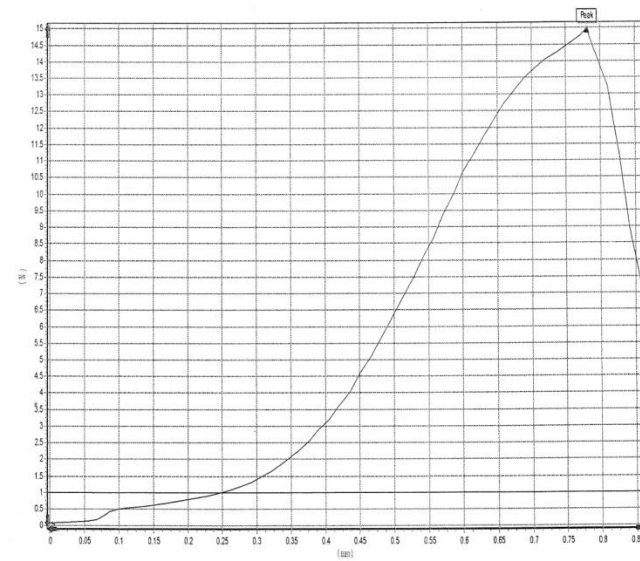
TEST REPORT

Test NO. : 36/6 Jan, 5% 133

Serat Real

Test Description :

Speciment	Area mm ²	Max Force N	Tensile Strenght N/mm ²	Yield Load N	Yield Strenght N/mm ²	Break Force N	Elong. %
		14,96					



Q.C. Dept. :

[Signature]

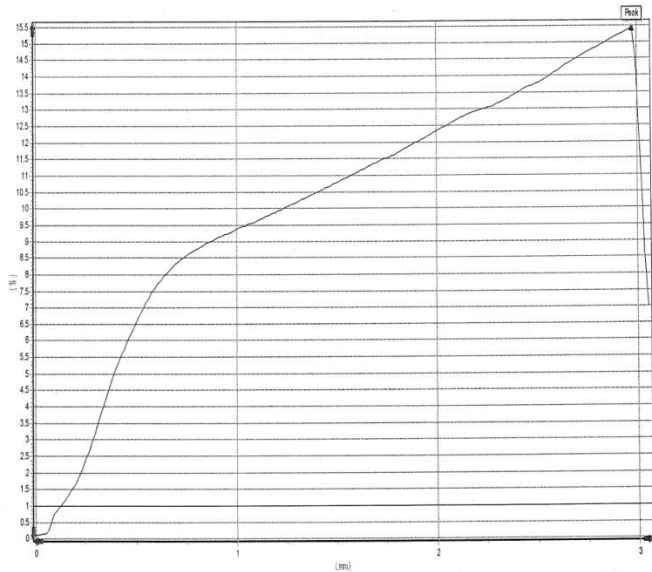
Tester :

TEST REPORT

Test NO. : 10/21 mm, S%, 132

Test Description :

Speciment	Area mm ²	Max Force N	Tensile Strenght N/mm ²	Yield Load N	Yield Strenght N/mm ²	Break Force N	Elong. %
		15.45					



Q.C. Dept. : _____

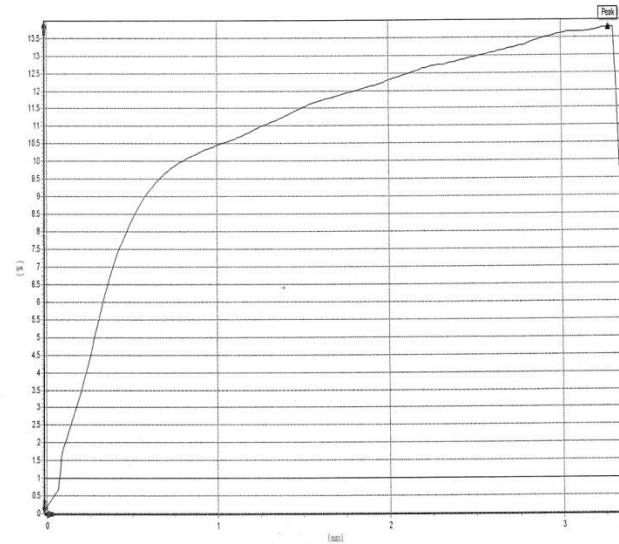
Tester : _____

TEST REPORT

Test NO. : 48/6 mm, 5%, 131

Test Description :

Speciment	Area mm ²	Max Force N	Tensile Strenght N/mm ²	Yield Load N	Yield Strenght N/mm ²	Break Force N	Elong. %
		13.80					



Q.C. Dept. : _____

Tester : _____

LAMPIRAN

KUAT GESER & KUAT TARIK

no.	Waktu dan variasi (%)	kode	Keliling penampang (pixel)	micron (μm)	Keliling penampang (μm)	milimeter	Keliling penampang (mm)	Panjang serat tertanam (mm)	luas area (mm^2)	P max saat tercabut (N)	tegangan (Mpa)	
											tarik	geser
1	seratkecil, 2 jam, 0%	1	461.936	0.632	730.911	1000	0.7309	3	2.193	12.33		5.62
2		2	510.946	0.632	808.459	1000	0.8085	3	2.425	4.02		1.66
3		3	679.797	0.632	1075.628	1000	1.0756	3	3.227			
4		4	566.98	0.632	897.120	1000	0.8971	3	2.691	13.75		5.11
5		5	536.255	0.632	848.505	1000	0.8485	3	2.546	11.43		4.49
6		6	586.255	0.632	927.619	1000	0.9276	3	2.783	7.73		2.78
7	seratbesar, 2 jam, 0%	13	1019.755	0.632	1613.536	1000	1.6135	5	8.068	28.53		3.54
8		14	776.317	0.632	1228.350	1000	1.2283	5.5	6.756	18.28	152.2446	2.71
9		15	1053.362	0.632	1666.712	1000	1.6667	5.5	9.167	11.98		1.31
10		16	857.349	0.632	1356.565	1000	1.3566	5	6.783	23.14		3.41
11		17	960.261	0.632	1519.400	1000	1.5194	5	7.597	15.91	86.60353	2.09
12		18	908.272	0.632	1437.139	1000	1.4371	5.5	7.904	27.91		3.53
13	seratkecil, 2 jam, 2,5%	37	482.876	0.632	764.044	1000	0.7640	3	2.292	23.1		10.08
14		38	499.325	0.632	790.071	1000	0.7901	3	2.370			
15		39	460.818	0.632	729.142	1000	0.7291	3	2.187	8.5		3.89
16		40	575.053	0.632	909.894	1000	0.9099	3	2.730	10.94		4.01
17		41	395.61	0.632	625.965	1000	0.6260	3	1.878	6.91		3.68
18		42	450.611	0.632	712.992	1000	0.7130	3	2.139	9.49	234.5885	4.44

19	seratbesar, 2 jam, 2,5%	31	751.067	0.632	1188.397	1000	1.1884	5.5	6.536	36.43		5.57
20		32	817.12	0.632	1292.911	1000	1.2929	5	6.465	59.62		9.22
21		33	991.392	0.632	1568.658	1000	1.5687	5	7.843	25.5		3.25
22		34	879.792	0.632	1392.076	1000	1.3921	5	6.960	47.37		6.81
23		35	715.994	0.632	1132.902	1000	1.1329	5.5	6.231	7.55		1.21
24		36	794.315	0.632	1256.828	1000	1.2568	5	6.284	15.62		2.49
25	Serat kecil, 2 jam, 5%	67	570.247	0.632	902.290	1000	0.9023	3	2.707	13.72		5.07
26		68	642.657	0.632	1016.862	1000	1.0169	3	3.051	15.96		5.23
27		69	526.714	0.632	833.408	1000	0.8334	3	2.500	11.05		4.42
28		70	464.737	0.632	735.343	1000	0.7353	3	2.206	5.69		2.58
29		71	500.25	0.632	791.535	1000	0.7915	3	2.375	12.96		5.46
30		72	537.826	0.632	850.991	1000	0.8510	3	2.553			
31	Sera tbesar, 2 jam, 5%	49	879.234	0.632	1391.193	1000	1.3912	4.5	6.260	18.81		3.00
32		50	810.848	0.632	1282.987	1000	1.2830	5.5	7.056	18.89		2.68
33		51	995.882	0.632	1575.763	1000	1.5758	5.5	8.667	31.15		3.59
34		52	863.786	0.632	1366.750	1000	1.3668	5	6.834	36.2		5.30
35		53	914.552	0.632	1447.076	1000	1.4471	5.5	7.959	31.27	187.6528	3.93
36		54	737.459	0.632	1166.866	1000	1.1669	4	4.667	24.15		5.17
37	seratkecil , 2 jam, 7,5%	85	426.739	0.632	675.220	1000	0.6752	3	2.026	6.11	168.4072	3.02
38		86	520.896	0.632	824.203	1000	0.8242	3	2.473	10.23		4.14
39		87	562.611	0.632	890.207	1000	0.8902	3	2.671	8.09		3.03
40		88	621.911	0.632	984.036	1000	0.9840	3	2.952	8.72	113.1629	2.95
41		89	479.401	0.632	758.546	1000	0.7585	3	2.276			
42		90	480.764	0.632	760.703	1000	0.7607	3	2.282	4.11		1.80
43	seratbes	73	960.865	0.632	1520.356	1000	1.5204	5.5	8.362	47.73		5.71

44	ar, 2 jam, 7,5%	74	789.606	0.632	1249.377	1000	1.2494	5.5	6.872	31.99		4.66
45		75	1070.306	0.632	1693.522	1000	1.6935	3	5.081			0.00
46		76	866.533	0.632	1371.097	1000	1.3711	5.5	7.541	39.99		5.30
47		77	862.273	0.632	1364.356	1000	1.3644	5	6.822	18.84		2.76
48		78	836.555	0.632	1323.663	1000	1.3237	5	6.618	35.7		5.39
49	seratkecil , 5%, 4 jam	109	602.414	0.632	953.187	1000	0.9532	2.5	2.383	11.11	153.6625	4.66
50		110	589.626	0.632	932.953	1000	0.9330	3	2.799	11.13	160.6889	3.98
51		111	595.164	0.632	941.715	1000	0.9417	3	2.825	15.65		5.54
52		112	605.114	0.632	957.459	1000	0.9575	3	2.872	11.21		3.90
53		113	555.794	0.632	879.421	1000	0.8794	3	2.638	12.36		4.68
54		114	604.704	0.632	956.810	1000	0.9568	3	2.870			
55	seratbes ar, 5%, 4 jam	97	763.245	0.632	1207.666	1000	1.2077	5.5	6.642			
56		98	929.563	0.632	1470.828	1000	1.4708	5.5	8.090	46.09		5.70
57		99	1193.395	0.632	1888.283	1000	1.8883	5.5	10.386	51.08	180.0224	4.92
58		100	994.193	0.632	1573.090	1000	1.5731	5.5	8.652	16.81		1.94
59		101	767.732	0.632	1214.766	1000	1.2148	5.5	6.681	36.08	307.2496	5.40
60		102	850.264	0.632	1345.354	1000	1.3454	5	6.727	9.65		1.43
61	seratkecil , 5%, 6 jam	133	630.682	0.632	997.915	1000	0.9979	3	2.994	14.96		5.00
62		134	580.143	0.632	917.948	1000	0.9179	3	2.754	9.29		3.37
63		135	478.592	0.632	757.266	1000	0.7573	3	2.272	4.66		2.05
64		136	537.673	0.632	850.748	1000	0.8507	3	2.552	18.92		7.41
65		137	410.484	0.632	649.500	1000	0.6495	3	1.949			
66		138	494.115	0.632	781.828	1000	0.7818	2	1.564	9.06		5.79
67	seratbes ar, 5%, 6	127	786.987	0.632	1245.233	1000	1.2452	5.5	6.849	39.93		5.83
68		128	856.935	0.632	1355.910	1000	1.3559	5	6.780	21.28	145.4521	3.14

69	jam	129	1007.954	0.632	1594.864	1000	1.5949	5.5	8.772	28.34		3.23
70		130	801.948	0.632	1268.905	1000	1.2689	5.5	6.979	13.95		2.00
71		131	665.216	0.632	1052.557	1000	1.0526	5.5	5.789	13.8		2.38
72		132	796.75	0.632	1260.680	1000	1.2607	5.5	6.934	15.45		2.23
73	seratkecil , 5%, 0 jam	163	562.925	0.632	890.704	1000	0.8907	3	2.672	12.7		4.75
74		164	631.292	0.632	998.880	1000	0.9989	3	2.997	29.95	377.2075	9.99
75		165	603.175	0.632	954.391	1000	0.9544	3	2.863	21.34		7.45
76		166	606.154	0.632	959.104	1000	0.9591	3	2.877	15.04		5.23
77		167	553.325	0.632	875.514	1000	0.8755	3	2.627			
78		168	629.9	0.632	996.677	1000	0.9967	3	2.990			
79	seratbesar, 5%, 0 jam	145	715.149	0.632	1131.565	1000	1.1316	5.5	6.224	37		5.95
80		146	662.997	0.632	1049.046	1000	1.0490	5.5	5.770			
81		147	710.647	0.632	1124.441	1000	1.1244	5.5	6.184	47.9		7.75
82		148	811.11	0.632	1283.402	1000	1.2834	5.5	7.059	3.18		0.45
83		149	840.184	0.632	1329.405	1000	1.3294	5.5	7.312			
84		150	774.69	0.632	1225.775	1000	1.2258	5.5	6.742			

Lampiran

TABEL 1

Variasi Konsentrasi Alkali (NaOH) dengan Waktu Perendaman 2 jam

variabel serat	no. serat	keliling (mm)	serat tertanam (mm)	P max (N)	keterangan	kuat geser (Mpa)	kuat tarik (Mpa)
konsentrasi NaOH 0%							
serat kecil	5	0.85	3	11.43	tercabut	4.49	
	6	0.93	3	7.73	tercabut	2.78	
Rata-rata		0.89		9.58		3.63	
serat besar	13	1.61	5	28.53	tercabut	3.54	
	14	1.23	5.5	18.28	putus		152.245
	16	1.36	5	23.14	tercabut	3.41	
	17	1.52	5	15.91	putus		86.6035
	18	1.44	5.5	27.91	tercabut	3.53	
Rata-rata		1.43		22.754		3.49	119.424
konsentrasi NaOH 2,5%							
serat kecil	39	0.73	3	8.5	tercabut	3.89	
	40	0.91	3	10.94	tercabut	4.01	
	41	0.63	3	6.91	tercabut	3.68	
	42	0.71	3	9.49	putus		234.588
Rata-rata		0.74		8.96		3.86	234.588
serat besar	31	1.19	5.5	36.43	tercabut	5.57	
	34	1.39	5	47.37	tercabut	6.81	
Rata-rata		1.29		41.9		6.19	
konsentrasi NaOH 5%							
serat kecil	67	0.90	3	13.72	tercabut	5.07	
	69	0.83	3	11.05	tercabut	4.42	
	70	0.74	3	5.69	tercabut	2.58	
	71	0.79	3	12.96	tercabut	5.45	
Rata-rata		0.82		10.855		4.38	

serat besar	52	1.37	5	36.2	tercabut	5.30	
	53	1.45	5.5	31.27	putus		187.653
	54	1.17	4	24.15	tercabut	5.17	
Rata-rata		1.33		30.54		5.24	187.653
konsentrasi NaOH 7,5%							
serat kecil	85	0.68	3	6.11	putus		168.407
	86	0.82	3	10.23	tercabut	4.14	
	87	0.89	3	8.09	tercabut	3.03	
	88	0.98	3	8.72	putus		113.163
Rata-rata		0.84		8.2875		3.58	140.785
serat besar	74	1.25	5.5	31.99	tercabut	4.66	
	76	1.37	5.5	39.99	tercabut	5.30	
	78	1.32	5	35.7	tercabut	5.39	
Rata-rata		1.31		35.8933 3		5.12	

TABEL 2

Variasi Waktu perendaman dengan Konsentrasi Alkali (NaOH) 5%

waktu perendaman	no. serat	keliling (mm)	serat tertanam (mm)	P max (N)	keterangan	kuat geser (Mpa)	kuat tarik (Mpa)
waktu perendaman 0 jam							
serat kecil	163	0.89	3	12.7	tercabut	4.75	
	165	1.00	3	21.34	tercabut	7.45	
	166	0.96	3	15.04	tercabut	5.23	
Rata-rata		0.95		16.36		5.81	
waktu perendaman 4 jam							
serat besar, tanpa perlakuan	145	1.13	5.5	37	tercabut	5.95	
	147	1.12	5.5	47.9	tercabut	7.75	
Rata-rata		1.13		42.45		6.85	
waktu perendaman 4 jam							
serat kecil	109	0.95	2.5	11.11	putus		153.663
	110	0.93	3	11.13	putus		160.689
	111	0.94	3	15.65	tercabut	5.54	
	112	0.96	3	11.21	tercabut	3.90	
	113	0.88	3	12.36	tercabut	4.68	
Rata-rata		0.93		12.292		4.71	157.176
waktu perendaman 6 jam							
serat besar	98	1.47	5.5	46.09	tercabut		
	99	1.89	5.5	51.08	tercabut	4.92	180.022
	100	1.57	5.5	16.81	putus		
	101	1.21	5.5	36.08	tercabut	5.40	307.250
Rata-rata		1.54		37.515		5.16	243.636
waktu perendaman 6 jam							
serat kecil	133	1.00	3	14.96	tecabut	5.00	
	134	0.92	3	9.29	tecabut	3.37	
	136	0.85	3	18.92	tecabut	7.41	
	138	0.78	2	9.06	tecabut	5.79	
Rata-rata		0.89		13.0575		5.39	

serat besar	127	1.25	5.5	39.93	tercabut	5.83	
	128	1.36	5	21.28	putus		145.452
	129	1.59	5.5	28.34	tercabut	3.23	
	131	1.05	5.5	13.8	tercabut	2.38	
	132	1.26	5.5	15.45	tercabut	2.23	
Rata-rata		1.30		23.76		3.42	145.452

