

LAMPIRAN

❖ Perhitungan data uji Tarik dan grafik tegangan regangan nya

➤ Konsentrasi 2% dengan lama peredaman NaOH 4 jam

No	keterangan	Spesimen 1	Spesimen 2	Spesimen 3	Rata-rata
1	Lebar spesimen	13	13	13	13
2	Tebal spesimen	5	5	5	5
3	Panjang spesimen awal	165	165	165	165
4	Panjang spesimen akhir	165,54	165,61	165,98	165,71
5	Gauge length (Lo)	57	57	57	57
6	Pertambahan panjang (ΔL)	0,54	0,61	0,98	0,71
7	Titik luluh (kgf)	64,20	73,50	86,20	74,63
8	Titik maksimum (kgf)	68,20	78,80	87,40	78,13
9	ΔL luluh (mm)	0,12	0,12	0,10	0,113
10	ΔL maksimum (mm)	0,18	0,16	0,14	0,16
11	Luas Penampang (A0)	65	65	65	65

$$a) \sigma_{t_{yield}} = \frac{W_{yield}}{A} = \frac{74,63 \text{ kgf}}{(13 \text{ mm} \times 5 \text{ mm})} = 1,1482 \frac{\text{kgf}}{\text{mm}^2} = 11,26 \text{ Mpa}$$

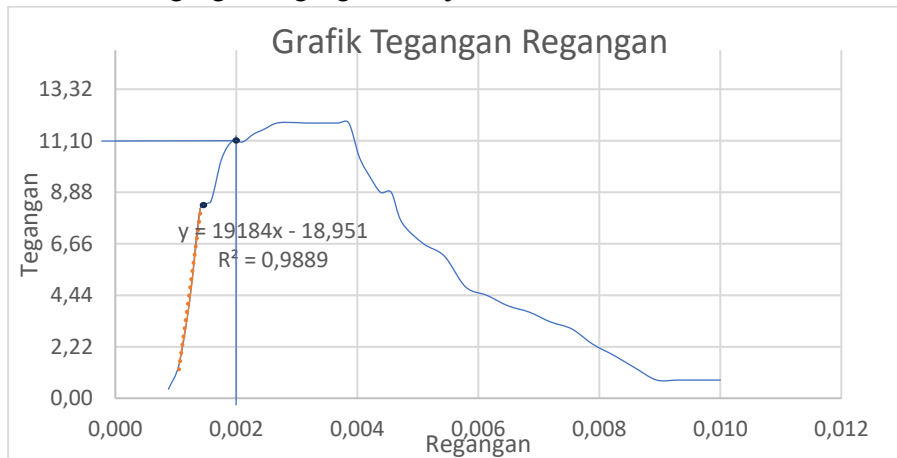
$$b) \sigma_{t_{max}} = \frac{W_{max}}{A} = \frac{78,13 \text{ kgf}}{(13 \text{ mm} \times 5 \text{ mm})} = 1,202 \frac{\text{kgf}}{\text{mm}^2} = 11,79 \text{ Mpa}$$

$$c) \varepsilon_{t_{yield}} = \frac{\Delta L}{L_0} \times 100\% = \frac{0,113}{57} \times 100\% = 0,19825\%$$

$$d) \varepsilon_{t_{max}} = \frac{\Delta L}{L_0} \times 100\% = \frac{0,16}{57} \times 100\% = 0,2807\%$$

$$e) E = \frac{\sigma_{t_{yield}}}{\varepsilon_{t_{yield}}} = \frac{11,26}{0,0019825} = 5681,6 \text{ MPa} = 5,682 \text{ Gpa}$$

➤ Grafik Tegangan Regangan 2% 4jam



➤ Konsentrasi 2% dengan lama peredaman NaOH 6 jam

No	keterangan	Spesimen 1	Spesimen 2	Spesimen 3	Rata-rata
1	Lebar spesimen	13	13	13	13
2	Tebal spesimen	5	5	5	5
3	Panjang spesimen awal	165	165	165	165
4	Panjang spesimen akhir	165,55	166,76	167,88	166,73
5	Gauge Length (Lo)	57	57	57	57
6	Pertambahan panjang (ΔL)	0,55	1,76	2,88	1,73
7	Titik luluh (kgf)	48.60	70.80	27,44	48,95
8	Titik maksimum (kgf)	54.20	119.60	78.60	84,13
9	ΔL luluh (mm)	0,06	0,21	0,007	0,0923
10	ΔL maksimum (mm)	0,12	0,42	1,71	0,75
11	Luas Penampang (A0)	65	65	65	65

$$a) \sigma_{yield} = \frac{W_{yield}}{A} = \frac{48,95 \text{ kgf}}{(13 \text{ mm} \times 5 \text{ mm})} = 0,7538 \frac{\text{kgf}}{\text{mm}^2} = 7,39 \text{ Mpa}$$

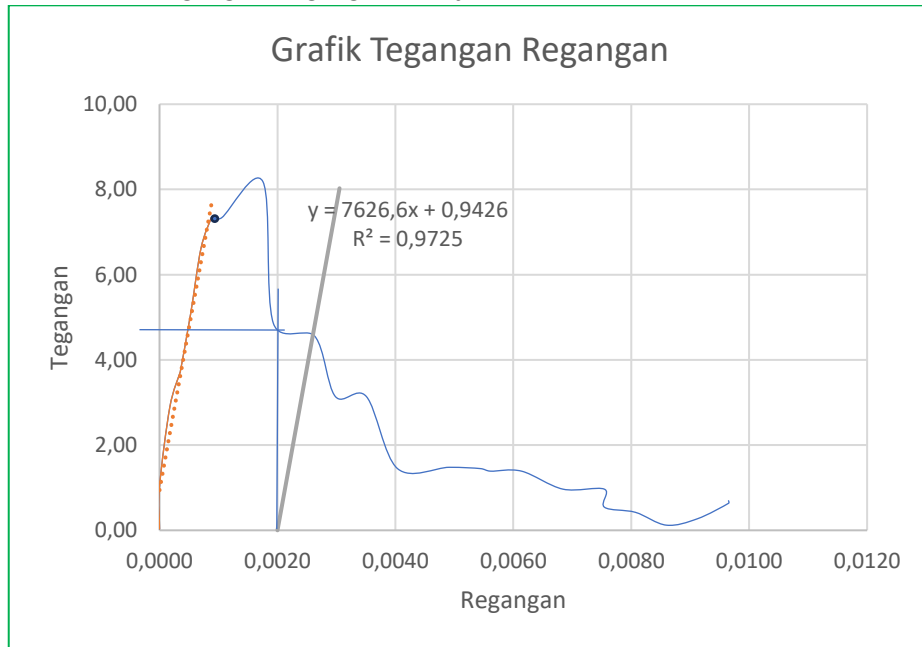
$$b) \sigma_{max} = \frac{W_{max}}{A} = \frac{84,13 \text{ kgf}}{(13 \text{ mm} \times 5 \text{ mm})} = 1,294 \frac{\text{kgf}}{\text{mm}^2} = 12,69 \text{ Mpa}$$

$$c) \epsilon_{yield} = \frac{\Delta L}{L_0} \times 100\% = \frac{0,0923}{57} \times 100\% = 0,162\%$$

$$d) \epsilon_{max} = \frac{\Delta L}{L_0} \times 100\% = \frac{0,75}{57} \times 100\% = 1,3158\%$$

e) $E = \frac{\sigma_{t_{yield}}}{\varepsilon_{t_{yield}}} = \frac{7,39}{0,00162} = 4560,3 \text{ MPa} = 4,56 \text{ Gpa}$

➤ Grafik Tegangan Regangan 2% 6jam

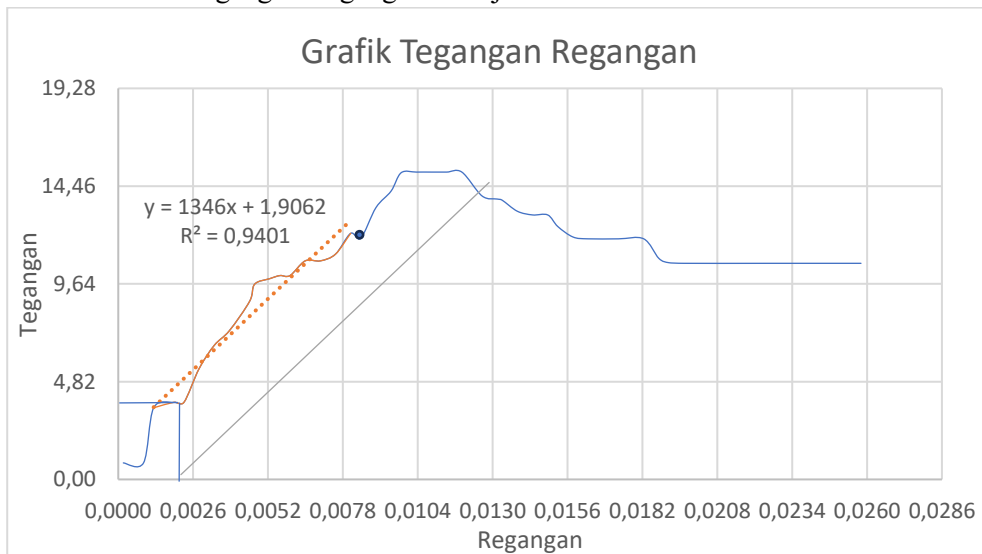


➤ Konsentrasi 5% dengan lama peredaman NaOH 2 Jam

No	keterangan	Spesimen 1	Spesimen 2	Spesimen 3	Rata-rata
1	Lebar spesimen	13	13	13	13
2	Tebal spesimen	5	5	5	5
3	Panjang spesimen awal	165	165	165	165
4	Panjang spesimen akhir	167,08	166,97	166,47	166,84
5	Gauge Length (Lo)	57	57	57	57
6	Pertambahan panjang (ΔL)	2,08	1,97	1,47	1,84
7	Titik luluh (kgf)	64,60	79,80	80,40	74,93
8	Titik maksimum (kgf)	93,80	130,60	100,40	108,26
9	ΔL luluh (mm)	0,266	0,381	0,46	0,369
10	ΔL maksimum (mm)	0,65	0,88	0,68	0,736
11	Luas Penampang (A0)	65	65	65	65

$$\begin{aligned}
 \text{a) } \sigma_{t_{yield}} &= \frac{W_{yield}}{A} = \frac{74,93 \text{ kgf}}{(13 \text{ mm} \times 5 \text{ mm})} = 1,1528 \frac{\text{kgf}}{\text{mm}^2} = 11,30 \text{ Mpa} \\
 \text{b) } \sigma_{t_{max}} &= \frac{W_{max}}{A} = \frac{108,26 \text{ kgf}}{(13 \text{ mm} \times 5 \text{ mm})} = 1,666 \frac{\text{kgf}}{\text{mm}^2} = 16,33 \text{ Mpa} \\
 \text{c) } \varepsilon_{t_{yield}} &= \frac{\Delta L}{L_0} \times 100\% = \frac{0,369}{57} \times 100\% = 0,64737\% \\
 \text{d) } \varepsilon_{t_{max}} &= \frac{\Delta L}{L_0} \times 100\% = \frac{0,736}{57} \times 100\% = 1,2912\% \\
 \text{e) } E &= \frac{\sigma_{t_{yield}}}{\varepsilon_{t_{yield}}} = \frac{11,30}{0,0064737} = 1746 \text{ MPa} = 1,746 \text{ Gpa}
 \end{aligned}$$

➤ Grafik Tegangan Regangan 5% 2jam

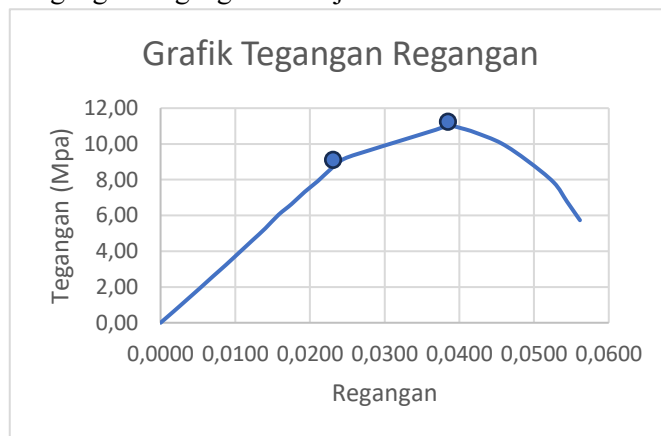


➤ Konsentrasi 5% dengan lama peredaman NaOH 4 Jam

No	keterangan	Spesimen 1	Spesimen 2	Spesimen 3	Rata-rata
1	Lebar spesimen	13	13	13	13
2	Tebal spesimen	5	5	5	5
3	Panjang spesimen awal	165	165	165	165
4	Panjang spesimen akhir	165,84	166,72	165,30	165,95
5	Gauge Length (Lo)	57	57	57	57
6	Pertambahan panjang (ΔL)	0,84	1,72	0,30	0,953
7	Titik luluh (kgf)	92,50	75,53	14,20	60,743
8	Titik maksimum (kgf)	106,80	88,60	23,60	73,0
9	ΔL luluh (mm)	0,16	0,565	0,06	0,262
10	ΔL maksimum (mm)	0,36	0,77	0,07	0,40
11	Luas Penampang (A0)	65	65	65	65

$$\begin{aligned}
 \text{a) } \sigma_{t_{yield}} &= \frac{W_{yield}}{A} = \frac{60,743 \text{ kgf}}{(13 \text{ mm} \times 5 \text{ mm})} = 0,934 \frac{\text{kgf}}{\text{mm}^2} = 9,167 \text{ Mpa} \\
 \text{b) } \sigma_{t_{max}} &= \frac{W_{max}}{A} = \frac{73,0 \text{ kgf}}{(13 \text{ mm} \times 5 \text{ mm})} = 1,123 \frac{\text{kgf}}{\text{mm}^2} = 11,01 \text{ Mpa} \\
 \text{c) } \varepsilon_{t_{yield}} &= \frac{\Delta L}{L_0} \times 100\% = \frac{0,262}{57} \times 100\% = 0,4596\% \\
 \text{d) } \varepsilon_{t_{max}} &= \frac{\Delta L}{L_0} \times 100\% = \frac{0,40}{57} \times 100\% = 0,7018\% \\
 \text{e) } E &= \frac{\sigma_{t_{yield}}}{\varepsilon_{t_{yield}}} = \frac{9,167}{0,004596} = 1994 \text{ MPa} = 1,994 \text{ Gpa}
 \end{aligned}$$

➤ Grafik Tegangan Regangan 5% 4 jam

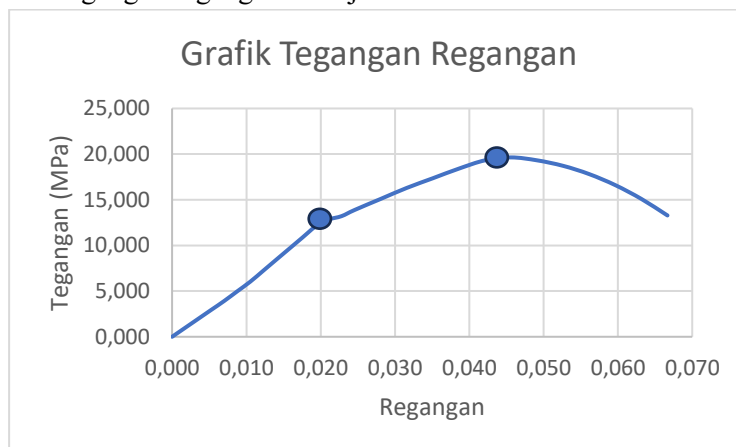


➤ Konsentrasi 5% dengan lama peredaman NaOH 6jam

No	keterangan	Spesimen 1	Spesimen 2	Spesimen 3	Rata-rata
1	Lebar spesimen	13	13	13	13
2	Tebal spesimen	5	5	5	5
3	Panjang spesimen awal	165	165	165	165
4	Panjang spesimen akhir	168,04	168,05	165,90	167,33
5	Gauge Length (Lo)	57	57	57	57
6	Pertambahan panjang (ΔL)	2,04	2,05	0,90	1,663
7	Titik luluh (kgf)	61,80	111,40	89,40	87,53
8	Titik maksimum (kgf)	172,40	124,6	93,40	130,13
9	ΔL luluh (mm)	0,07	0,165	0,09	0,1083
10	ΔL maksimum (mm)	0.12	0,32	0,13	0,190
11	Luas Penampang (A0)	65	65	65	65

$$\begin{aligned}
 \text{a) } \sigma_{yield} &= \frac{W_{yield}}{A} = \frac{87,53 \text{ kgf}}{(13 \text{ mm} \times 5 \text{ mm})} = 1,346 \frac{\text{kgf}}{\text{mm}^2} = 13,21 \text{ Mpa} \\
 \text{b) } \sigma_{max} &= \frac{W_{max}}{A} = \frac{130,13 \text{ kgf}}{(13 \text{ mm} \times 5 \text{ mm})} = 2,002 \frac{\text{kgf}}{\text{mm}^2} = 19,63 \text{ Mpa} \\
 \text{c) } \varepsilon_{yield} &= \frac{\Delta L}{L_0} \times 100\% = \frac{0,1083}{57} \times 100\% = 0,1900\% \\
 \text{d) } \varepsilon_{max} &= \frac{\Delta L}{L_0} \times 100\% = \frac{0,136}{57} \times 100\% = 0,7018\% \\
 \text{e) } E &= \frac{\sigma_{yield}}{\varepsilon_{yield}} = \frac{13,21}{0,001900} = 6952,63 \text{ MPa} = 6,953 \text{ Gpa}
 \end{aligned}$$

➤ Grafik tegangan regangan 5% 6jam



➤ Konsentrasi 8% dengan lama peredaman NaOH 2 jam

No	keterangan	Spesimen 1	Spesimen 2	Spesimen 3	Rata-rata
1	Lebar spesimen	13	13	13	13
2	Tebal spesimen	5	5	5	5
3	Panjang spesimen awal	165	165	165	165
4	Panjang spesimen akhir	166,45	166,62	166,05	166,37
5	Gauge Length (Lo)	57	57	57	57
6	Pertambahan panjang (ΔL)	1,45	1,62	1,05	1,373
7	Titik luluh (kgf)	93,20	146,20	26,80	88,73
8	Titik maksimum (kgf)	147,60	155,40	44,20	115,73
9	ΔL luluh (mm)	0,12	0,58	0,07	0,257
10	ΔL maksimum (mm)	0,22	0,68	0,09	0,33
11	Luas Penampang (A0)	65	65	65	65

$$a) \sigma_{yield} = \frac{W_{yield}}{A} = \frac{88,73 \text{ kgf}}{(13 \text{ mm} \times 5 \text{ mm})} = 1,3635 \frac{\text{kgf}}{\text{mm}^2} = 13,39 \text{ Mpa}$$

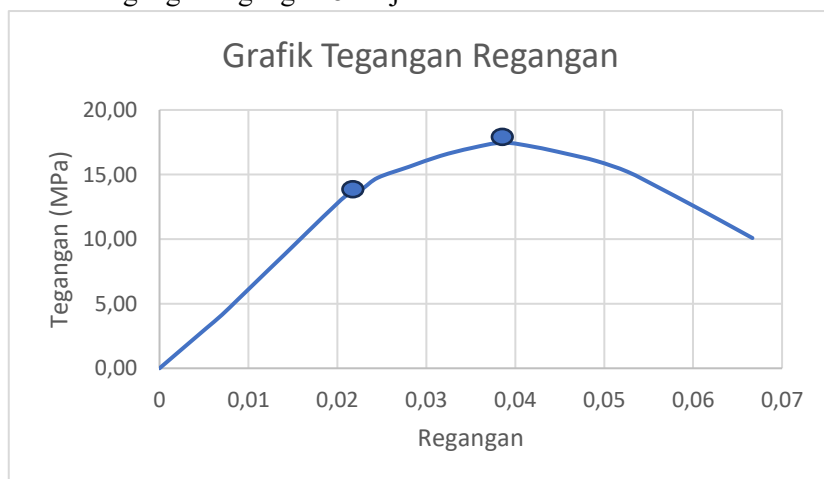
$$b) \sigma_{max} = \frac{W_{max}}{A} = \frac{115,73 \text{ kgf}}{(13 \text{ mm} \times 5 \text{ mm})} = 1,780 \frac{\text{kgf}}{\text{mm}^2} = 17,46 \text{ Mpa}$$

$$c) \varepsilon_{yield} = \frac{\Delta L}{L_0} \times 100\% = \frac{0,257}{57} \times 100\% = 0,4509\%$$

$$d) \varepsilon_{max} = \frac{\Delta L}{L_0} \times 100\% = \frac{0,33}{57} \times 100\% = 0,5789\%$$

$$e) E = \frac{\sigma_{yield}}{\varepsilon_{yield}} = \frac{13,39}{0,004509} = 2790,28 \text{ MPa} = 2,790 \text{ Gpa}$$

➤ Grafik tegangan regangan 8% 2jam

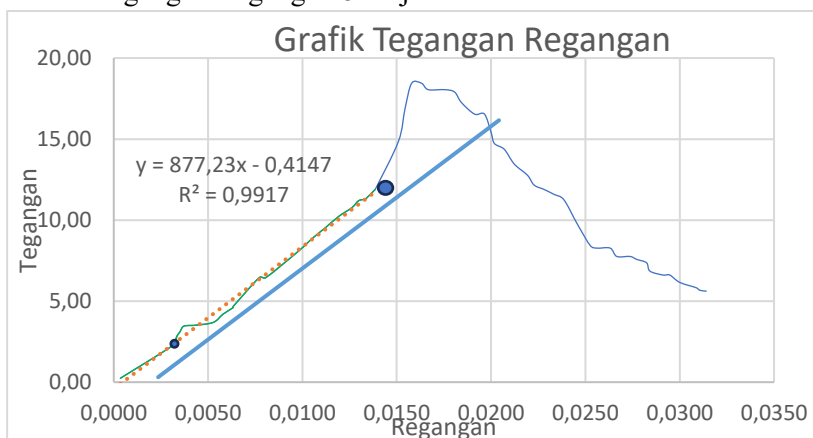


- Konsentrasi 8% dengan lama peredaman NaOH 4 jam

No	keterangan	Spesimen 1	Spesimen 2	Spesimen 3	Rata-rata
1	Lebar spesimen	13	13	13	13
2	Tebal spesimen	5	5	5	5
3	Panjang spesimen awal	165	165	165	165
4	Panjang spesimen akhir	166,30	166,08	166,79	166,39
5	Gauge Length (Lo)	57	57	57	57
6	Pertambahan panjang (ΔL)	1,30	1,08	1,79	1,39
7	Titik luluh (kgf)	90,61	72,16	78,8	80,52
8	Titik maksimum (kgf)	115,73	133,60	122,20	120,40
9	ΔL luluh (mm)	0,245	0,33	0,79	0,455
10	ΔL maksimum (mm)	0.80	0,57	0,93	0,723
11	Luas Penampang (A0)	65	65	65	65

$$\begin{aligned}
 \text{a) } \sigma_{yield} &= \frac{W_{yield}}{A} = \frac{80,52 \text{ kgf}}{(13 \text{ mm} \times 5 \text{ mm})} = 1,239 \frac{\text{kgf}}{\text{mm}^2} = 12,16 \text{ Mpa} \\
 \text{b) } \sigma_{max} &= \frac{W_{max}}{A} = \frac{120,40 \text{ kgf}}{(13 \text{ mm} \times 5 \text{ mm})} = 1,852 \frac{\text{kgf}}{\text{mm}^2} = 18,16 \text{ Mpa} \\
 \text{c) } \varepsilon_{yield} &= \frac{\Delta L}{L_0} \times 100\% = \frac{0,455}{57} \times 100\% = 0,7982\% \\
 \text{d) } \varepsilon_{max} &= \frac{\Delta L}{L_0} \times 100\% = \frac{0,723}{57} \times 100\% = 1,2684\% \\
 \text{e) } E &= \frac{\sigma_{yield}}{\varepsilon_{yield}} = \frac{12,16}{0,007982} = 1524 \text{ MPa} = 1,524 \text{ Gpa}
 \end{aligned}$$

- Grafik Trgangan Regangan 8% 4jam



- Konsentrasi 8% dengan lama peredaman NaOH 6jam

No	keterangan	Spesimen 1	Spesimen 2	Spesimen 3	Rata-rata
1	Lebar spesimen	13	13	13	13
2	Tebal spesimen	5	5	5	5
3	Panjang spesimen awal	165	165	165	165
4	Panjang spesimen akhir	167,54	165,92	165,80	166,42
5	Gauge Length (Lo)	57	57	57	57
6	Pertambahan panjang (ΔL)	2,54	0,92	0,80	1,42
7	Titik luluh (kgf)	39,8	44,75	45,57	43,37
8	Titik maksimum (kgf)	106,60	65,20	105,80	92,53
9	ΔL luluh (mm)	0,17	0,10	0,20	0,1567
10	ΔL maksimum (mm)	0,75	0,18	0,52	0,483
11	Luas Penampang (A0)	65	65	65	65

a) $\sigma_{t_{yield}} = \frac{W_{yield}}{A} = \frac{43,37 \text{ kgf}}{(13 \text{ mm} \times 5 \text{ mm})} = 0,667 \frac{\text{kgf}}{\text{mm}^2} = 6,54 \text{ Mpa}$

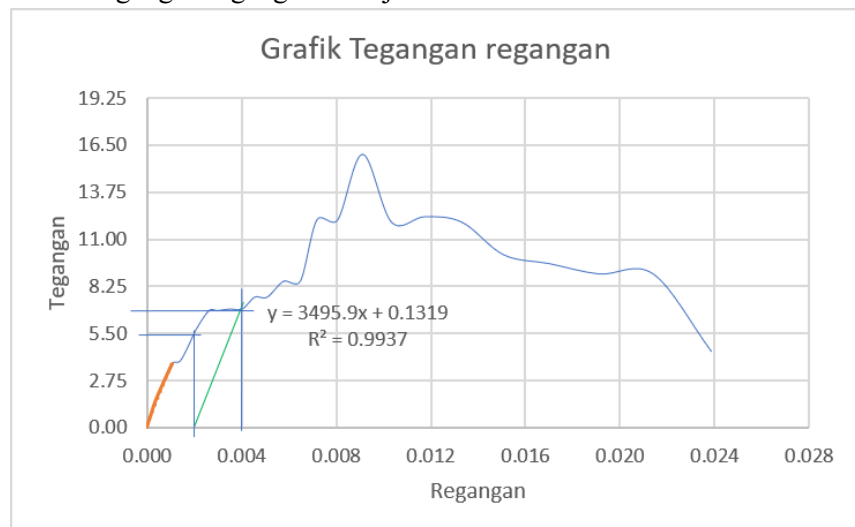
b) $\sigma_{t_{max}} = \frac{W_{max}}{A} = \frac{92,53 \text{ kgf}}{(13 \text{ mm} \times 5 \text{ mm})} = 1,424 \frac{\text{kgf}}{\text{mm}^2} = 13,96 \text{ Mpa}$

c) $\epsilon_{t_{yield}} = \frac{\Delta L}{L_0} \times 100\% = \frac{0,1567}{57} \times 100\% = 0,2748\%$

d) $\epsilon_{t_{max}} = \frac{\Delta L}{L_0} \times 100\% = \frac{0,483}{57} \times 100\% = 0,8474\%$

e) $E = \frac{\sigma_{t_{yield}}}{\epsilon_{t_{yield}}} = \frac{6,54}{0,002748} = 2379,47 \text{ MPa} = 2,38 \text{ Gpa}$

- Grafik tegangan regangan 8% 6jam



❖ Perhitungan untuk uji bending

- Konsentrasi 2% dengan lama peredaman NaOH 4 jam

N0	Keterangan	Spesimen 1	Spesimen 2	Spesimen 3	Rata - rata
1	Lebar beban (mm)	13	13	13	13
2	Tebal beban (mm)	5	5	5	5
3	Jarak tumpuan (mm)	96	96	96	96
4	Beban maksimum (kg)	14,2	16,6	13,6	14,8
5	Defleksi (mm)	0,71	1,72	0,84	1,09

➤ Perhitungan

- a) $\sigma b = \frac{3 \times 14,8 \times 96}{2 \times 13 \times 5^2} = 6,56 \text{ kg/mm}^2 \times 9,81 \text{ (konversi Mpa)} = 64,3 \text{ Mpa}$
- b) $\epsilon b = \frac{6 \times 1,09 \times 5}{96^2} = 0,00354 \text{ mm/mm}$
- c) $Eb = \frac{1}{4} \times \frac{96^3}{13 \times 5^3} \times \frac{14,8}{1,09} = 1848 \times 9,81 \text{ (konversi Mpa)} = 18.128 \text{ Mpa} = 18,12 \text{ Gpa}$

- Konsentrasi 2% dengan lama peredaman NaOH 6jam

N0	Keterangan	Spesimen 1	Spesimen 2	Spesimen 3	Rata - rata
1	Lebar beban (mm)	13	13	13	13
2	Tebal beban (mm)	5	5	5	5
3	Jarak tumpuan (mm)	96	96	96	96
4	Beban maksimum (kg)	9,8	9,8	10,8	10,1
5	Defleksi (mm)	1,98	1,99	1,90	1,95

- a) $\sigma b = \frac{3 \times 10,1 \times 96}{2 \times 13 \times 5^2} = 4,47 \text{ kg/mm}^2 \times 9,81 \text{ (konversi Mpa)} = 43,8 \text{ Mpa}$
- b) $\epsilon b = \frac{6 \times 1,95 \times 5}{96^2} = 0,00634 \text{ mm/mm}$
- c) $Eb = \frac{1}{4} \times \frac{96^3}{13 \times 5^3} \times \frac{10,1}{1,95} = 705 \times 9,81 \text{ (konversi Mpa)} = 6.916 \text{ Mpa} = 6,916 \text{ Gpa}$

- Konsentrasi 5% dengan lama peredaman NaOH 2jam

N0	Keterangan	Spesimen 1	Spesimen 2	Spesimen 3	Rata - rata
1	Lebar beban (mm)	13	13	13	13
2	Tebal beban (mm)	5	5	5	5
3	Jarak tumpuan (mm)	96	96	96	96
4	Beban maksimum (kg)	11,6	9,2	9,8	10,2
5	Defleksi (mm)	2,14	2,27	1,90	2,10

a) $\sigma b = \frac{3 \times 10,2 \times 96}{2 \times 13 \times 5^2} = 4,51 \text{ kg/mm}^2 \times 9,81 \text{ (konversi Mpa)} = 44,2 \text{ Mpa}$

b) $\epsilon b = \frac{6 \times 2,10 \times 5}{96^2} = 0,00683 \text{ mm/mm}$

c) $Eb = \frac{1}{4} \times \frac{96^3}{13 \times 5^3} \times \frac{10,2}{2,10} = 661 \times 9,81 \text{ (konversi Mpa)} = 6.484 \text{ Mpa} = 6,484 \text{ Gpa}$

- Konsentrasi 5% dengan lama peredaman NaOH 4jam

N0	Keterangan	Spesimen 1	Spesimen 2	Spesimen 3	Rata - rata
1	Lebar beban (mm)	13	13	13	13
2	Tebal beban (mm)	5	5	5	5
3	Jarak tumpuan (mm)	96	96	96	96
4	Beban maksimum (kg)	12,4	8,4	9,8	10,2
5	Defleksi (mm)	2,36	1,96	0,61	1,64

a) $\sigma b = \frac{3 \times 10,2 \times 96}{2 \times 13 \times 5^2} = 4,51 \text{ kg/mm}^2 \times 9,81 \text{ (konversi Mpa)} = 44,3 \text{ Mpa}$

b) $\epsilon b = \frac{6 \times 1,64 \times 5}{96^2} = 0,00533 \text{ mm/mm}$

c) $Eb = \frac{1}{4} \times \frac{96^3}{13 \times 5^3} \times \frac{10,2}{1,64} = 661 \times 9,81 \text{ (konversi Mpa)} = 8299 \text{ Mpa} = 8,299 \text{ Gpa}$

- Konsentrasi 5% dengan lama peredaman NaOH 6jam

N0	Keterangan	Spesimen 1	Spesimen 2	Spesimen 3	Rata - rata
1	Lebar beban (mm)	13	13	13	13
2	Tebal beban (mm)	5	5	5	5
3	Jarak tumpuan (mm)	96	96	96	96
4	Beban maksimum (kg)	14,4	9,4	11,8	11,9
5	Defleksi (mm)	1,91	1,27	1,58	1,58

$$\begin{aligned}
 \text{a) } \sigma_b &= \frac{3 \times 11,9 \times 96}{2 \times 13 \times 5^2} = 5,27 \text{ kg/mm}^2 \times 9,81 \text{ (konversi Mpa)} = 51,7 \text{ Mpa} \\
 \text{b) } \epsilon_b &= \frac{6 \times 1,58 \times 5}{96^2} = 0,00514 \text{ mm/mm} \\
 \text{c) } Eb &= \frac{1}{4} \times \frac{96^3}{13 \times 5^3} \times \frac{11,9}{1,58} = 1025 \times 9,81 \text{ (konversi Mpa)} = 10.055 \text{ Mpa} = 10,06 \text{ Gpa}
 \end{aligned}$$

- Konsentrasi 8% dengan lama peredaman NaOH 2jam

N0	Keterangan	Spesimen 1	Spesimen 2	Spesimen 3	Rata - rata
1	Lebar beban (mm)	13	13	13	13
2	Tebal beban (mm)	5	5	5	5
3	Jarak tumpuan (mm)	96	96	96	96
4	Beban maksimum (kg)	15,6	14,8	21,8	17,4
5	Defleksi (mm)	2,02	1,96	2,42	2,13

$$\begin{aligned}
 \text{a) } \sigma_b &= \frac{3 \times 17,4 \times 96}{2 \times 13 \times 5^2} = 5,27 \text{ kg/mm}^2 \times 9,81 \text{ (konversi Mpa)} = 75,6 \text{ Mpa} \\
 \text{b) } \epsilon_b &= \frac{6 \times 2,13 \times 5}{96^2} = 0,00693 \text{ mm/mm} \\
 \text{c) } Eb &= \frac{1}{4} \times \frac{96^3}{13 \times 5^3} \times \frac{17,4}{2,13} = 1111 \times 9,81 \text{ (konversi Mpa)} = 10.898 \text{ Mpa} = 10,898 \text{ Gpa}
 \end{aligned}$$

- Konsentrasi 8% dengan lama peredaman NaOH 4jam

N0	Keterangan	Spesimen 1	Spesimen 2	Spesimen 3	Rata - rata
1	Lebar beban (mm)	13	13	13	13
2	Tebal beban (mm)	5	5	5	5
3	Jarak tumpuan (mm)	96	96	96	96
4	Beban maksimum (kg)	15,8	11,2	9,6	12,2
5	Defleksi (mm)	2,28	0,89	1,98	1,71

a) $\sigma b = \frac{3 \times 12,2 \times 96}{2 \times 13 \times 5^2} = 5,40 \text{ kg/mm}^2 \times 9,81 \text{ (konversi Mpa)} = 52,9 \text{ Mpa}$

b) $\epsilon b = \frac{6 \times 1,71 \times 5}{96^2} = 0,00556 \text{ mm/mm}$

c) $E b = \frac{1}{4} \times \frac{96^3}{13 \times 5^3} \times \frac{12,2}{1,71} = 971 \times 9,81 \text{ (konversi Mpa)} = 9525 \text{ Mpa} = 9,525 \text{ Gpa}$

- Konsentrasi 8% dengan lama peredaman NaOH 6jam

N0	Keterangan	Spesimen 1	Spesimen 2	Spesimen 3	Rata - rata
1	Lebar beban (mm)	13	13	13	13
2	Tebal beban (mm)	5	5	5	5
3	Jarak tumpuan (mm)	96	96	96	96
4	Beban maksimum (kg)	12,2	12,6	14,8	13,2
5	Defleksi (mm)	1,29	0,76	2,29	1,44

a) $\sigma b = \frac{3 \times 13,2 \times 96}{2 \times 13 \times 5^2} = 5,85 \text{ kg/mm}^2 \times 9,81 \text{ (konversi Mpa)} = 57,4 \text{ Mpa}$

b) $\epsilon b = \frac{6 \times 1,44 \times 5}{96^2} = 0,00468 \text{ mm/mm}$

c) $E b = \frac{1}{4} \times \frac{96^3}{13 \times 5^3} \times \frac{13,2}{1,44} = 1247 \times 9,81 \text{ (konversi Mpa)} = 12.233 \text{ Mpa} = 12,233 \text{ Gpa}$