1. **Perhitungan Tegangan Tarik Komposit Serat Daun Nanas Tanpa Rendaman NaOH, Serat Rendaman NaOH dan Serat Gelas.**

$$\sigma = \frac{F}{A}$$

Dengan :

σ = Kekuatan tarik (Mpa)

F = gaya tarik (N)

A= luas penampang (mm^2)

1. Fraksi Volume 30% Komposit Serat Daun Nanas Tanpa Rendaman NaOH.

   Spesimen 1:

   $$\sigma = \frac{3364,4\ N}{160\ mm^2} = 21,05\ MPa$$

   Spesimen 2:

   $$\sigma = \frac{3674,0\ N}{160\ mm^2} = 22,95\ MPa$$

   Spesimen 3:

   $$\sigma = \frac{3213,9\ N}{160\ mm^2} = 20,08\ MPa$$

   $$Rata-rata = \frac{21,05 + 22,96 + 20,08}{3} = 21,36\ MPa$$

2. Fraksi Volume 40% Komposit Serat Daun Nanas Tanpa Rendaman NaOH.

   Spesimen 4:

   $$\sigma = \frac{3213,6\ N}{160\ mm^2} = 20,08\ MPa$$

   Spesimen 5:

   $$\sigma = \frac{4771,0\ N}{160\ mm^2} = 29,81\ MPa$$

   Spesimen 6:

   $$\sigma = \frac{4703,6\ N}{160\ mm^2} = 25,46\ MPa$$

   $$Rata-rata = \frac{20,08 + 29,81 + 25,46}{3} = 25,12\ MPa$$

3. Fraksi Volume 50% Komposit Serat Daun Nanas Tanpa Rendaman NaOH.

   Spesimen 7:

$$\sigma = \frac{4491,2 \ N}{160 \ mm^2} = 28,07 \ MPa$$

Spesimen 8:

$$\sigma = \frac{4314,0 \ N}{160 \ mm^2} = 26,96 \ MPa$$

Spesimen 9:

$$\sigma = \frac{3957,9 \ N}{160 \ mm^2} = 24,73 \ MPa$$

$$Rata - rata = \frac{28,07 + 24,73 + 26,96}{3} = 8,89 \ MPa$$

4.   Fraksi Volume 30% Komposit Serat Daun Nanas dengan Rendaman NaOH.

Spesimen10:

$$\sigma = \frac{4178,0 \ N}{160 \ mm^2} = 26,11 \ MPa$$

Spesimen 11:

$$\sigma = \frac{4057,1 \ N}{160 \ mm^2} = 25,35 \ MPa$$

Spesimen 12:

$$\sigma = \frac{3909,1 \ N}{160 \ mm^2} = 24,43 \ MPa$$

$$Rata - rata = \frac{26,11 + 25,53 + 24,43}{3} = 25,30 \ MPa$$

5.   Fraksi Volume 40% Komposit Serat Daun Nanas dengan Rendaman NaOH.

Spesimen 13:

$$\sigma = \frac{4083,2 \ N}{160 \ mm^2} = 23,52 \ MPa$$

Spesimen 14:

$$\sigma = \frac{4483,6 \ N}{160 \ mm^2} = 28,02 \ MPa$$

Spesimen 15:

$$\sigma = \frac{4483,6 \ N}{160 \ mm^2} = 28,02 \ Mpa$$

$$Rata - rata = \frac{23,52 + 28,02 + 28,02}{3} = 26,66 \ MPa$$

6.   Fraksi Volume 50% Komposit Serat Daun Nanas dengan Rendaman NaOH.

Spesimen 16:

$$\sigma = \frac{5748,3 \, N}{160 \, mm^2} = 35,92 \, MPa$$

Spesimen 17:

$$\sigma = \frac{4847,5 \, N}{160 \, mm^2} = 30,29 \, MPa$$

Spesimen 18:

$$\sigma = \frac{5341,4 \, N}{160 \, mm^2} = 33,38 \, MPa$$

$$Rata - rata = \frac{35,92 + 30,29 + 33,38}{3} = 33,20 \, MPa$$

7.   Fraksi Volume 40% Komposit Serat Gelas (Fiberglass).

Spesimen 19:

$$\sigma = \frac{4376 \, N}{160 \, mm^2} = 27,35 \, MPa$$

Spesimen 20:

$$\sigma = \frac{4163,2 \, N}{160 \, mm^2} = 26,02 \, MPa$$

Spesimen 21:

$$\sigma = \frac{4008 \, N}{160 \, mm^2} = 25,05 \, MPa$$

$$Rata - rata = \frac{27,35 + 26,02 + 25,05}{3} = 26,14 MPa$$

2. Perhitungan Regangan Komposit Serat Daun Nanas Tanpa Rendaman NaOH, Serat Rendaman NaOH dan Serat Gelas.

$$\varepsilon = \frac{l_i - l_o}{l_o}$$

Dimana : ε : regangan(%)

   l_i : penjang benda uji setelah pengujian (mm)
   l_o : panjang benda uji sebelum pengujian (mm)

1.   Fraksi Volume 30% Komposit Serat Daun Nanas Tanpa Rendaman NaOH.

Spesimen 1:

$$\varepsilon = \frac{321,35 \, mm - 320 \, mm}{320 \, mm} = 0,00421$$

Spesimen 2:

$$\varepsilon = \frac{321{,}52 \ mm - 320 \ mm}{320 \ mm} = 0{,}00475$$

Spesimen 3:

$$\varepsilon = \frac{321{,}26 \ mm - 320 \ mm}{320 \ mm} = 0{,}00393$$

$$Rata-rata = \frac{0{,}00421 + 0{,}00475 + 0{,}00393}{3} = 0{,}00429 \ atau \ 0{,}42\%$$

2. Fraksi Volume 40% Komposit Serat Daun Nanas Tanpa Rendaman NaOH.

Spesimen 4:

$$\varepsilon = \frac{321{,}25 \ mm - 320 \ mm}{320 \ mm} = 0{,}00390$$

Spesimen 5:

$$\varepsilon = \frac{323{,}68 \ mm - 320 \ mm}{320 \ mm} = 0{,}0115$$

Spesimen 6:

$$\varepsilon = \frac{321{,}43 \ mm - 320 \ mm}{320 \ mm} = 0{,}00446$$

$$Rata-rata = \frac{0{,}00390 + 0{,}0115 + 0{,}00446}{3} = 0{,}00662 \ atau \ 0{,}66\%$$

3. Fraksi Volume 50% Komposit Serat Daun Nanas Tanpa Rendaman NaOH.

Spesimen 7:

$$\varepsilon = \frac{322{,}00 \ mm - 320 \ mm}{320 \ mm} = 0{,}00625$$

Spesimen 8:

$$\varepsilon = \frac{321{,}34 \ mm - 320 \ mm}{320 \ mm} = 0{,}00418$$

Spesimen 9:

$$\varepsilon = \frac{321{,}53 \ mm - 320 \ mm}{320 \ mm} = 0{,}00478$$

$$Rata-rata = \frac{0{,}00625 + 0{,}00418 + 0{,}00478}{3} = 0{,}00507 \ atau \ 0{,}50\%$$

4. Fraksi Volume 30% Komposit Serat Rendaman dalam NaOH.

Spesimen 10:

$$\varepsilon = \frac{321{,}46\ mm - 320\ mm}{320\ mm} = 0{,}00456$$

Spesimen 11:

$$\varepsilon = \frac{321{,}40\ mm - 320\ mm}{320\ mm} = 0{,}00437$$

Spesimen 12:

$$\varepsilon = \frac{321{,}39\ mm - 320\ mm}{320\ mm} = 0{,}00434$$

$$Rata-rata = \frac{0{,}00456 + 0{,}00437 + 0{,}00434}{3} = 0{,}00442\ atau\ 0{,}44\%$$

5. Fraksi Volume 40% Komposit Serat Daun Nanas Rendaman dalam NaOH.

   Spesimen 13:

$$\varepsilon = \frac{321{,}46\ mm - 320\ mm}{320\ mm} = 0{,}00378$$

Spesimen 14:

$$\varepsilon = \frac{321{,}77\ mm - 320\ mm}{320\ mm} = 0{,}00553$$

Spesimen 15:

$$\varepsilon = \frac{321{,}72\ mm - 320\ mm}{320\ mm} = 0{,}00537$$

$$Rata-rata = \frac{0{,}00378 + 0{,}00553 + 0{,}00537}{3} = 0{,}00489\ atau\ 0{,}48\%$$

6. Fraksi Volume 50% Komposit Serat Daun Nanas Rendaman dalam NaOH.

   Spesimen 16:

$$\varepsilon = \frac{323{,}01\ mm - 320\ mm}{320\ mm} = 0{,}00940$$

Spesimen 17:

$$\varepsilon = \frac{323{,}36\ mm - 320\ mm}{320\ mm} = 0{,}0105$$

Spesimen 18:

$$\varepsilon = \frac{322{,}95\ mm - 320\ mm}{320\ mm} = 0{,}00921$$

$$Rata-rata = \frac{0{,}00940 + 0{,}0105 + 0{,}00921}{3} = 0{,}00970\ atau\ 0{,}97\%$$

7. Fraksi Volume 40% Komposit Serat Gelas (Fiberglass).

Spesimen 19:

$$\varepsilon = \frac{321{,}23\ mm - 320\ mm}{320\ mm} = 0{,}003844$$

Spesimen 20:

$$\varepsilon = \frac{321{,}02\ mm - 320\ mm}{320\ mm} = 0{,}003187$$

Spesimen 21:

$$\varepsilon = \frac{321{,}02\ mm - 320\ mm}{320\ mm} = 0{,}003187$$

$$Rata - rata = \frac{0{,}003844 + 0{,}003187 + 0{,}003187}{3} = 0{,}003406\ atau\ 0{,}34\%$$

3. Perhitungan Modulus Elastisitas Komposit Serat Daun Nanas Tanpa Rendaman NaOH, Serat dengan Rendaman NaOH dan Serat Gelas.

$$E = \frac{\sigma}{\varepsilon} = \frac{F.Lo}{\Delta L.A}$$

Dimana : σ = Tegangan (Mpa)

ε = Regangan

F = Gaya pada benda (N)

A = Luas penampang (mm^2)

Lo = panjang sebelum pengujian

ΔL = perpanjangan benda uji setelah pengujian

1. Fraksi Volume 30% Komposit Serat Daun Nanas Tanpa Rendaman NaOH.

    Spesimen 1:

    $$E = \frac{21{,}059\ MPa}{0{,}00424} = 4966{,}74\ MPa$$

    Spesimen 2:

    $$E = \frac{22{,}963\ MPa}{0{,}00478} = 4803{,}97\ MPa$$

    Spesimen 3:

    $$E = \frac{20{,}087\ MPa}{0{,}00395} = 5085{,}31\ MPa$$

    $$Rata - rata = \frac{4966{,}74 + 4803{,}97 + 5085{,}31}{3} = 4952{,}00\ MPa$$

2. Fraksi Volume 40% Komposit Serat Daun Nanas Tanpa Rendaman NaOH.

    Spesimen 4:

$$E = \frac{20,058 \ MPa}{0,00391} = 5059,19 \ MPa$$

Spesimen 5:

$$E = \frac{29,819 \ MPa}{0,0115} = 2592,95 \ MPa$$

Spesimen 6:

$$E = \frac{25,460 \ MPa}{0,00447} = 5695,74 \ MPa$$

$$Rata - rata = \frac{5059,19 + 2592,95 + 5695,74}{3} = 4449,29 \ MPa$$

3. Fraksi Volume 50% Komposit Serat Daun Nanas Tanpa Rendaman NaOH.

Spesimen 7:

$$E = \frac{28,070 \ MPa}{0,00626} = 4122,35 \ MPa$$

Spesimen 8:

$$E = \frac{24,737 \ MPa}{0,00419} = 5903,81 \ MPa$$

Spesimen 9:

$$E = \frac{26,963 \ MPa}{0,00479} = 5629,01 \ Mpa$$

$$Rata - rata = \frac{4484,02 + 5903,81 + 5629,81}{3} = 5338,94 \ MPa$$

4. Fraksi Volume 30% Komposit Serat Daun Nanas dengan Rendaman NaOH.

Spesimen 10:

$$E = \frac{26,113 \ MPa}{0,00457} = 5714,00 \ MPa$$

Spesimen 11:

$$E = \frac{25,357 \ MPa}{0,00439} = 5776,08 \ MPa$$

Spesimen 12:

$$E = \frac{24,432 \ MPa}{0,00435} = 5616,55 \ MPa$$

$$Rata - rata = \frac{5714,00 + 6776,08 + 5616,55}{3} = 5702,21 \, MPa$$

5. Fraksi Volume 40% Komposit Serat Daun Nanas dengan Rendaman NaOH.

Spesimen 13:

$$E = \frac{23,520 \, MPa}{0,00379} = 6205,80 \, MPa$$

Spesimen 14:

$$E = \frac{28,456 \, MPa}{0,00555} = 5127,50 \, MPa$$

Spesimen 15:

$$E = \frac{28,023 \, MPa}{0,00578} = 5208,73 \, MPa$$

$$Rata - rata = \frac{6205,80 + 5127,50 + 5208,73}{3} = 5514,01 \, MPa$$

6. Fraksi Volume 50% Komposit Serat Daun Nanas dengan Rendaman NaOH.

Spesimen 16:

$$E = \frac{35,927 \, MPa}{0,00942} = 3813,90 \, MPa$$

Spesimen 17:

$$E = \frac{30,297 \, MPa}{0,0105} = 2885,43 \, MPa$$

Spesimen 18:

$$E = \frac{33,384 \, MPa}{0,00923} = 3616,90 \, MPa$$

$$Rata - rata = \frac{5514,01 + 2885,43 + 3616,90}{3} = 3438,74 \, MPa$$

7. Fraksi Volume 40% Komposit Serat Gelas *(Fiberglass)*

Spesimen 19:

$$E = \frac{27,35 \; MPa}{0,002844} = 9619,73 \; MPa$$

Spesimen 20:

$$E = \frac{26,02 \; MPa}{0,003188} = 8161,85 \; MPa$$

Spesimen 21:

$$E = \frac{25,05 \; MPa}{0,004219} = 5937,42 \; MPa$$

$$Rata - rata = \frac{7115,44 + 8163,13 + 8163,13}{3} = 7906,33 \; MPa$$

4. Perhitungan Kerja Patah Komposit Serat Daun Nanas Tanpa Rendaman NaOH, Serat Daun Nanas dengan Rendaman NaOH dan Serat Gelas.

$$W = M . G . L (\cos \beta - \cos \alpha)$$

Dimana W = kerja patah (Joule)
M = berat pendulum (Kg)
G = grafitasi
L = panjang lengan ayun (m)
β = sudut jatuh (Derajat)
α = sudut awal (Derajat)

1.	Fraksi Volume 30% Komposit Serat Daun Nanas Tanpa Rendaman NaOH.

Spesimen 1:

$$W = 2,5 \; x \; 9,81 \; x \; 0,4 \; (\cos 76 - \cos 150) = 10,868 \; Joule$$

Spesimen 2:

$$W = 2,5 x 9,81 x 0,4 \; (\cos 79 - \cos 150) = 10,367 \; Joule$$

Spesimen 3:

$$W = 2,5 \; x \; 9,81 \; x \; 0,4 \; (\cos 75 - \cos 150) = 10,034 \; Joule$$

$$Rata - rata = \frac{10,868 + 10,367 + 10,034}{3} = 10,424 \; Joule$$

2.	Fraksi Volume 40% Komposit Serat Daun Nanas Tanpa Rendaman NaOH.

Spesimen 4:

$$W = 2{,}5 \times 9{,}81 \times 0{,}4 \, (\cos 63 + \cos 150) = 12{,}949 \; Joule$$

Spesimen 5:

$$W = 2{,}5 \times 9{,}81 \times 0{,}4 \, (\cos 60 + \cos 150) = 13{,}400 \; Joule$$

Spesimen 6:

$$W = 2{,}5 \times 9{,}81 \times 0{,}4 \, (\cos 58 + \cos 150) = 13{,}694 \; Joule$$

$$Rata - rata = \frac{12{,}949 + 13{,}400 + 13{,}694}{3} = 13{,}347 \; Joule$$

3.   Fraksi Volume 50% Komposit Serat Daun Nanas Tanpa Rendaman NaOH.

Spesimen 7:

$$W = 2{,}5 \times 9{,}81 \times 0{,}4 \, (\cos 25 + \cos 150) = 17{,}386 \; Joule$$

Spesimen 8:

$$W = 2{,}5 \times 9{,}81 \times 0{,}4 \, (\cos 27 + \cos 150) = 17{,}236 \; Joule$$

Spesimen 9:

$$W = 2{,}5 \times 9{,}81 \times 0{,}4 \, (\cos 25 + \cos 150) = 17{,}386 \; Joule$$

$$Rata - rata = \frac{17{,}386 + 17{,}236 + 17{,}386}{3} = 17{,}336 \; Joule$$

4.   Fraksi Volume 30% Komposit Serat Daun Nanas dengan Rendaman NaOH.

Spesimen 10:

$$W = 2{,}5 \times 9{,}81 \times 0{,}4 \, (\cos 120 + \cos 150) = 3{,}590 \; Joule$$

Spesimen 11:

$$W = 2{,}5 \times 9{,}81 \times 0{,}4 \, (\cos 114 + \cos 150) = 4{,}505 \; Joule$$

Spesimen 12:

$$W = 2{,}5 \times 9{,}81 \times 0{,}4 \, (\cos 121 + \cos 150) = 3{,}443 \; Joule$$

$$Rata - rata = \frac{3{,}590 + 4{,}505 + 3{,}443}{3} = 3{,}846 \; Joule$$

5.   Fraksi Volume 40% Komposit Serat Daun Nanas dengan Rendaman NaOH.

Spesimen 13:

$$W = 2{,}5 \times 9{,}81 \times 0{,}4 \, (\cos 105 + \cos 150) = 5{,}956 \; Joule$$

Spesimen 14:

$$W = 2,5 \times 9,81 \times 0,4 \, (\cos 100 + \cos 150) = 6,792 \, Joule$$

Spesimen 15:

$$W = 2,5 \times 9,81 \times 0,4 \, (\cos 96 + \cos 150) = 7,470 \, Joule$$

$$Rata - rata = \frac{5,956 + 6,792 + 7,470}{3} = 6,739 \, Joule$$

6. Fraksi Volume 50% Komposit Serat Daun Nanas dengan Rendaman NaOH.

Spesimen 16:

$$W = 2,5 \times 9,81 \times 0,4 \, (\cos 41 - \cos 150) = 15,899 \, Joule$$

Spesimen 17:

$$W = 2,5 \times 9,81 \times 0,4 \, (\cos 44 - \cos 150) = 15,552 \, Joule$$

Spesimen 18:

$$W = 2,5 \times 9,81 \times 0,4 \, (\cos 45 - \cos 150) = 15,432 \, Joule$$

$$Rata - rata = \frac{15,899 + 15,552 + 15,432}{3} = 15,627 \, Joule$$

7. Fraksi Volume 40% Komposit Serat Gelas (Fiberglass)

Spesimen 19:

$$W = 2,5 \times 9,81 \times 0,4 \, (\cos 10 - \cos 150) = 18,156 \, Joule$$

Spesimen 20:

$$W = 2,5 \times 9,81 \times 0,4 \, (\cos 10 - \cos 150) = 18,156 \, Joule$$

Spesimen 21:

$$W = 2,5 \times 9,81 \times 0,4 \, (\cos 10 - \cos 150) = 18,156 \, Joule$$

$$Rata - rata = \frac{18,156 + 18,156 + 18,156}{3} = 18,156 \, Joule$$

5. **Perhitungan Nilai Kekuatan Impak Komposit Serat Daun Nanas Tanpa Rendaman NaOH, Serat Daun Nanas dengan Rendaman NaOH dan Serat Gelas.**

$$Nila \, ketangguhan(K) = \frac{Kerja \, Patah \, (W)}{luas \, penampang \, dibawah \, takikan \, (A)} \, Joule/mm^2$$

Luas (A) = 12,7 x 12,7 = 161,29 mm

1. Fraksi Volume 30% Komposit Serat Daun Nanas Tanpa Rendaman NaOH.

Spesimen 1:

$$K = \frac{10{,}868\ Joule}{161{,}29\ mm} = 0{,}067\ Joule/mm^2$$

Spesimen 2:

$$K = \frac{10{,}367\ Joule}{161{,}29\ mm} = 0{,}064\ Joule/mm^2$$

Spesimen 3:

$$K = \frac{10{,}034\ Joule}{161{,}29\ mm} = 0{,}062\ Joule/mm^2$$

$$Rata - rata = \frac{0{,}067 + 0{,}064 + 0{,}062}{3} = 0{,}064\ Joule/mm^2$$

2. Fraksi Volume 40% Komposit Serat Daun Nanas Tanpa Rendaman NaOH.

Spesimen 4:

$$K = \frac{12{,}949\ Joule}{161{,}29\ mm} = 0{,}080\ Joule/mm^2$$

Spesimen 5:

$$K = \frac{13{,}400\ Joule}{161{,}29\ mm} = 0{,}083\ Joule/mm^2$$

Spesimen 6:

$$K = \frac{13{,}694\ Joule}{161{,}29\ mm} = 0{,}084\ Joule/mm^2$$

$$Rata - rata = \frac{0{,}080 + 0{,}083 + 0{,}084}{3} = 0{,}082\ Joule/mm^2$$

3. Fraksi Volume 50% Komposit Serat Daun Nanas Tanpa Rendaman NaOH.

Spesimen 7:

$$K = \frac{17{,}386\ Joule}{161{,}29\ mm} = 0{,}107\ Joule/mm^2$$

Spesimen 8:

$$K = \frac{17{,}236\ Joule}{161{,}29\ mm} = 0{,}106\ Joule/mm^2$$

Spesimen

$$K = \frac{17{,}386\ Joule}{161{,}29\ mm} = 0{,}107\ Joule/mm^2$$

$$Rata - rata = \frac{0{,}107 + 0{,}106 + 0{,}107}{3} = 0{,}106\ Joule/mm^2$$

4. Fraksi Volume 30% Komposit Serat Daun Nanas dengan Rendaman NaOH.

Benda uji 10:

$$K = \frac{3,590 \, Joule}{161,29 \, mm} = 0,022 \, Joule/mm^2$$

Benda uji 11:

$$K = \frac{4,505 \, Joule}{161,29 \, mm} = 0,027 \, Joule/mm^2$$

Benda uji 12:

$$K = \frac{3,443 \, Joule}{161,29 \, mm} = 0,021 \, Joule/mm^2$$

$$Rata - rata = \frac{0,022 + 0,027 + 0,021}{3} = 0,023 \, Joule/mm^2$$

5. Fraksi Volume 40% Komposit Serat Daun Nanas dengan Rendaman NaOH.

Spesimen 13:

$$K = \frac{5,956 \, Joule}{161,29 \, mm} = 0,036 \, Joule/mm^2$$

Spesimen 14:

$$K = \frac{6,792 \, Joule}{161,29 \, mm} = 0,042 \, Joule/mm^2$$

Spesimen 15:

$$K = \frac{7,470 \, Joule}{161,29 \, mm} = 0,046 \, Joule/mm^2$$

$$Rata - rata = \frac{0,036 + 0,042 + 0,046}{3} = 0,041 \, Joule/mm^2$$

6. Fraksi Volume 50% Komposit Serat Daun Nanas dengan Rendaman NaOH.

Spesimen 16:

$$K = \frac{15,899 \, Joule}{161,29 \, mm} = 0,098 \, Joule/mm^2$$

Spesimen 17:

$$K = \frac{15,552 \, Joule}{161,29 \, mm} = 0,096 \, Joule/mm^2$$

Spesimen 18:

$$K = \frac{15,432 \, Joule}{161,29 \, mm} = 0,095 \, Joule/mm^2$$

$$Rata - rata = \frac{0,098 + 0,096 + 0,095}{3} = 0,096 \, Joule/mm^2$$

7. Fraksi Volume 40% Komposit Serat Gelas (*Fiberglass*).

Spesimen 19:

$$K = \frac{18,156 \, Joule}{161,29 \, mm} = 0,112 \, Joule/mm^2$$

Spesimen 20:

$$K = \frac{18,156 \, Joule}{161,29 \, mm} = 0,112 \, Joule/mm^2$$

Spesimen 21:

$$K = \frac{18,156 \, Joule}{161,29 \, mm} = 0,112 \, Joule/mm^2$$

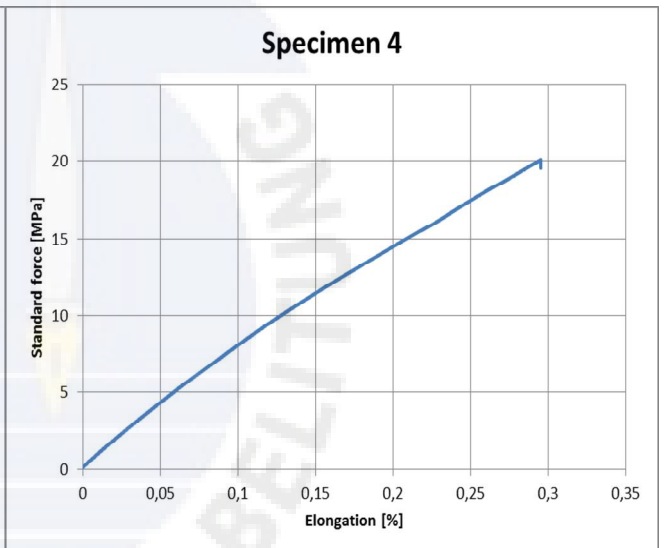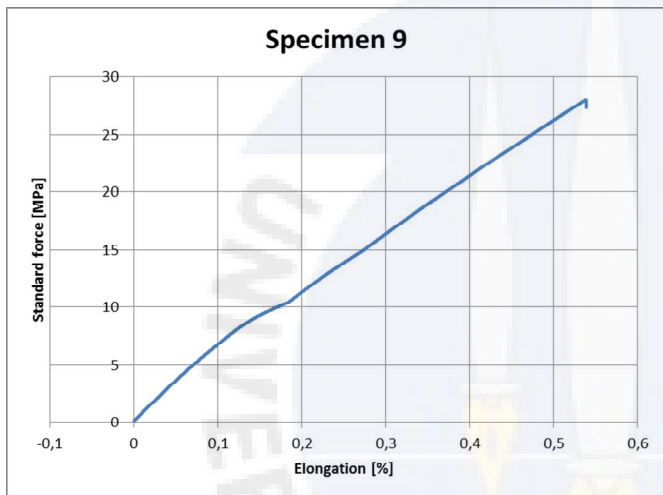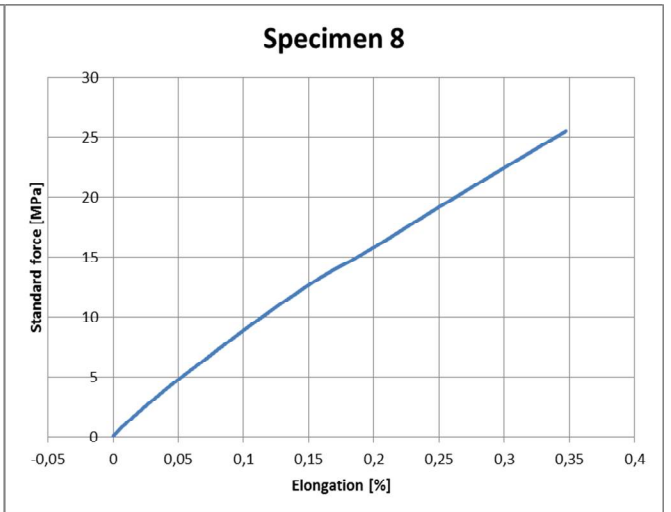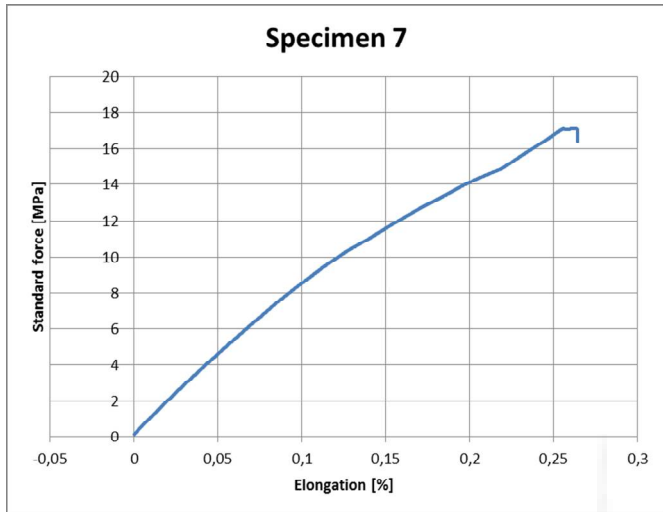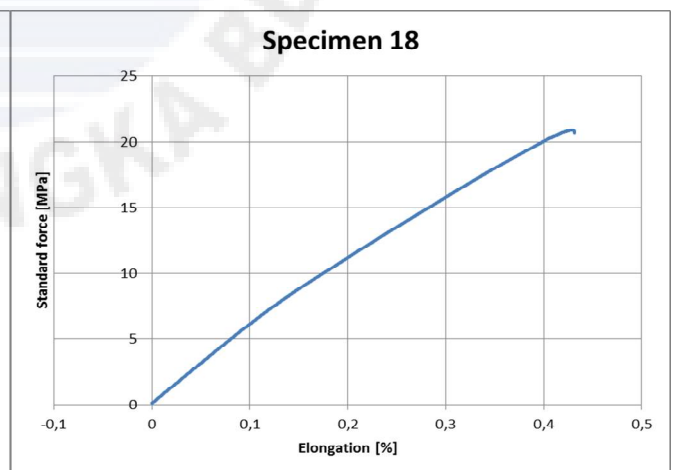$$Rata - rata = \frac{0,112 + 0,112 + 0,112}{3} = 0,112 \, Joule/mm^2$$

Grafik Spesimen Pengujian Tarik Komposit Serat Daun Nanas

Specimen 7

Specimen 8

Specimen 9

Specimen 10

Specimen 11

Specimen 12

Specimen 13

Specimen 14

Specimen 15

Specimen 16

Specimen 17

Specimen 18

Specimen 19

Specimen 20

Specimen 23

Specimen 21

Specimen 22

Specimen 24
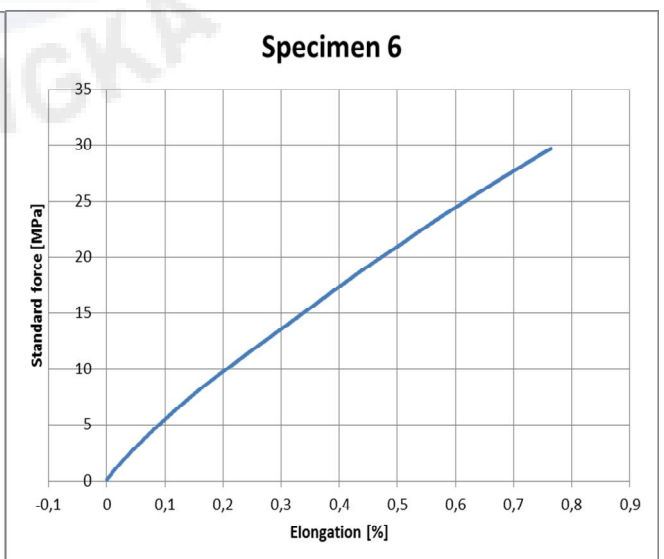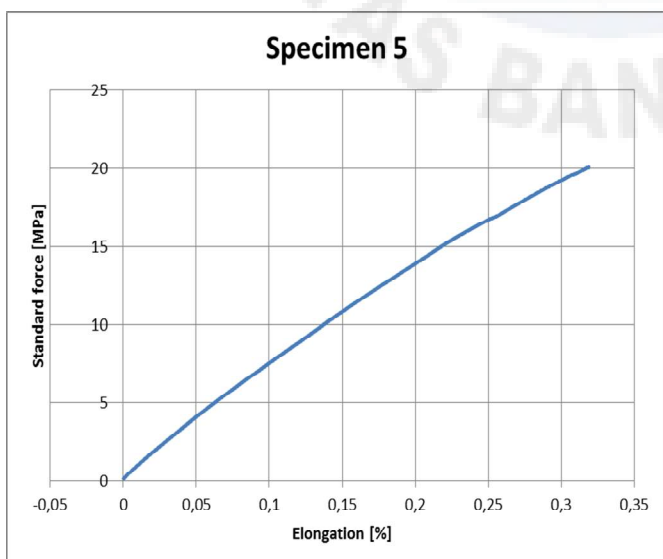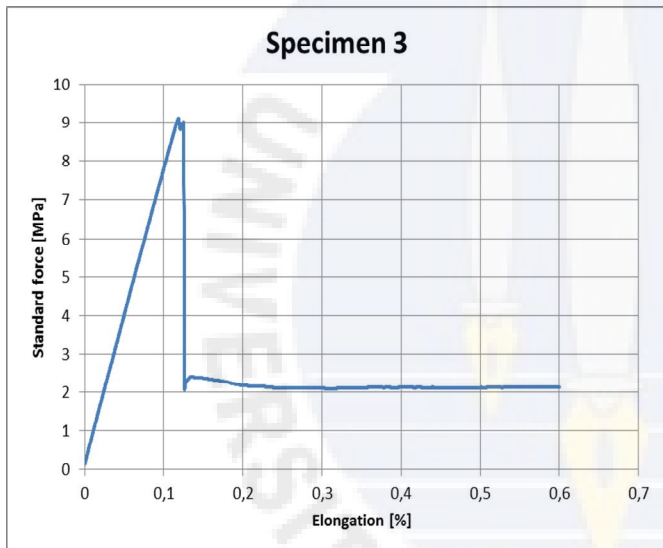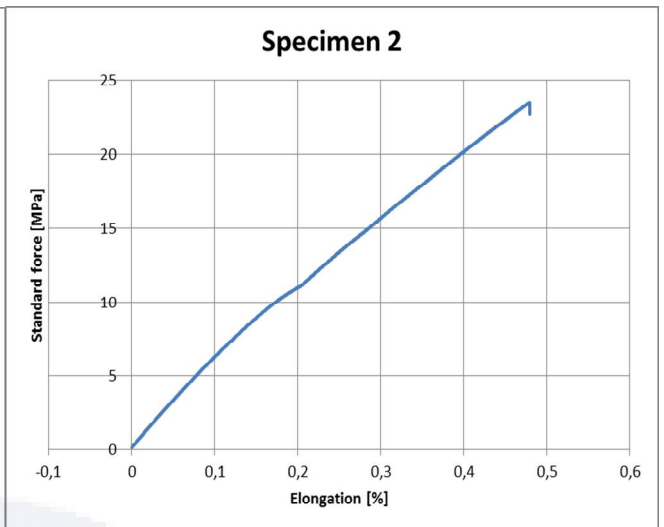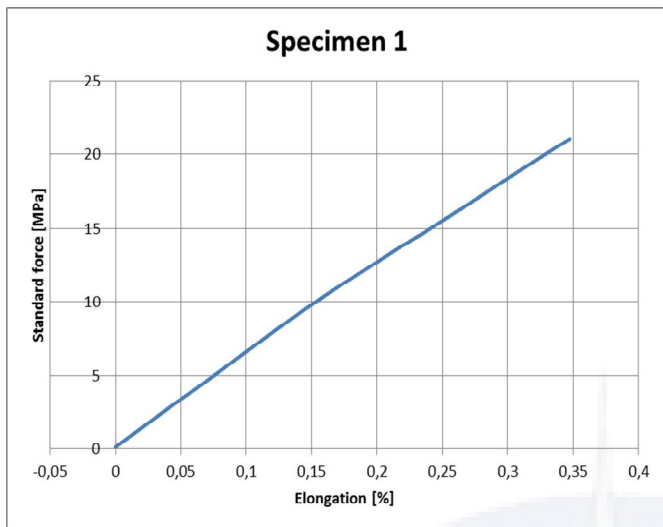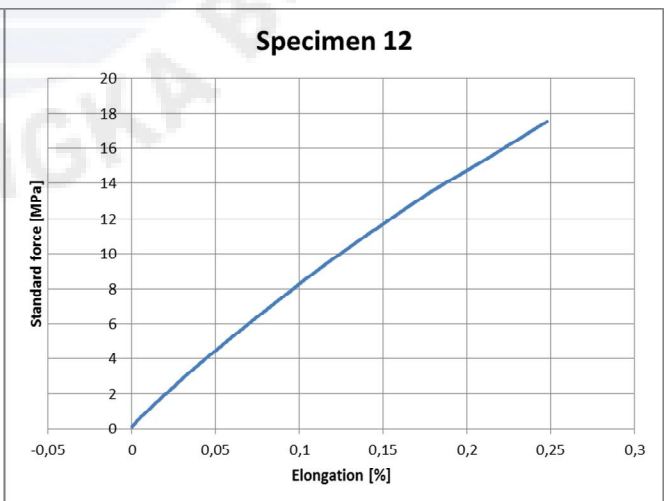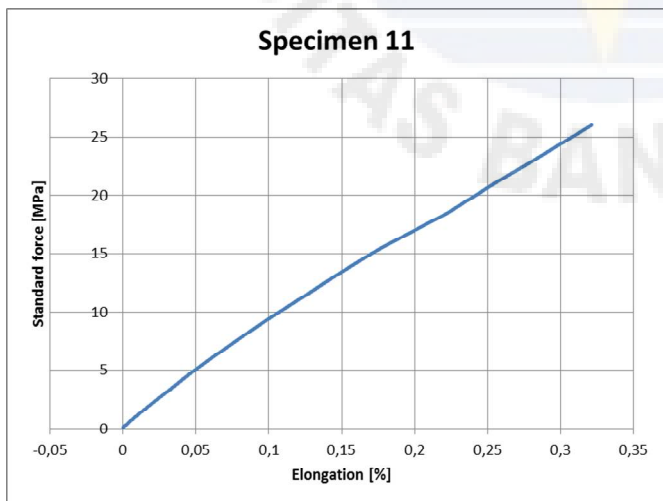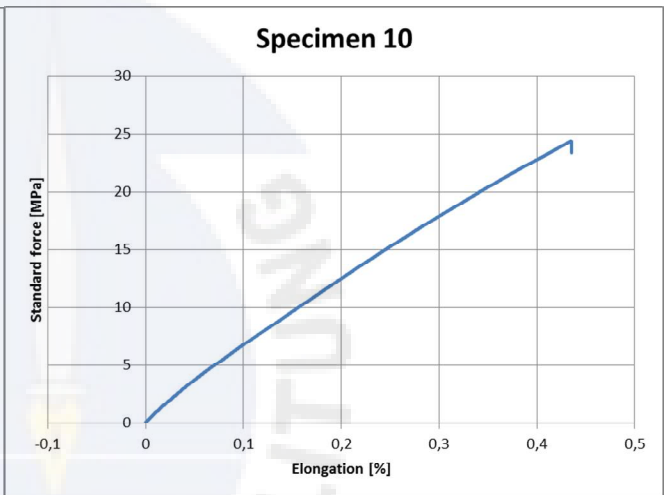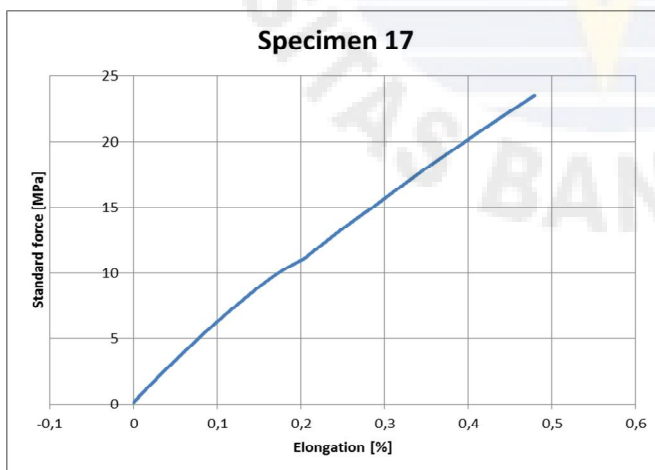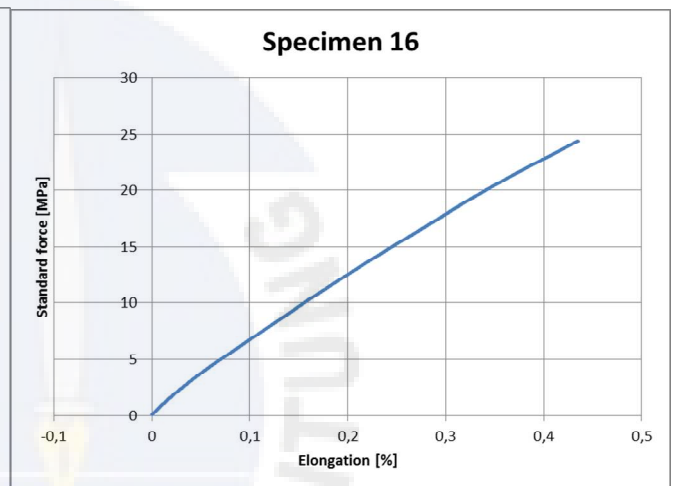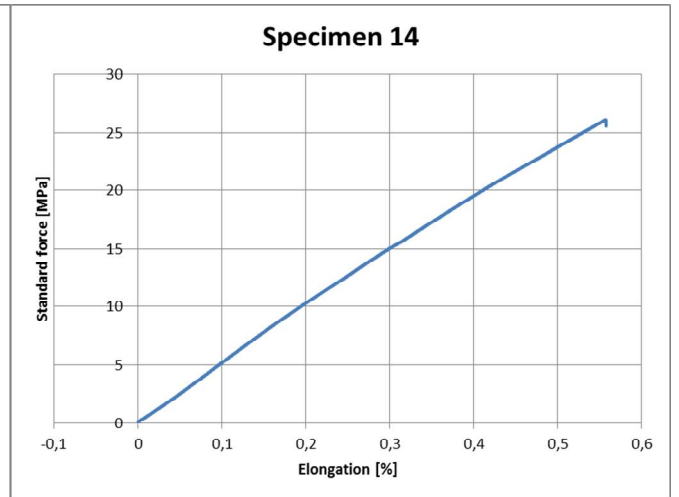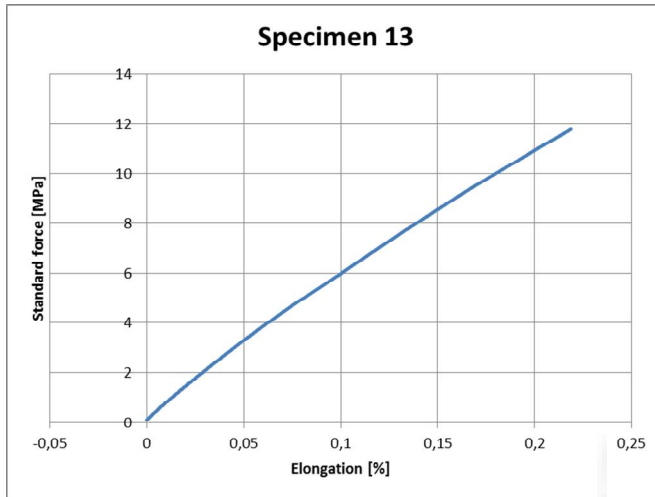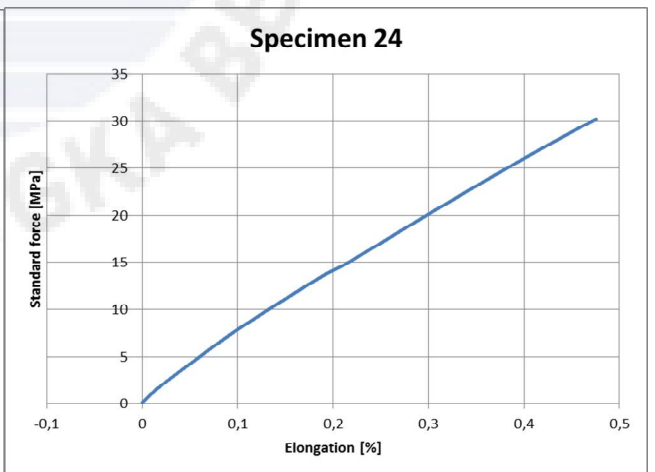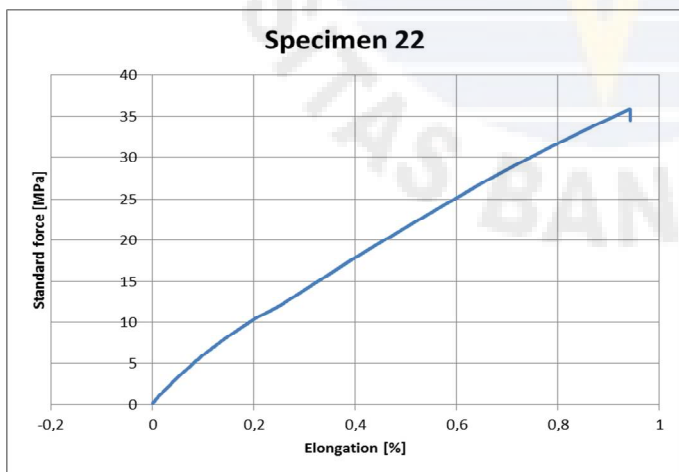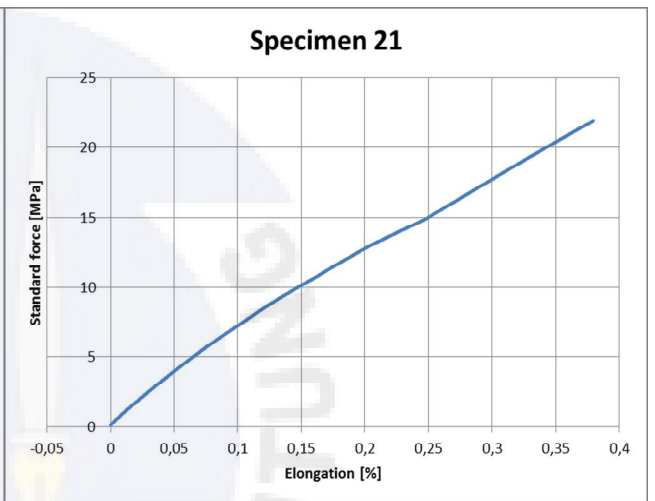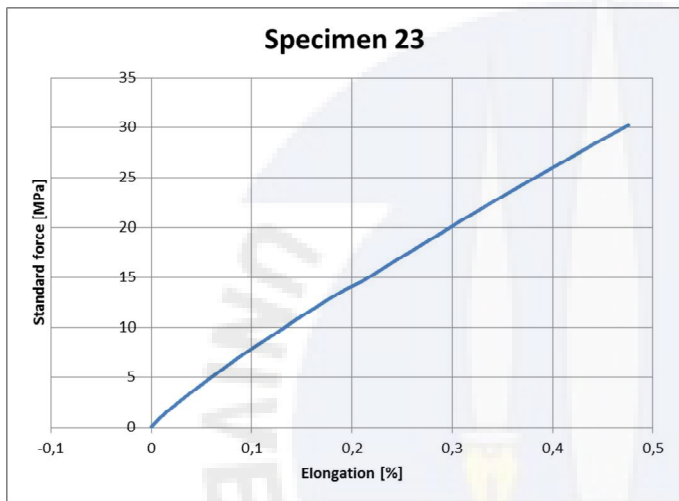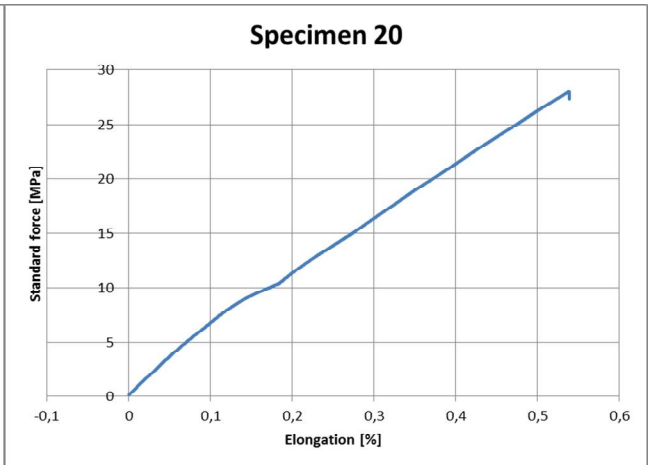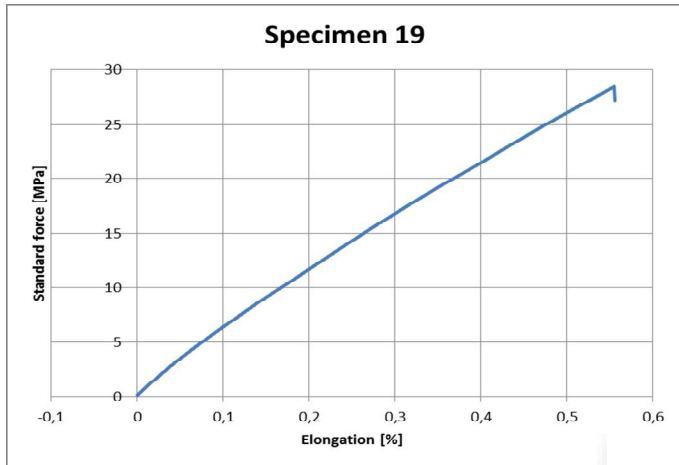
DATA PENGUJIAN IMPAK KOMPOSIT SERAT DAUN NANAS DAN SERAT GELAS

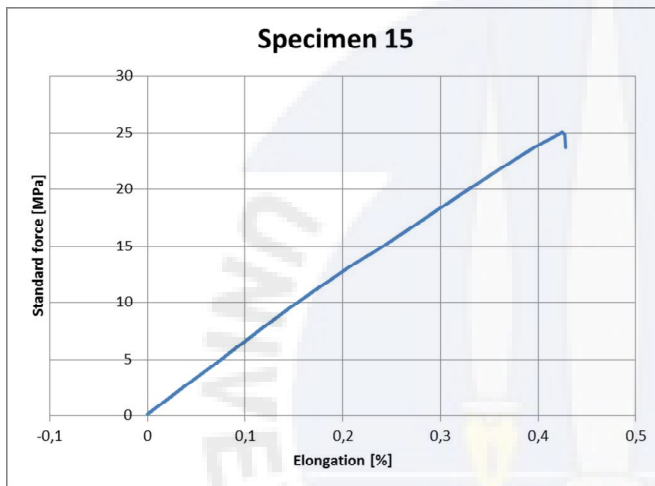| Spesimen	Sudut Awal (derajat)	Sudut Jatuh (derajat)	Rata-rata Sudut Jatuh (derajat)
1	150	76	
2	150	79	76,66
3	150	75	
4	150	63	
5	150	60	60,33
6	150	58	
7	150	25	
8	150	27	25,66
9	150	25	
10	150	120	
11	150	114	118,33
12	150	121	
13	150	105	
14	150	100	100,33
15	150	96	
16	150	41	
17	150	44	43,33
18	150	45	
19	150	10	
20	150	10	10
21	150	10	

Mengetahui,

Sumber: Data Pengujian di Politeknik Manufaktur
Negeri Bangka Belitung Sungailiat Bangka

Ketua Jurusan Teknik Mesin

DATA PENGUJIAN TARIK KOMPOSIT SERAT DAUN NANAS DAN SERAT GELAS

|	Specimen	Date/Cloc	E_t	E_{Sec}	σ_{x1}	σ_Y	ε_Y	$\varepsilon_{Y\,(Corr.)}$	σ_M	ε_M	$\varepsilon_{M\,(Corr.)}$	σ_B	ε_B	$\varepsilon_{B\,(Corr.)}$	h	b	A_0
			MPa	MPa	MPa	MPa	%	%	MPa	%	%	MPa	%	%	mm	mm	mm²
Specimen 1	1	41625,41	6122,873						21,05968	0,424716	0,432335	21,05968	0,424716	0,432335	8	20	160
Specimen 2	2	41625,41							22,96329	0,478316		22,96329	0,178316		8	20	160
Specimen 3	3	41625,41	-2881,71		8,30066				9,116566	0,118337	-0,17637	9,116566			8	20	160
Specimen 4	4	41625,41	6481,321						20,08726	0,395284	0,318424	20,08726	0,395284	0,318424	8	20	160
Specimen 5	5	41625,41	6388,438						20,08529	0,39187	0,336496	20,08529	0,39187	0,336496	8	20	160
Specimen 6	6	41625,42	4321,32	3556,551	29,37522				29,81943	1,153482	1,179686	29,81943	1,153482	1,179686	8	20	160
Specimen 7	7	41625,42	5851,027						17,14532	0,26325	0,304956	17,14532	0,26325	0,304956	8	20	160
Specimen 8	8	41625,42	7082,607						25,46018	0,447254	0,3717	25,46018	0,447254	0,3717	8	20	160
Specimen 9	9	41625,42	6316,767						28,07073	0,626497	0,650159	28,07073	0,626497	0,650159	8	20	160
Specimen 10	10	41625,42							24,73729	0,419129		24,73729	0,419129		8	20	160
Specimen 11	11	41625,42	5896,6						26,96367	0,479196	0,401983	26,96367	0,479196	0,401983	8	20	160
Specimen 12	12	41625,43							17,5657	0,24794	0,28047	17,5657	0,24794	0,28047	8	20	160
Specimen 13	13	41625,43							11,81192	0,219014		11,81192	0,219014		8	20	160
Specimen 14	14	41625,43	5094,457						26,11357	0,457342	0,558835	26,11357	0,457342	0,558835	8	20	160
Specimen 15	15	41625,43	4555,002						25,35718	0,439237	0,361175	25,35718	0,439237	0,361175	8	20	160
Specimen 16	16	41625,43	5768,565						24,43214	0,435362	0,452016	24,43214	0,435362	0,452016	8	20	160
Specimen 17	17	41625,43	4897,511						23,52093	0,379392	0,505929	23,52093	0,379392	0,505929	8	20	160
Specimen 18	18	41625,43	5153,372						20,88775	0,428695	0,445839	20,88775	0,428695	0,445839	8	20	160
Specimen 19	19	41625,43	5390,272						28,45659	0,555435	0,57259	28,45659	0,555435	0,57259	8	20	160
Specimen 20	20	41625,43	4930,866						28,02313	0,538535	0,57163	28,02313	0,538535	0,57163	8	20	160
Specimen 21	21	41625,44	5552,407						21,91925	0,37968	0,408079	21,91925	0,37968	0,408079	8	20	160
Specimen 22	22	41625,44	4322,974		31,36633				35,9277	0,942606	0,979493	35,9277	0,942606	0,979493	8	20	160
Specimen 23	23	41625,44	4523,334	3802,869	33,09092				30,29769	1,052381	1,08852	30,29769	1,052381	1,08852	8	20	160
Specimen 24	24	41625,44							33,38462	0,923615		33,38462	0,923615		8	20	160
Spesimen 25	25	41625,44	9471,313						27,35573	0,285445	0,298483	27,35573	0,285445	0,298483	8	20	160
Spesimen 26	26	41625,44	7665,161						26,02767	0,321577	0,343061	26,02767	0,321577	0,343061	8	20	160
Spesimen 27	27	41625,44							25,05973	0,424716		25,05973	0,424716		8	20	160

Sumber: Data Pengujian Tarik di Politeknik Manufaktur
Negeri Bangka Belitung Timah Sungailiat Bangka.

Mengetahui,

Ketua Jurusan Teknik Mesin
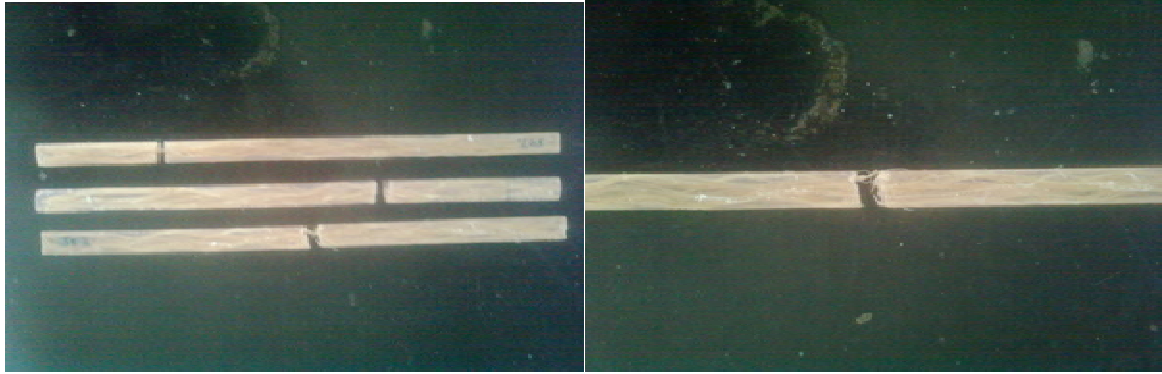
Gambar Spesimen Sesudah Pengujian

Gambar Spesimen Sebelum Pengujian

Gambar Lem Kaca

Gambar Timbangan Digital

Gambar Pisau

Gambar Jarum Suntik

Gambar Cetakan Uji Impak

Gambar Cetakan Uji Tarik

Gambar Gelas Ukur