# LAMPIRAN

1. **Menentukan Fraksi Volume komposit**

   Massa jenis serat aramid   = 1,44 gr/cm³

   Massa jenis epoksi       = 1,1 gr/ cm³

   Perbandingan fraksi volume serat dan matriks 15%:85%.

   Volume cetakan, $V_c$      = 65 cm³

   Volume matriks, $V_m$     $= \dfrac{85\%}{100\%} x65 \text{ cm}^3$

                               = 55 cm³

   Massa matriks, $M_m$     $= V_m x \rho_m$

                               $= 55 \text{ cm}^3$ x 1.1 gr/ cm³

                               = 60 gr

   Volume serat, $V_f$        $= \dfrac{15\%}{100\%} x65 \text{ cm}^3$

                               = 9 cm³

   Massa serat, $M_f$        $= V_f x \rho_f$

                               $= 9 \text{ cm}^3$ x 1,44 gr/ cm³

                               = 12,96 gr

2. **Perhitungan Pengujian Tarik**

   Variasi temperatur *curing* 150⁰C

   - Tegangan tarik $\left(\sigma = \dfrac{F}{A_0} = \dfrac{5874 \, N}{2,7 \, x \, 6 \, mm^2} = 368,05 \, Mpa\right)$

   - Regangan $\left(\varepsilon = \dfrac{\Delta l}{l_0} = \dfrac{3,50}{100 \, x \, 100} = 3,50\%\right)$

   - Modulus elastisitas $\left(\epsilon = \dfrac{\sigma}{\varepsilon} = \dfrac{368,05 \, N/mm^2}{3,50} = 10,5 \, Gpa\right)$

3. **Perhitungan Pengujian Tekan**

Variasi temperatur *curing* 150⁰C

- o pipe stiffness $\left(P_s = \dfrac{F}{\Delta_y} = \dfrac{5580\ N}{10\ mm^2} = 558\ Mpa\right)$

- o pipe deflection $\left(P_d = \dfrac{\Delta y}{dx100} = \dfrac{10}{30\ x\ 100} = 33\%\right)$

- o Modulus tekan $\left(\epsilon = \dfrac{(P_s)}{(P_d)} = \dfrac{558\ MPa}{33} = 16,9\ Mpa\right)$