

# **LAMPIRAN 1**

Pada  $V_f = 0,4$  diperoleh dari perhitungan sebagai berikut :

Diketahui ;

Massa jenis serat ijuk ( $\rho_i$ ) =  $1,030 \text{ gr/cm}^3$

Massa jenis serat gelas ( $\rho_g$ ) =  $2,54 \text{ gr/cm}^3$

Massa jenis *polyester* ( $\rho_m$ ) =  $1,21 \text{ gr/cm}^3$

Dimensi cetakan Panjang ( $p$ ) = 30 cm

Lebar ( $l$ ) = 25 cm

Tebal ( $t$ ) = 0,4 cm

Massa gelas dengan ukuran 25 x 30 (cm) anyam = 48 gram

1. Volume cetakan ( $V_c$ )

$$\begin{aligned} V_c &= p \cdot l \cdot t \\ &= 30 \cdot 25 \cdot 0,4 \text{ (cm)} \\ &= 300 \text{ cm} \end{aligned}$$

2. Volume serat ( $V_{ftot}$ ) dengan persamaan (2.5b)

$$\begin{aligned} V_{ftot} &= V_c \cdot V_{ftot} \\ &= 300 \text{ cm}^3 \cdot 0,4 \\ &= 120 \text{ cm}^3 \end{aligned}$$

- Volume serat gelas

$$V_{fg} = \frac{(x) \cdot m_g}{\rho_g} \dots\dots\dots(3.1a)$$

- Masa serat ijuk

$$m_{fi} = (V_{ftot} - V_{fgelas}) \cdot \rho_i \dots\dots\dots (3.1b)$$

- Menghitung masa serat ijuk varias lapisan serat gelas menurut persamaan (3.1a) dan (3.1b).

1. 0 lapis
2. 1 lapis
3. 2 lapis
4. 3 lapis
5. 4 lapis

1. 0 lapisan serat gelas

- ♦  $V_{fg} = \frac{(x) \cdot m_g}{\rho_g}$

$$V_{fg} = \frac{(0) \cdot 48 \text{ g}}{2,54 \text{ g/cm}^3}$$

$$= 0 \text{ cm}^3$$

$$\diamond m_{fi} = (V_{ftot} - V_{fgelas}) \cdot \rho_i$$

$$m_{fi} = (120 \text{ cm}^3 - 0 \text{ cm}^3) \cdot 1030 \text{ g/cm}^3$$

$$= 123,6 \text{ g}$$

## 2. 1 lapisan serat gelas

$$\diamond V_{fg} = \frac{(x) \cdot m_g}{\rho_g}$$

$$V_{fg} = \frac{(1) \cdot 48 \text{ g}}{2,54 \text{ g/cm}^3}$$

$$= 18,9 \text{ cm}^3$$

$$\diamond m_{fi} = (V_{ftot} - V_{fgelas}) \cdot \rho_i$$

$$m_{fi} = (120 \text{ cm}^3 - 18,9 \text{ cm}^3) \cdot 1030 \text{ g/cm}^3$$

$$= 104,133 \text{ g}$$

## 3. 2 lapisan serat gelas

$$\diamond V_{fg} = \frac{(x) \cdot m_g}{\rho_g}$$

$$V_{fg} = \frac{(2) \cdot 48 \text{ g}}{2,54 \text{ g/cm}^3}$$

$$= 37,8 \text{ cm}^3$$

$$\diamond m_{fi} = (V_{ftot} - V_{fgelas}) \cdot \rho_i$$

$$m_{fi} = (120 \text{ cm}^3 - 37,8 \text{ cm}^3) \cdot 1030 \text{ g/cm}^3$$

$$= 84,7 \text{ g}$$

## 4. 3 lapisan serat gelas

$$\diamond V_{fg} = \frac{(x) \cdot m_g}{\rho_g}$$

$$V_{fg} = \frac{(3) \cdot 48 \text{ g}}{2,54 \text{ g/cm}^3}$$

$$= 56,7 \text{ cm}^3$$

$$\diamond m_{fi} = (V_{ftot} - V_{fgelas}) \cdot \rho_i$$

$$m_{fi} = (120 \text{ cm}^3 - 56,7 \text{ cm}^3) \cdot 1030 \text{ g/cm}^3$$

$$= 65,2 \text{ g}$$

5. 4 lapisan serat gelas

$$\diamond V_{fg} = \frac{(x) \cdot m_g}{\rho_g}$$

$$V_{fg} = \frac{(4) \cdot 48 \text{ g}}{2,54 \text{ g/cm}^3}$$

$$= 75,6 \text{ cm}^3$$

$$\diamond m_{fi} = (V_{ftot} - V_{fgelas}) \cdot \rho_i$$

$$m_{fi} = (120 \text{ cm}^3 - 75,6 \text{ cm}^3) \cdot 1030 \text{ g/cm}^3$$

$$= 45,8 \text{ g}$$

Perhitungan massa matrik dapat dilihat sebagai berikut:

1. Volume matrik ( $v_m$ )

$$v_m = v_c - v_{ftot}$$

$$= 300 \text{ cm}^3 - 120 \text{ cm}^3$$

$$= 180 \text{ cm}^3$$

Maka massa matrik, menurut persamaan (2.4)

$$m_m = 300 \text{ cm}^3 \times (1 - 0,4) \times 1,21 \text{ gr/cm}^3$$

$$= 217,8 \text{ gr} .$$