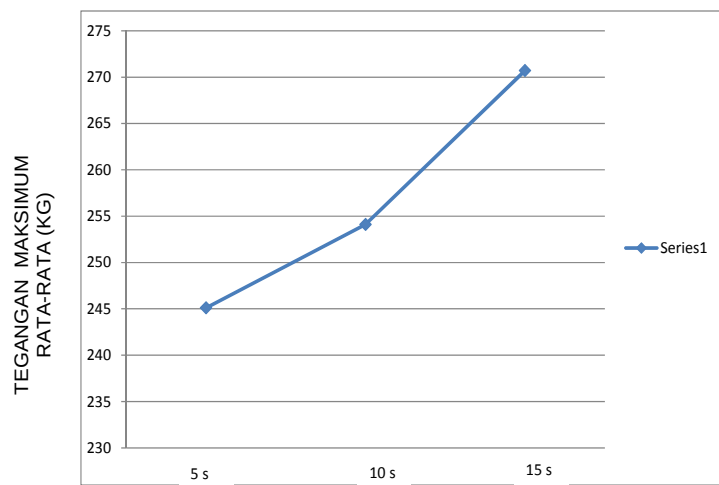
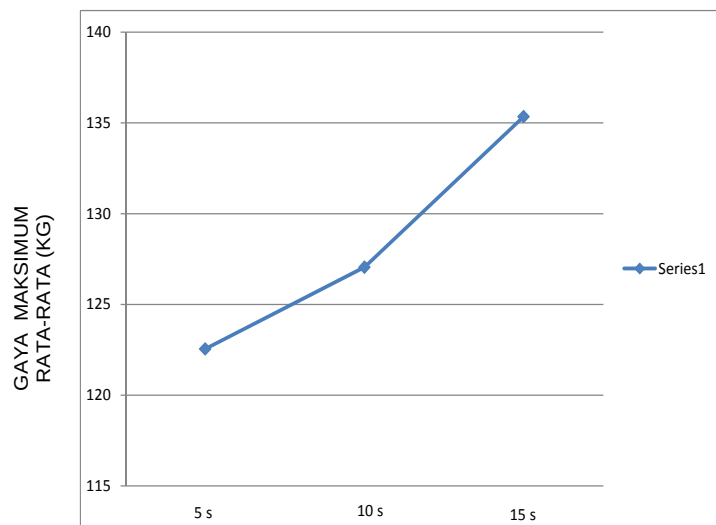
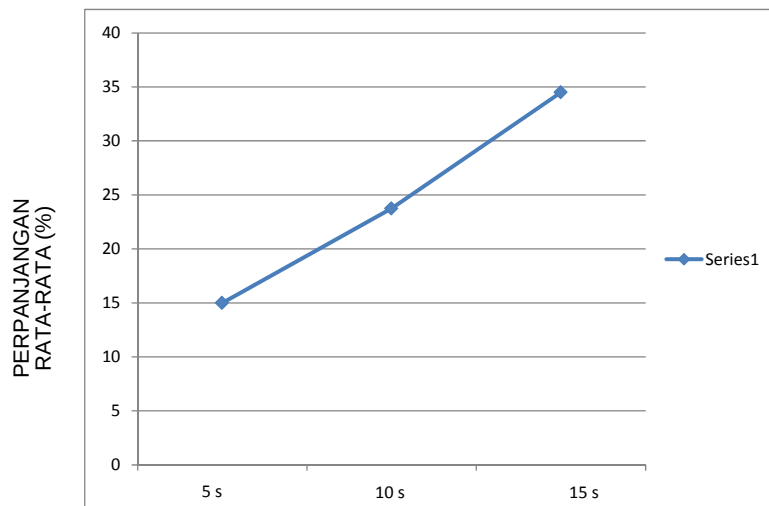
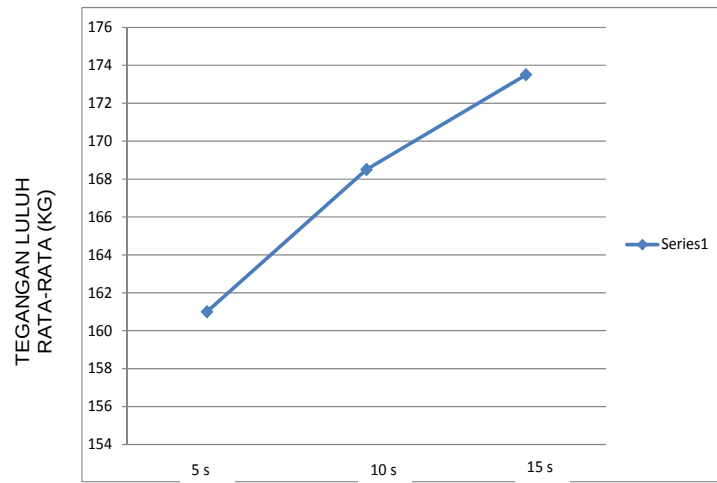
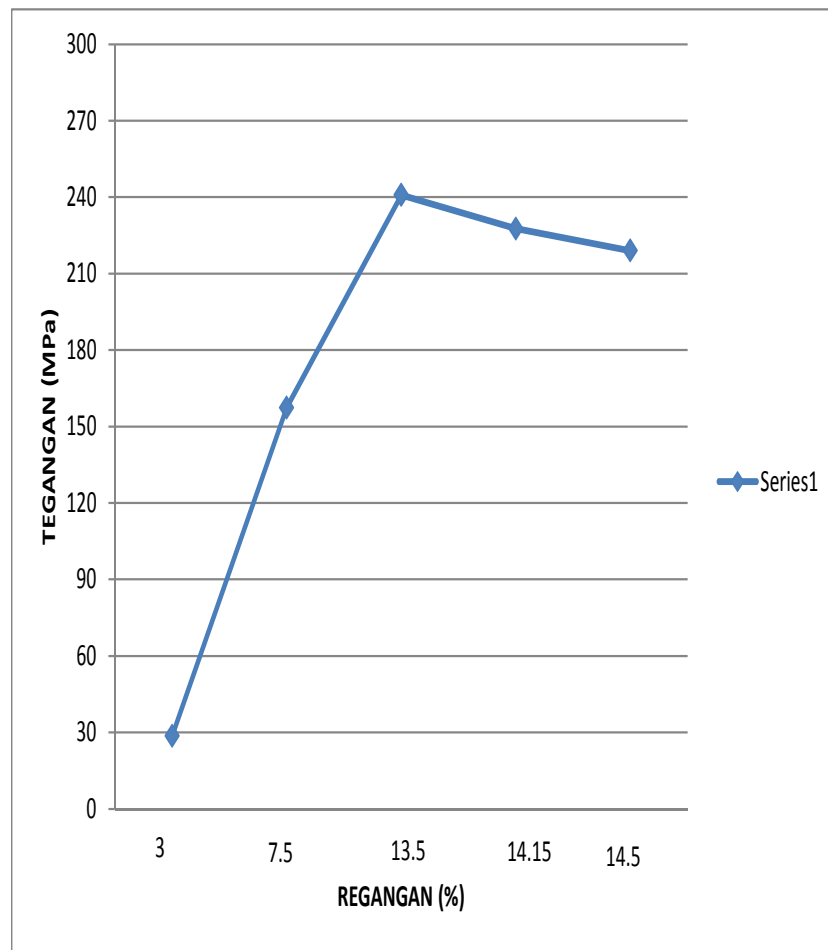
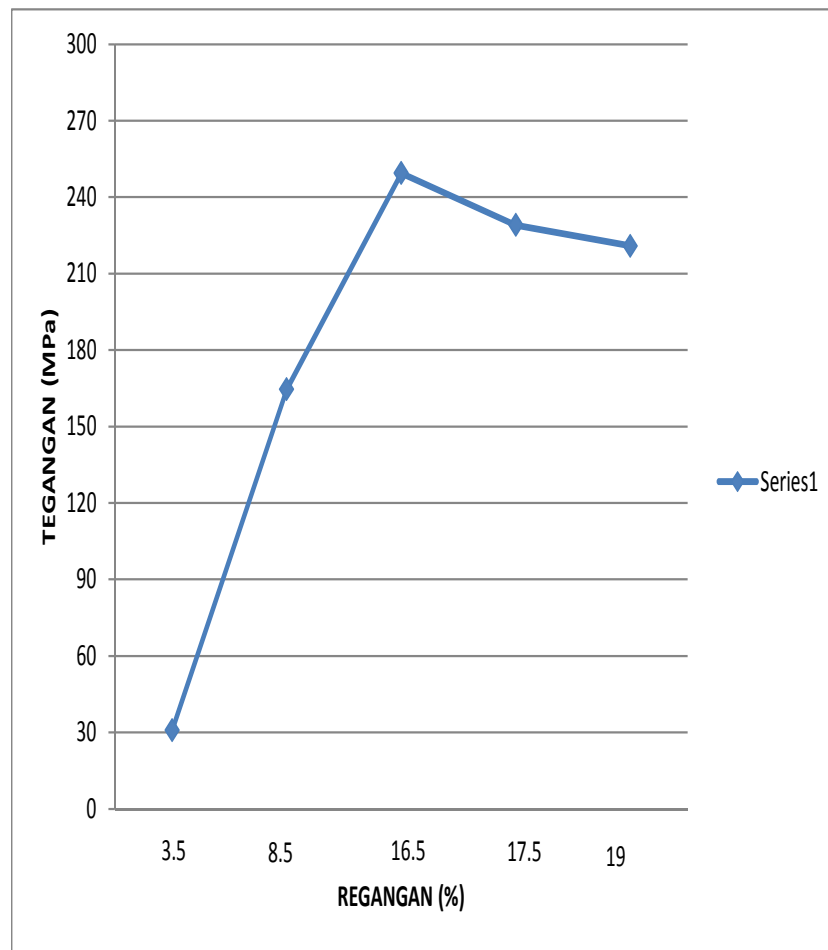




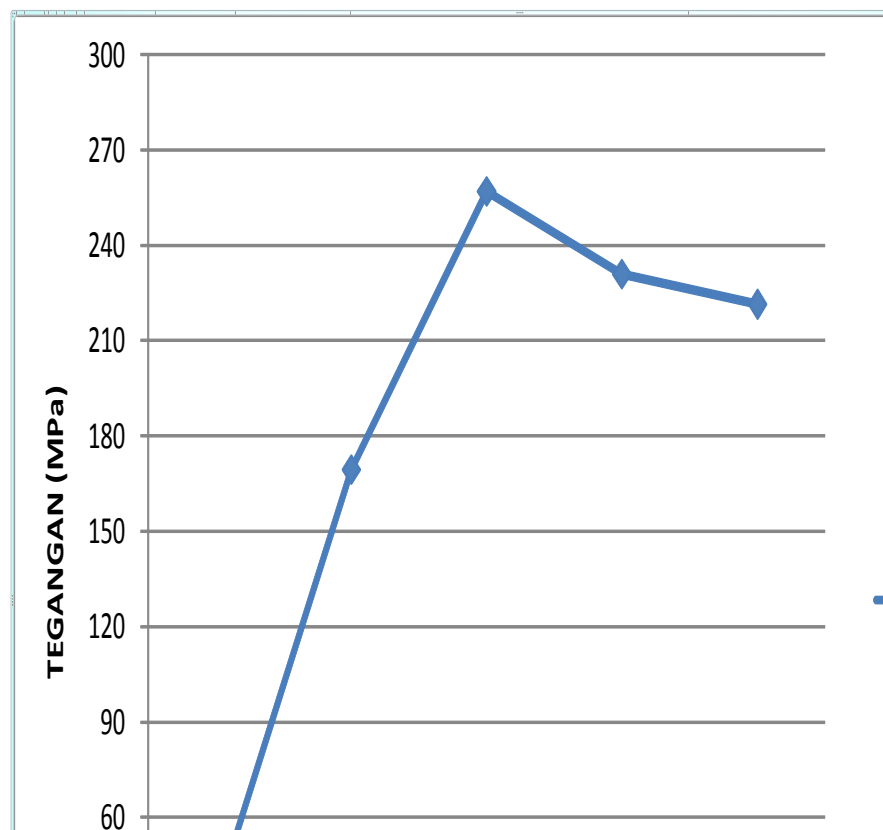




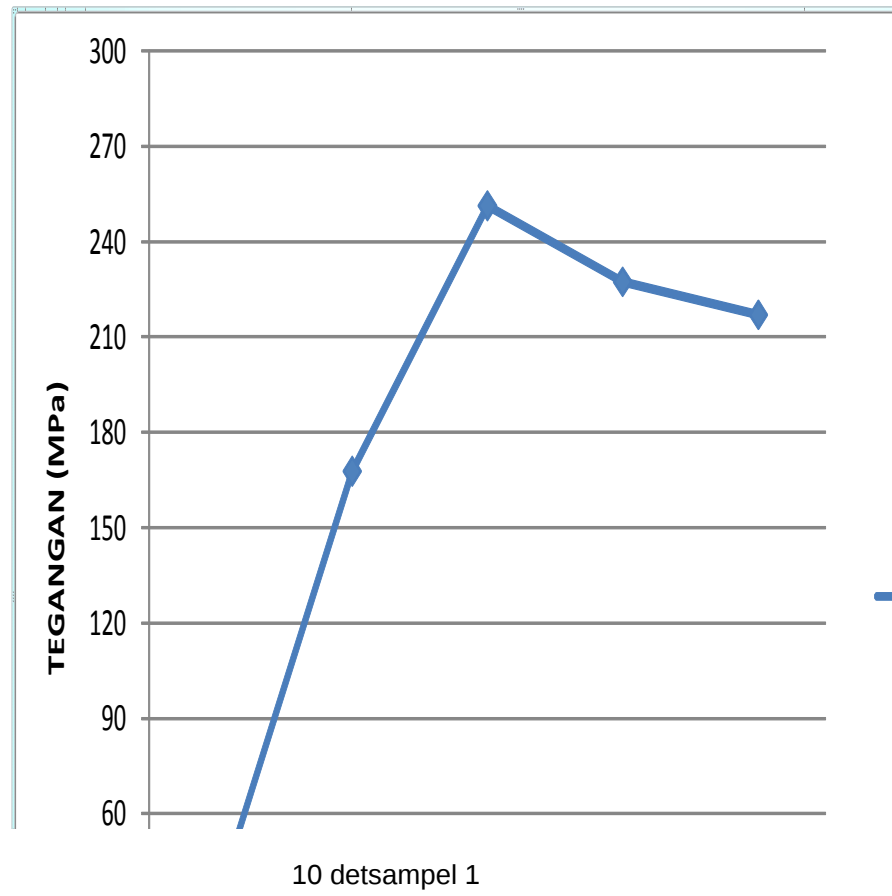
5 detsampel 1

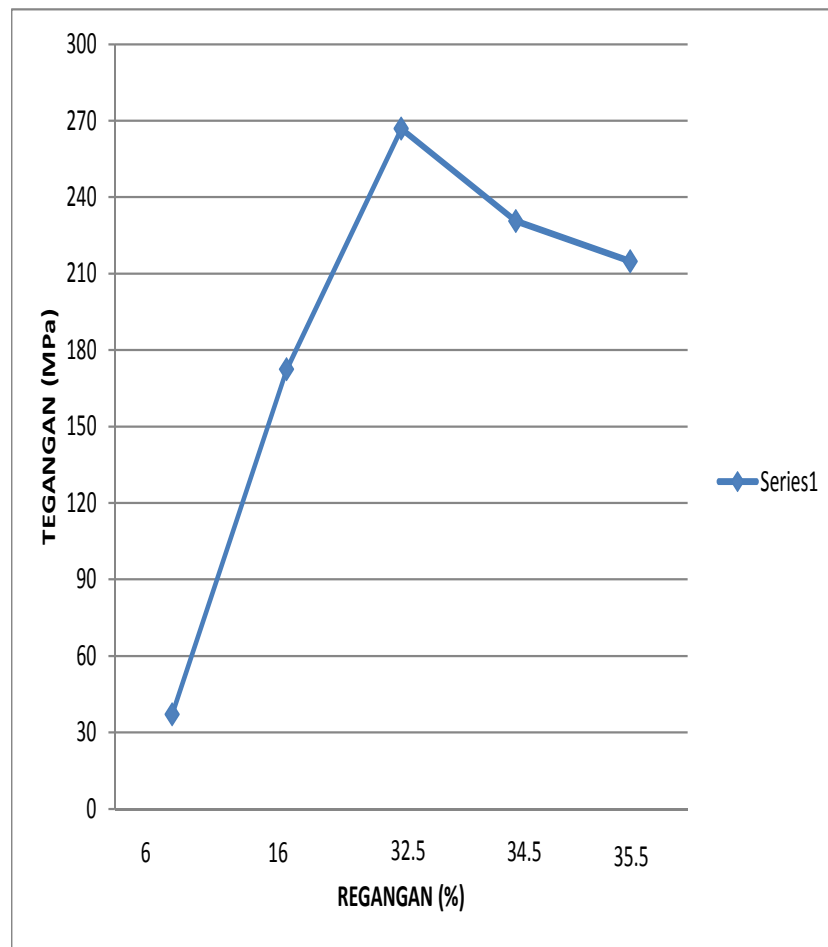


5 detsampel 2

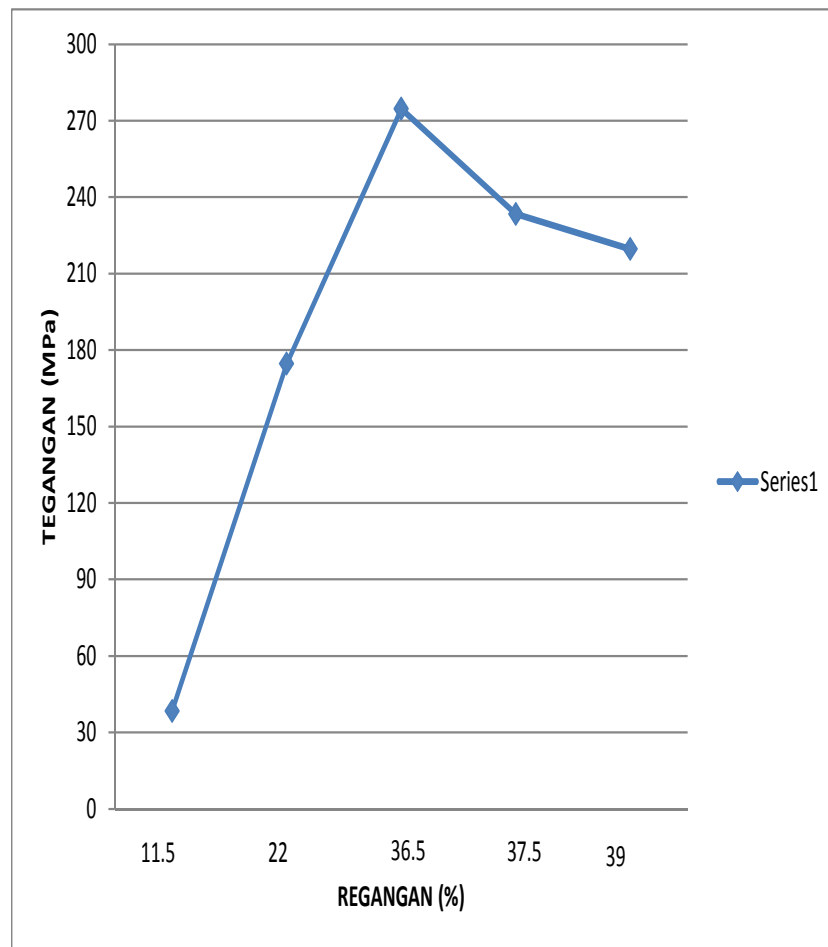


10 detsampel 2





15 detiksampel 1



15 detiksampel 2

1. Perhitungan Kekuatan Tarik Maksimal

$$\sigma_u = \frac{Fu}{A_o}$$

Dimana : Fu = beban (kg)

σ_u = tegangan ultimate (Mpa)

A_o = luas penampang awal (mm^2)

a. Variasi waktu 5 detik

$$\text{spesimen 1 : } \sigma_u = \frac{120.4 \text{ kg}}{5 \text{ mm}^2} = 24.08 \text{ kg/mm}^2 = 240.8 \text{ Mpa}$$

$$\text{spesimen 2 : } \sigma_u = \frac{124.7 \text{ kg}}{5 \text{ mm}^2} = 24.94 \text{ kg/mm}^2 = 249.4 \text{ Mpa}$$

b. Variasi waktu 10 detik

$$\text{spesimen 1 : } \sigma_u = \frac{125.6 \text{ kg}}{5 \text{ mm}^2} = 25.12 \text{ kg/mm}^2 = 251.2 \text{ Mpa}$$

$$\text{spesimen 2 : } \sigma_u = \frac{128.5 \text{ kg}}{5 \text{ mm}^2} = 25.7 \text{ kg/mm}^2 = 257 \text{ Mpa}$$

c. Variasi waktu 15 detik

$$\text{spesimen 1 : } \sigma_u = \frac{133.4 \text{ kg}}{5 \text{ mm}^2} = 26.68 \text{ kg/mm}^2 = 266.8 \text{ Mpa}$$

$$\text{spesimen 2 : } \sigma_u = \frac{137.3 \text{ kg}}{5 \text{ mm}^2} = 27.46 \text{ kg/mm}^2 = 274.6 \text{ Mpa}$$

2. Perhitungan Perpanjangan

$$\varepsilon = \frac{\Delta L}{L_0} \times 100\% = \frac{L - L_0}{L_0} \times 100\%$$

Dimana : ε = *elongation* (%)

L = panjang setelah ditarik (mm)

L₀ = panjang sebelum ditarik (mm)

a. Variasi waktu 5 detik

$$\text{spesimen 1 : } \varepsilon = \frac{22.7 \text{ mm} - 20\text{mm}}{20\text{mm}} \times 100\% = 13.5\%$$

$$\text{spesimen 2 : } \varepsilon = \frac{23.3 \text{ mm} - 20\text{mm}}{20\text{mm}} \times 100\% = 16.5 \%$$

b. Variasi waktu 10 detik

$$\text{spesimen 1 : } \varepsilon = \frac{24.2 \text{ mm} - 20\text{mm}}{20\text{mm}} \times 100\% = 21 \%$$

$$\text{spesimen 2 : } \varepsilon = \frac{25.3 \text{ mm} - 20\text{mm}}{20\text{mm}} \times 100\% = 26.5 \%$$

c. Variasi waktu 15 detik

$$\text{spesimen 1 : } \varepsilon = \frac{26.5 \text{ mm} - 20\text{mm}}{20\text{mm}} \times 100\% = 32.5 \%$$

$$\text{spesimen 2 : } \varepsilon = \frac{27.3 \text{ mm} - 20\text{mm}}{20\text{mm}} \times 100\% = 36.5 \%$$

3. Perhitungan Reduksi Penampang

$$q = \frac{\Delta A}{A_0} \times 100\% = \frac{A_0 - A_1}{A_0} \times 100\%$$

Dimana : A_0 = luas mula-mula (mm^2)

A_1 = luas setelah ditarik (mm^2)

q = reduksi penampang (%)

a. Variasi waktu 5 detik

$$\text{spesimen 1 : } A_1 = P \times L = 0.47 \times 4.8 = 2.256 \text{ mm}^2$$

$$q = \frac{5 \text{ mm}^2 - 2.256 \text{ mm}^2}{5 \text{ mm}^2} \times 100\% = 54.88 \%$$

$$\text{spesimen 2 : } A_1 = P \times L = 0.47 \times 4.7 = 2.209 \text{ mm}^2$$

$$q = \frac{5 \text{ mm}^2 - 2.209 \text{ mm}^2}{5 \text{ mm}^2} \times 100\% = 55.82 \%$$

b. Variasi waktu 10 detik

$$\text{spesimen 1 : } A_1 = P \times L = 0.43 \times 4.7 = 2.021 \text{ mm}^2$$

$$q = \frac{5 \text{ mm}^2 - 2.021 \text{ mm}^2}{5 \text{ mm}^2} \times 100\% = 59.58 \%$$

$$\text{spesimen 2 : } A_1 = P \times L = 0.43 \times 4.6 = 1.978 \text{ mm}^2$$

$$q = \frac{5 \text{ mm}^2 - 1.978 \text{ mm}^2}{5 \text{ mm}^2} \times 100\% = 60.44 \%$$

c. Variasi waktu 15 detik

$$\text{spesimen 1 : } A_1 = P \times L = 0.44 \times 4.5 = 1.98 \text{ mm}^2$$

$$q = \frac{5 \text{ mm}^2 - 1.98 \text{ mm}^2}{5 \text{ mm}^2} \times 100\% = 60.4 \%$$

$$\text{spesimen 2 : } A_1 = P \times L = 0.45 \times 4.3 = 1.935 \text{ mm}^2$$

$$q = \frac{5 \text{ mm}^2 - 1.935 \text{ mm}^2}{5 \text{ mm}^2} \times 100\% = 61.4 \%$$