Micrômetro

→ Calculos utilizando as medidas encontradas a partir do Micrometro

- Valor mais provável da grandeza:

↳ Diâmetro ($\bar{D}$):

$$\bar{D} = \frac{16,420 + 16,420 + 16,420 + 16,420 + 16,420}{4} \rightarrow \boxed{\bar{D} = 16,420\ mm}$$

↳ Altura ($\bar{H}$):

$$\bar{H} = \frac{17,227 + 17,227 + 17,227 + 17,227 + 17,227}{4} \rightarrow \boxed{\bar{H} = 17,227\ mm}$$

- Desvio Padrão - Altura:

↳ $\sigma_p = \sqrt{\frac{\sum (a_i - \bar{a})^2}{n-1}} \rightarrow \sigma_p = \sqrt{\frac{(17,227-17,227)^2}{4} + \frac{(17,227-17,227)^2}{4} + \frac{(17,227-17,227)^2}{4} + \frac{(17,227-17,227)^2}{4} + \frac{(17,227-17,227)^2}{4}}$

$$\rightarrow \sigma_p = \sqrt{0+0+0+0+0}$$

$$\rightarrow \boxed{\sigma_p = 0\ mm}$$

- Desvio Padrão - Diâmetro:

$$\rightarrow \sigma_p = \sqrt{\frac{(16,420-16,420)^2}{4} + \frac{(16,420-16,420)^2}{4} + \frac{(16,420-16,420)^2}{4} + \frac{(16,420-16,420)^2}{4} + \frac{(16,420-16,420)^2}{4}}$$

$$\rightarrow \sigma_p = \sqrt{0+0+0+0+0}$$

$$\rightarrow \boxed{\sigma_p = 0\ mm}$$

- Incerteza final:

↳ Diâmetro: $\rightarrow \sigma_D = \sqrt{\sigma_p^2 + \sigma_r^2}$

$$\rightarrow \sigma_D = \sqrt{0^2 + (0,001)^2}$$

$$\rightarrow \boxed{\sigma_D = 0,001\ mm}$$

↳ Altura: $\rightarrow \sigma_H = \sqrt{\sigma_p^2 + \sigma_r^2}$

$$\rightarrow \sigma_H = \sqrt{0^2 + (0,001)^2}$$

$$\rightarrow \boxed{\sigma_H = 0,001\ mm}$$

- Cálculo da Densidade (g/mm^3):

$$\rightarrow \bar{\rho} = \frac{4 \cdot \bar{M}}{\pi \cdot \bar{D}^2 \cdot \bar{H}}$$

$$\rightarrow \bar{\rho} = \frac{4 \cdot (16,2)}{\pi \cdot (16,420)^2 \cdot (17,227)}$$

$$\rightarrow \bar{\rho} = \frac{64,8}{\pi \cdot (269,6464)(17,227)}$$

$$\rightarrow \boxed{\bar{\rho} = 0,00444134685412\ g/mm^3}$$