

• Cálculo da Incerteza da Densidade (g/mm^3):

$$\rightarrow \sigma_p = \bar{\rho} \cdot \sqrt{\left(\frac{\sigma_m}{\bar{M}}\right)^2 + \left(\frac{2\sigma_D}{\bar{D}}\right)^2 + \left(\frac{\sigma_H}{\bar{H}}\right)^2}$$

$$\rightarrow \sigma_p = 0,004413468542 \cdot \sqrt{\left(\frac{0,01}{10,1}\right)^2 + \left(\frac{0,001}{16,420}\right)^2 + \left(\frac{0,001}{17,227}\right)^2}$$

$$\rightarrow \sigma_p = 0,004413468542 \cdot 0,000626790377$$

$$\rightarrow \sigma_p = 0,000002766319611 \text{ g}/\text{mm}^3$$

• Notação Final Densidade (g/mm^3):

$$\rightarrow \rho = \bar{\rho} \pm \sigma_p$$

$$\rightarrow \rho = 0,004413468542 \pm 0,000002766319611$$

$$\rightarrow \rho = 0,004416234862 \text{ g}/\text{mm}^3$$

• Erro Relativo:

$$\rightarrow E\% = \frac{|X_m - X_v|}{X_v} \times 100\%$$

Valor Aproximado
Valor exato

$$\rightarrow E\% = \frac{|0,004413468542 - 0,0044|}{0,0044} \times 100$$

$$\rightarrow E\% = 0,003061032273 \times 100$$

$$\rightarrow E\% = 0,306103227\%$$

9,04%

• Incerteza Experimental Relativa:

$$\rightarrow \sigma\% = \frac{\sigma_p}{\bar{\rho}} \times 100$$

$$\rightarrow \sigma\% = \frac{0,000002766319611}{0,004413468542} \times 100$$

$$\rightarrow \sigma\% = 0,0006267903767 \times 100$$

$$\rightarrow \sigma\% = 0,062679037\%$$