

Cálculo da (incerteza da) densidade:

$$\bar{\rho} = \frac{4\bar{m}}{\pi \cdot \bar{b}^2 \cdot \bar{h}} = \frac{4 \cdot 40,82}{3,14 \cdot (15,4)^2 \cdot 22,8} = 0,009252415138 \text{ g/mm}^3$$

Incerteza da densidade:

$$\Delta \rho = \sqrt{\left(\frac{\Delta m}{\bar{m}}\right)^2 + \left(\frac{2 \cdot \Delta d}{\bar{d}}\right)^2 + \left(\frac{\Delta h}{\bar{h}}\right)^2}$$

$$\Delta \rho = \sqrt{\left(\frac{0,01}{40,82}\right)^2 + \left(\frac{2 \cdot 0,243}{15,4}\right)^2 + \left(\frac{0,243}{22,8}\right)^2}$$

$$\Delta \rho = 0,001594491668 \text{ g/mm}^3$$

Notação final p/ densidade:

$$\rho = \bar{\rho} \pm \Delta \rho$$

$$\rho = 0,009252415138 \pm 0,001594491668$$

$$\rho = 0,025230631 \text{ ou } \rho = -0,006425201542$$

Erro relativo:

$$E(\%) = \frac{|X_m - X_v|}{X_v} \cdot 100$$

$$E(\%) = \frac{|9,2524 - 8,40|}{8,40} \cdot 100$$

$$E(\%) = 0,998\%$$

Erro experimental:

$$E_{exp} = \frac{\Delta \bar{G}}{\bar{G}} \cdot 100$$

$$E_{exp} = \frac{0,001594491668}{0,009252415138} = 0,0017283$$