

Exposición 4: Principios de Arquímedes

$$\textcircled{1} \quad V = 4 \text{ cm}^3$$

$$\rho = 207 \text{ kg/m}^3$$

$$P = 1000 \text{ kg/m}^3$$

$$\textcircled{a} \quad w = (207)(9.81)(4 \times 10^{-6})$$

$$w = 8.11 \times 10^{-3} \text{ N}$$

$$\textcircled{b} \quad F_a = \rho g V = (1000)(9.81)(4 \times 10^{-4})$$

$$F_a = 39.2 \times 10^{-3} \text{ N} = 0.0392 \text{ N}$$

$$F = 31.9 \times 10^{-3} \text{ N}$$

$$\textcircled{2} \quad m_1 = 26.039$$

$$w_1 = (0.027)(9.81) = 0.265$$

$$w_2 = (0.02146)(9.81) = 0.2107$$

$$E = w_1 - w_2 = 0.0446 \text{ N}$$

$$V_0 = \frac{0.0446}{(1000)(9.81)} = 4.5463 \times 10^{-6} \text{ m}^3$$

$$\rho_0 = \frac{0.02603}{4.5463 \times 10^{-6}} = 5725.53505 \text{ kg/m}^3 = 5.729 \text{ g/cm}^3$$

$$\textcircled{3} \quad \sum F = 0 \quad F_b - w = 0$$

$$\therefore w = \frac{9.81 \times 10^3 \text{ N}}{\text{m}^3} \left(\frac{381 \times 10^{-3}}{10^3} \right) = 3.77 \text{ N}$$

$$V_d = (40)^3 = 512 \times 10^3 \text{ m}^3$$

$$F_c = \left(\frac{12.36 \times 10^3}{\text{m}^3} \right) (512) - 3.77 = 8.56 \text{ N}$$