Exercise 40

A large piece of jewelry has a mass of 132.6 g. A graduated cylinder initially contains 48.6 mL water. When the jewelry is submerged in the graduated cylinder, the total volume increases to 61.2 mL.

(a) Determine the density of this piece of jewelry.

(b) Assuming that the jewelry is made from only one substance, what substance is it likely to be? Explain.

Solution

To obtain the jewelry's density, divide the mass of the jewelry by the volume it takes up.

$$\text{Density} = \frac{132.6\ \text{g}}{(61.2 - 48.6)\ \text{mL}} \approx 10.5\ \frac{\text{g}}{\text{mL}} = 10.5\ \frac{\text{g}}{\text{cm}^3}$$

Table 1.4 on page 34 lists the densities of common solids, and 10.5 g/cm^3 is the density of silver.