

Density

Calculate density, and identify substances using a density chart.

Density is a measure of the amount of mass in a certain volume. This physical property is often used to identify and classify substances. It is usually expressed in grams per cubic centimeters, or g/cm³. The chart on the right lists the densities of some common materials.

EQUATION: density = $\frac{\text{mass}}{\text{volume}}$

$$D = \frac{m}{V}$$

SAMPLE PROBLEM: What is the density of a billiard ball that has a volume of 100 cm³ and a mass of 250 g?

$$D = \frac{250 \text{ g}}{100 \text{ cm}^3}$$

$$D = 2.5 \text{ g/cm}^3$$

Densities of Substances

Substance	Density (g/cm ³)
Gold	19.3
Mercury	13.5
Lead	11.4
Iron	7.87
Aluminum	3.7
Bone	1.7–2.0
Gasoline	0.66–0.69
Air (dry)	0.00119

Your Turn!

1. A loaf of bread has a volume of 2270 cm³ and a mass of 454 g. What is the density of the bread?

2. A liter of water has a mass of 1000 g. What is the density of water? (Hint: 1 mL = 1 cm³)

3. A block of wood has a density of 0.6 g/cm³ and a volume of 1.2 cm³. What is the mass of the block of wood? Be careful!

4. Use the data below to calculate the density of each unknown substance. Then use the density chart above to determine the identity of each substance.

	Mass (g)	Volume (cm ³)	Density (g/cm ³)	Substance
	Example: 4725	350	$4725 \div 350 = 13.5$	mercury _____
a.	171	15	_____	_____
b.	148	40	_____	_____
c.	475	250	_____	_____
d.	680	1000	_____	_____