

Answer on Question #52997 - Physics - Mechanics - Kinematics - Dynamics

A liquid with specific gravity of $SG = 1.2$ fills a volume. If the mass in the volume is $m = 200$ kg, what is the magnitude V of the volume?

Solution:

The specific gravity is given by

$$SG = \frac{\rho}{\rho_{H_2O}} = \frac{m/V}{\rho_{H_2O}},$$

where $\rho = \frac{m}{V}$ – is the density of the liquid, and ρ_{H_2O} – is the density of the water. Since $SG = 1.2$, and $\rho_{H_2O} = 1000 \frac{\text{kg}}{\text{m}^3}$, we obtain

$$V = \frac{m}{SG \cdot \rho_{H_2O}} = \frac{200 \text{ kg}}{1.2 \cdot 1000 \frac{\text{kg}}{\text{m}^3}} = 0.167 \text{ m}^3$$

Answer: 0.167 m³.