

Answer on Question #52995, Physics / Mechanics | Kinematics | Dynamics

If the density of the liquid is 835 kg/m^3 , find its specific weight and specific gravity (S.G)

Solution:

We know that the density of a substance is that quantity of matter contained in unit volume of the substance. According to the condition of the task we have the density of the liquid is $835 \frac{\text{kg}}{\text{m}^3}$.

$$\text{Specific gravity of a substance} = \frac{\text{Weight of substance}}{\text{Weight of equal volume of water}} = \frac{\text{Density of substance}}{\text{Density of water}}$$

$$\text{Density, } \rho = \frac{\gamma}{g}$$

$$\text{Specific weight can be calculated from the noted above formula, } \gamma = \rho \cdot g = 835 \frac{\text{kg}}{\text{m}^3} \cdot 9.81 \frac{\text{m}}{\text{s}^2} \approx 8.20 \frac{\text{kN}}{\text{m}^3}$$

Now, we can determine the specific gravity (S.G) of the liquid, which is equal to

$$\text{Specific gravity of a substance} = \frac{8.20 \frac{\text{kN}}{\text{m}^3}}{9.79 \frac{\text{kN}}{\text{m}^3}} = 0.838$$

Thus, the specific weight is equal to $8.20 \frac{\text{kN}}{\text{m}^3}$ and the specific gravity (S.G) is equal to 0.838.