

84. The area facing down (and up) is $A = (0.050\text{ m})(0.040\text{ m}) = 0.0020\text{ m}^2$. The submerged volume is $V = Ad$ where $d = 0.015\text{ m}$. In order to float, the downward pull of gravity mg must equal the upward buoyant force exerted by the seawater of density ρ :

$$mg = \rho Vg \implies m = \rho V = (1025)(0.0020)(0.015) = 0.031\text{ kg} .$$