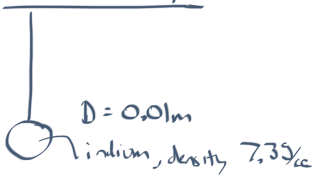
Indium ball problem



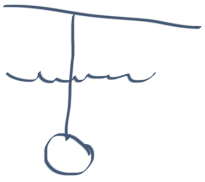
$m = \rho V$

$T - mg = 0$ if not falling

$T = \rho V g$

$T = 0.04 N$ newtons

Suspended in gallium



$T + B - W = 0$

$T = \rho_I V g - \rho_g V g$

$= V g (\rho_I - \rho_g)$

$= \left(\frac{4}{3}\pi r^3\right)(7 - 6)$

$T = 0.007$ Newtons

Indium ball falling in gallium

$T + B - W = ma$

$a = \frac{B - W}{m}$

$= \frac{(\rho_g - \rho_I) V g}{\rho_I V}$

$= -g\left(1 - \frac{\rho_g}{\rho_I}\right)$

$= -10 m/s^2 \left(1 - \frac{6}{7}\right)$

$a = (0.14) g$

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