Answer on Question #71249, Physics / Other

A cylinder of an unknown material has a weight in the air of 9.62 Newtons. The submerged cylinder in water has an apparent weight of 8.77 Newtons. What is the specific gravity of the unknown material and the name of the material?

Solution:

Given:

$F_{g(air)}$ = 9.62 N

$F_{g(water)}$ = 8.77 N

$SG = ?$

Specific gravity is the ratio of the density of a substance to the density of a reference substance. The apparent specific gravity is simply the ratio of the weights of equal volumes of sample and water in air:

$$SG = \frac{F_{g(air)}}{F_{g(water)}}$$

So,

$$SG = \frac{9.62}{8.77} = 1.097$$

The material is ABS plastic.

Answer. $SG = 1.097;$ ABS plastic.

Sources:

https://en.wikipedia.org/wiki/Specific_gravity

http://www.pvc.org/en/p/specific-gravity-density