

BUOYANCY FORCE LABORATORY

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OBJECTIVE:

To apply the concepts of buoyancy force to determine how “fast” an object sinks in a fluid.

BACKGROUND:

A hydrometer is a device for indicating the specific gravity of the liquids. The design for this hydrometer consists of two parts. The bottom part is a hollow cylinder with a 1.0 inch diameter and the top is a tube with a 0.025 inch diameter. The empty hydrometer weighs 0.020 lbs. A) Gradually steel balls are added and the distance X (depth of sinking as measured from bottom of object) as a function of this added extra weight is determined. What weight of the steel balls should be added to make the hydrometer float in the position shown in fresh water or at a point where $X = 1.3$ inches? How much weight of the steel balls should be added to completely submerge the hydrometer in fresh water or $X = 2.3$ inches? Plot X as a function of added weight. Repeat for two other liquids: Gasoline and Carbon Tetrachloride. From the plots obtained, determine in which liquid the hydrometer sinks "faster". Hint: Check slopes of plots. Turn in your results in table format.

