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Density lab part one

Research question

How are density units determined? What is the real-world application of density?

Introduction

Density is defined mathematically as the ratio of a substance's mass and volume:

$$\rho = \text{mass/volume}$$

It uses derived units; in chemistry, the derived units are usually g/mL or g/cm³ (cubic centimeters).

The latter is equivalent

to the former because 1 mL = 1 cm³.

Procedures

First, we measured the mass of the gray plastic PVC sample using an electronic scale. We filled our graduated cylinder with 50.0 mL of water and then slid the sample into the cylinder. We then measured the new volume of the water, being careful each time to measure at the meniscus. Next, we subtracted these two volumes to obtain the sample's volume. The sample's mass was divided by its volume to obtain density. Each lab group then announced their findings and a comparison of these was made.

Data/Observations

Mass of PVC 11.01g

Volume of water is 50ML

New/sample volume is 58ML

58ML - 50ML = 8.0ML

11.01g/8.0ML = 1.376g/ML

Density is 1.4g/ML

Conclusion

The units of density are determined by the units used for mass and volume and then dividing those units with their respective quantities. These are derived units renowned by computations. Density is a Physical trait that determines if an object will sink or float in a liquid. If the object is greater than the liquid's density it sinks. If the object density is less than the liquid's density it floats. The PVC had a greater density than the H₂O and therefore it sank.

The Mass is a measure of the amount of matter in an object. Whereas, the density is an object's mass divided by the volume that the object occupies. The tendency of an object to float in a fluid is buoyancy. Physical Property is a characteristic of a substance that can be observed or measured without changing the identity of the substance.