Density Lab

Problem

What are the relationships between mass, volume and density?

Materials

Triple Beam Balance
Metric Ruler
Assorted Plastic Blocks

Procedure

Trial I

Note: Success of this laboratory activity depends on the ability to take accurate measurements, to make valid estimations and to apply rules for significant figures in mass, volume (and density) calculations.

1. Obtain a set of three plastic blocks (same color). Record the block numbers and color in the table below.
2. Using a triple beam balance mass and record one plastic block (to the nearest tenth of a gram).
3. Using a metric ruler measure and record the dimensions of one block (to the nearest millimeter).
4. Calculate the volume of one block.
5. Calculate the density of one block.
6. Repeat for each other block supplied.
7. Determine the average density of the blocks.
8. Obtain the actual density from the teacher and calculate an error analysis.

Block Number			
Color of Block			
Mass (gm)			
Length (cm)			
Width (cm)			
Height (cm)			
Volume (cm^3)			
Density (gm/cm^3)			
		Average Density	
		Actual Density	*Supplied below*

Trial II

1. Obtain a set of plastic blocks (same color). Record the block numbers and color in the table below.
2. Using a triple beam balance mass and record one plastic block (to the nearest tenth of a gram).
3. Using a metric ruler measure and record the dimensions of one block (to the nearest millimeter).
4. Calculate the volume of one block.
5. Calculate the density of one block.
6. Repeat for each other block supplied.
7. Using Excel plot a graph of Mass (y) versus Volume (x). Determine the line equation to find the density.
8. Obtain the actual density from the teacher and calculate an error analysis.
9. Based on the plot and table below determine what the set of blocks are made of.

Type of Plastic	Density (g/cm^3)
Sintra™	**0.541**
High Density Polyethylene	**0.967**
Polypropylene	**0.910**
Acrylic	**1.170**
Polyvinyl Chloride	**1.420**

Analyze and Conclude

1. Is making a graphical plot and finding the slope equation a useful method to determine density?
2. How can you determine the density of any object even if it has an irregular shape?

Based From
Flinn Scientific Inc.: Measurement Challenge