

Kwantlen Polytechnic University
Chemistry 1094
Density Layers

Date: _____ **Name:** _____ **Lab Day/Time:** _____

Object: The object of this experiment is to determine the density of some solid objects by dropping them into a series of unmixed liquids.

Procedure:

1. Weigh a clean dry 50 mL graduated cylinder on the triple beam balance.
2. Add about 10 ml of corn syrup to the 50 mL graduated cylinder. Do not pour the corn syrup down the side of the cylinder. Weigh and record the mass of the cylinder and corn syrup. Allow enough time for the corn syrup to completely settle then read and record the volume of the corn syrup in the cylinder.
3. Carefully and slowly pour about 10 mL of Tide detergent into the graduated cylinder containing the corn syrup. By doing this slowly, and pouring down the side of the cylinder, you will minimize the amount of mixing between the two liquids.
4. Weigh and record the mass of the cylinder and contents. Read and record the volume of the contents. Allow enough time for the liquid to settle before recording the volume.
5. Repeat steps 3 and 4 with the mineral oil and isopropyl alcohol, pouring down the side of the cylinder.
6. Gently slide the following objects, in the order indicated, down the side of your 50 mL graduated cylinder, and observe in which layer they come to rest: a glass bead, a pinto bean, a small piece of paraffin wax, and a small cork.
7. When you are finished the liquids in the 50 mL cylinder can be mixed and disposed of down the drain (after draining the solid objects). Wash cylinder with Sunlight detergent.

Determining the Density of Household Liquids

	Corn Syrup	Tide Detergent	Mineral Oil	Isopropyl Alcohol
Mass of graduated cylinder before adding liquid to cylinder (g)				
Mass of cylinder after adding liquid to cylinder (g)				
Volume of liquid in cylinder before adding household liquid to cylinder (mL)				
Volume of cylinder and contents after adding liquid (mL)				
Calculated mass of liquid (g)				
Calculated volume of liquid (mL)				
Calculated density of liquid (g/mL)				
<i>Show your calculations for every case</i>				

Determining the Approximate Density of Solid Objects

Object	Glass Bead	Pinto Bean	Paraffin Wax	Small Cork
Layer Where it Came to Rest (Or Layers in between which it came to rest)				
Calculated Density of that Layer (or of the two layers in between which it came to rest, if applicable)				
Therefore Approximate Density of Solid Object (g/mL) (State as greater than, less than, or equal to, density of layer where it came to rest)				

Questions:

1. Can you think of other liquids that could be used to widen the range of your density determining device?
2.
 - a) List the household liquids in order of increasing density.
 - b) List the solid objects in order of increasing density.