

Viscosity Exploration

Materials

Four Vials of Liquid, Stop Watch, Thermometer, beaker of water, and hot plate.

- Liquid A – Dishwashing Soap
- Liquid B – Vegetable Oil
- Liquid C - Water
- Liquid D – Corn Syrup

Large test tubes were suggested for this experiment – however – you can use water bottles or clear jars. You don't need to do a specific distance – you can just look at the bubbles movement.

Procedure

Each vial is marked with a black line – the distance between the black lines is 15.5 cm. You are going to record the time it takes for the bubble to transverse the 15.5 cm using the stop watch.

The four vials are in a water bath. This water bath will be heated during the experiment to raise the temperature.

Step 1 – Record Temperature of the water bath.

Step 2 – For each vial, tip the vial over and measure the time it takes for the bubble to transverse the 15.5 cm. Record the time in the data collection sheet. Repeat three times. Place the vial back into the water bath.

Step 3 – Repeat Step 2 for each vial.

Begin heating the water bath to approximately 10 degrees above the initial temperature reading.

When the bath reaches the desired temperature – remove the bath from the heating plate.

Repeat Steps 1 through 3.

Upon completion, begin heating the water bath to approximately 10 degrees above the previous temperature reading.

When the bath reaches the desired temperature – remove the bath from the heating plate.

Repeat Steps 1 through 3.

Upon completion, begin heating the water bath to approximately 10 degrees above the previous temperature reading.

When the bath reaches the desired temperature – remove the bath from the heating plate.

Repeat Steps 1 through 3

Turn off the heating plate and allow the water bath to cool.

Calculate the average time for each trial.

	Trial 1	Trial 2	Trial 3	Average
Temperature of the Liquid (Degrees C)				
	Time (sec)	Time (sec)	Time (sec)	Time (sec)
Liquid A				
Liquid B				
Liquid C				
Liquid D				

	Trial 1	Trial 2	Trial 3	Average
Temperature of the Liquid (Degrees C)				
	Time (sec)	Time (sec)	Time (sec)	Time (sec)
Liquid A				
Liquid B				
Liquid C				
Liquid D				

	Trial 1	Trial 2	Trial 3	Average
Temperature of the Liquid (Degrees C)				
	Time (sec)	Time (sec)	Time (sec)	Time (sec)
Liquid A				
Liquid B				
Liquid C				

Liquid D				
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	Trial 1	Trial 2	Trial 3	Average
Temperature of the Liquid (Degrees C)				
	Time (sec)	Time (sec)	Time (sec)	Time (sec)
Liquid A				
Liquid B				
Liquid C				
Liquid D				

Plot Time vs. Temperature for the Liquid _____



Complete the following:

Describe your observations for this experiment:

Which liquid had the greatest viscosity? (Most resistance to flow.)

Which liquid had the least viscosity?

Did temperature effect the flow? Why or Why not?