

Viscosity Experiment

Name: _____ Class: _____ Date: _____

This experiment is usually done in class but watching a video is good since it does not waste time with set up and clean up and allows us to do more fluids in less time.

Before watching the video, try to predict the order of the liquid race – see if you can get them all in the right order.

Fluid	Prediction	Actual Time	Viscosity (High to low)	Flow Rate (High or low)
water		00:233	10	1
Rubbing alcohol		00:400	8	3
Cream (MILK)		00:267	9	2
Olive Oil		00:633	5	6
Lamp Oil		00:467	7	4
Vegetable Oil		00:567	6	5
Honey		20:767	1	10
Maple Syrup		01:333	4	7
Corn Syrup		19:500	2	9
Dish Soap		04:633	3	8

Now watch the video and fill in the information as to the times. You may pause the video or watch it more than once to get it all.

<https://youtu.be/f6spBkVeQ4w>



Analysis of Results

Which fluid has the lowest viscosity and the highest flow rate? (This one won the race)

Water -

Which fluid has the highest viscosity and the slowest flow rate? (This one took the longest and 'lost' the race)

Honey

Describe the relationship between viscosity and flow rate?

The higher the viscosity, the lower the flow rate. It is inversely proportional.

How do you think the corn syrup's results would be different if we heated it before doing this investigation? Explain using scientific principles like the Particle Theory of Matter (otherwise known as the Kinetic Molecular Theory).

If the corn syrup is heated, the viscosity would be decreased since the particles have more energy and this weakens the bonds between the particles since the thermal energy or the vibration of the particles is greater.

Why did we not use gases for this experiment? (Try to give three reasons or more).

Gases are hard to see (think of the CO₂ that we used to put out the candle flame)

Gases are sometimes lighter than air and will diffuse in all directions

Gases are hard to contain to start or to end the experiment

Gases are expensive

Molasses has a viscosity greater than that of Corn Syrup. Why do some people use the expression, "Slower than molasses in January."?

Molasses is a viscous fluid and as such, when it is cold, the molecules slow down and the bonds increase and this is extra true in a cold month like January. In the old pioneer days, the house would be cold and the molasses would be even more viscous.

