

Name \_\_\_\_\_

Date \_\_\_\_\_

## How Does Silica Affect Lava Flow?

**Purpose:** To model the changes in viscosity with the addition of silica.

### Background Information:

Magma is a mixture of molten rock, suspended mineral grains, and dissolved gases deep beneath Earth's surface. Once the magma flows out onto Earth's surface, it is called lava. There are actually three different types of magma, based upon the composition and the viscosity of the magma. Each different type of magma acts differently as it becomes lava, after reaching Earth's surface. The main component that alters the composition of magma and also determines magma's viscosity is the percentage of silicon dioxide or silica. ( $\text{SiO}_2$ ). Viscosity is a substance's internal resistance to flow. Substances like syrup, honey, and liquid soap have a higher viscosity than substances like water, oil, and vinegar. In other words, syrup does not flow as easily as oil.

In this lab, you will be adding sand to liquid soap in order to observe how changing the composition of the liquid soap affects its viscosity.

### Form a Hypothesis:

Before conducting the lab, form a hypothesis on how you think the addition of sand will affect the viscosity of the liquid soap:

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\_\_\_\_\_

### Procedure:

1. Obtain a cup with 50 mL of dishwashing liquid, an empty cup, and a spoon.
2. Pour the liquid soap into the empty cup and describe the flow of the soap: \_\_\_\_\_

3. Add one cup containing sand to the liquid soap. Stir well and describes what happens to the flow: \_\_\_\_\_

4. Did adding sand make the liquid soap flow more easily or not as easy? \_\_\_\_\_

5. Did adding sand increase or decrease the viscosity of the liquid soap? \_\_\_\_\_

### Analyze and Conclude:

1. What do the liquid soap and sand represent? \_\_\_\_\_

2. How does an increase in silica affect the lava viscosity? \_\_\_\_\_

3. One type of magma, called basaltic magma, is said to flow because of the way it moves across Earth's surface. Since it "flows", what can you infer about the silica content of a basaltic flow? \_\_\_\_\_

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