



## BORAX-FREE SLIME

### OVERVIEW

Campers will be learning about the properties of solids and liquids while using solid and liquid materials to make slime, a non-Newtonian fluid. It will allow them to investigate these phases to the very foundation, studying particle movement in action.

### TOPIC AREA(S)

Chemistry

### GRADE LEVEL

Grades 1 and 2 (Sprockets)

### QUESTIONS PRIOR TO THE LESSON/GETTING EXCITED

- What are particles?
- What causes moving particles to speed up or slow down?
- Now that we've learned about particles, what makes a substance a solid?
- What makes a substance a liquid?
- What happens when a substance has characteristics of both a solid and a liquid? Does anyone know what this is called?

### BACKGROUND INFORMATION FOR INSTRUCTORS (INCLUDE QUESTIONS W/ ANSWERS)

1. What are particles?

-Everything around us is made up of tiny atoms and molecules that are known as particles. They each have specific properties based on the elements that they are made up of and the way these elements interact.

2. What causes moving particles to speed up or slow down?

-Particles are always moving, even though it may be very slow and unnoticeable movement. This particle movement is what contributes to the state of the substance. The addition of heat as a form of energy causes particles to speed up and the removal of heat as energy causes particles to slow down.

3./4. What makes a substance a solid or a liquid?

-Solids are characterized by very little movement of the particles the substance contains. There is very little energy in these particles and they are packed tightly together. Examples include ice, solid metals, and many of the everyday objects around us.

-Liquids are characterized by a moderate amount of movement of the particles in the substance. There is more energy contained in them than in a gas, but less than a liquid. The particles are not packed as tightly as a solid, and; thus, can flow and fill containers due to this. An example includes liquid water.

5. What happens when a substance has characteristics of both a solid and a liquid? What is this called?

-This is called a non-Newtonian fluid. It is similar to an intermediate between a solid and a liquid. However, in this case, the addition or removal of heat as energy is not the only factor that causes particles to speed up or slow down. They can also change speed in response to stress or pressure on the substance.



<b>RELEVANCE TO THE CURRICULUM</b>			
<b>Grade 1 and 2</b>	<b>Grade 3 and 4</b>	<b>Grade 5 and 6</b>	<b>Grade 7 and 8</b>
<ul style="list-style-type: none"> <li>Needs &amp; Characteristics of Living Things</li> <li>Growth and Changes in Animals</li> <li>Materials, Objects and Everyday Structures</li> <li>Movement</li> <li>Energy in Our Lives</li> <li>Properties of Liquids and Solids</li> <li>Daily and Seasonal Changes</li> <li>Air and Water in the Environment</li> </ul>	<ul style="list-style-type: none"> <li>Growth and Changes in Plants</li> <li>Habitats and Communities</li> <li>Strong and Stable Structures</li> <li>Pulleys and Gears</li> <li>Forces Causing Movement</li> <li>Light and Sound</li> <li>Soils in the Environment</li> <li>Rocks and Minerals</li> </ul>	<ul style="list-style-type: none"> <li>Human Organ Systems</li> <li>Biodiversity</li> <li>Forces Acting on Structures and Mechanisms</li> <li>Flight</li> <li>Properties of and Changes in Matter</li> <li>Electricity and Electrical Devices</li> <li>Conservation of Energy and Resources</li> <li>Space</li> </ul>	<ul style="list-style-type: none"> <li>Interactions in the Environment</li> <li>Cells</li> <li>Form and Function</li> <li>Systems in Action</li> <li>Pure Substances and Mixtures</li> <li>Fluids</li> <li>Heat in the Environment</li> <li>Water Systems</li> </ul>
<b>MATERIALS (SPECIFY WHETHER PER CAMPER, GROUP OR CLASS)</b>			
Per Camper: <ul style="list-style-type: none"> <li>Reusable or recyclable container for mixing (like a yogurt container)</li> <li>Popsicle stick for mixing</li> <li>½ cup white or clear elmer’s glue</li> <li>¼ cup Tide laundry detergent</li> <li>Food colouring of desired colours</li> <li>Glitter, gems, any other desired additions, etc.</li> <li>Plastic baggie to bring it home</li> </ul>			
<b>SAFETY CONSIDERATIONS</b>			
Please don’t eat anything; it wouldn’t taste very good			

<b>PROCEDURE</b>
<p><b>Step 1:</b> Measure out ½ cup of Elmer’s glue and ¼ cup of Tide laundry detergent for each camper.</p>
<p><b>Step 2:</b> Campers will then combine the glue and the laundry detergent in their given container, mixing with the popsicle stick.</p>



**Step 3:** If the slime is too liquidy, add more glue in 1 tablespoon intervals. If it is too sticky, add more laundry detergent in 1 tablespoon intervals. Mix and adjust as necessary.

**Step 4:** Campers can then add food colouring of their choice and any gems, glitter, or other objects if desired.

**Step 5:** The slime can then be placed in a plastic baggie for each camper to bring home.

#### **REFERENCES**

<https://babbleddabledo.com/how-to-make-slime-neon-style/>  
<https://www.thoughtco.com/classic-simple-slime-recipe-602242>  
[https://www.ducksters.com/science/solids\\_liquids\\_gases.php](https://www.ducksters.com/science/solids_liquids_gases.php)