



Year 5 Perfect Polymers - Non-Newtonian Fluids

TEACHER REFERENCE GUIDE

With Street Science, you became a junior scientist and **observed** the **properties** of solids, liquids and gasses.

1. In your first experiment, you mixed different **materials** to make a Non-Newtonian fluid called Slime. List the different materials and equipment you used for this experiment - label the state of each material.

e.g. PVA mixture (liquid)

Cornflour/glitter (solid)

Activating Agent (liquid)

Stirring stick (solid)

Cup (solid)

2. As a **Non-Newtonian fluid**, slime displays properties of both a solid and a liquid.

In the boxes below, describe properties of your slime when it behaved as a solid and when it behaved as a liquid. Use words and/or pictures.

<i>The slime behaved like a liquid when it...</i>	<i>The slime behaved like a solid when it...</i>
<ul style="list-style-type: none">• <i>Flowed</i>• <i>Took the shape of its container</i>	<ul style="list-style-type: none">• <i>Broke after pressure was applied</i>• <i>Held its structure long enough to be picked up</i>



3. Heat changes the **state** of a material by changing the way particles behave. Complete the sentences below, and draw pictures to show how particles in a material change as heat is applied or removed.

<p>Particles of a <u>s o l i d</u> have a small amount of energy.</p> <p>They are held together by <u>b o n d s</u> so cannot move apart from each other.</p>	
<p>Particles of a liquid have more energy and are able to <u>f l o w</u> around each other.</p> <p>The movement of liquid particles is bound by the shape of their <u>c o n t a i n e r</u>.</p>	
<p><u>P a r t i c l e s</u> of a gas have so much energy that they can easily move away from each other. They are very difficult to <u>c o n t a i n</u>.</p>	

Extras for Experts!

While slime doesn't do that much to change the way we live, the invention of fake snow allows people to play snow sports in places where real snow does not fall.

Research, describe and report back to the class about another scientific discovery which has helped improve peoples' lives!