



Science Experiment: Heat Sensitive Slime

Project: Science, Chemistry, Weather & Climate

Supplies:

- 1/4 cup white school glue
- 1 Tablespoons water
- 3 teaspoons Thermochromics pigment
- 1/4 cup liquid starch
- Food coloring

Time: 30-45 minutes

What to Do:

1. Decide on your color scheme for the slime. The color of thermochromics pigment will be the color of the slime when it is cold. Then pick an alternating color of food coloring for the hot color. Think color wheel neighbors to make the transition smooth.
 - Blue pigment with yellow food coloring (Slime is teal and turns yellow when hot)
 - Red pigment with yellow food coloring (Slime is orangey red and turns yellow when hot)
 - Blue pigment with red food coloring (slime is purple and turns pink when hot)
2. Pour 1/4 cup glue into a large bowl. Add 1 tablespoon water and stir until combined. Add 5 drop of food coloring and mix well. Then add 3 teaspoons of thermochromics pigment and mix until uniformly distributed.
3. Add 1/8 cup liquid starch and mix until thick and slimy. Then knead the slime with your hands and return to the starch mixture for another mixing. This step is important because it makes sure there's no unmixed glue hiding in the center of your slime ball. If slime is still sticky, add additional starch, a little bit at a time, and knead until not sticky anymore. Most batches will use almost all of the starch.
4. Store slime in a glass or plastic container with a lid for up to one month. I noticed that it needed a bit more starch if it had been a few days since playing with it. Just pour a teaspoon or so on the slime and knead it again.

WHAT IS THERMOCHROMISM?

This slime gets its color changing super powers from thermochromics pigment. Thermochromics materials change colors when there is a change in temperature. Mood rings and lipstick use them. And so do those rubber duckies that tell you when the bath is too hot for baby.

There are two main types of thermochromics materials: liquid crystals and leuco dyes. In liquid crystals, temperature changes cause the crystals to move and change the spacing between them, which then causes light to refract at different wavelengths. Different wavelengths create different visible colors. Leuco dyes use a similar mechanism, but instead of changing the distance between crystals, temperature changes cause the dyes to change molecular structures. One form reflects colored light, the other colorless.

Reflect:

1. What happened when you touched the slime?
2. Why do you think heat changes the slime?
3. What life skills did you use when conducting this experiment?

Apply:

1. Where have you seen other items that are heat sensitive?
2. Where do we see slime in our world? In our bodies?
3. How does our body's mucus relate to the slime we created? What does the mucus do for our body?

Source: <http://leftbraincraftbrain.com/2015/04/23/heat-sensitive-color-changing-slime/>