

# Glowing Slime

**Overview:** When you think of slime, do you imagine slugs, snails, and puppy kisses? Or does the science fiction film *The Blob* come to mind? Any way you picture it, slime is definitely slippery, slithery, and just plain icky — and a perfect forum for learning about polymers. This slime can also be made to glow, which is a terrific introduction to understanding UV light.

**What to Learn:** By the time you are finished you will understand that just as spaghetti needs sauce to stick together, polymers need a cross-linking agent. And, you'll learn to make cool luminescent slime you can view with a little help from a black light.

## Materials

- water
- popsicle sticks
- disposable cups
- clear glue or white glue
- yellow highlighter
- measuring spoons
- scissors
- borax (laundry whitener)
- Optional: UV fluorescent black light

## Experiment

1. Wear your gloves and put your goggles on. No exceptions!
2. Remove the end of a highlighter pen.
3. Tip pen over until the roll of felt comes out.
4. Slit along the plastic coating covering the felt. Spread the fibers out.
5. Over a large container, douse entire felt with water until it turns white. This is the glow juice.
6. Put 4 tablespoons of glow juice into a disposable cup. Add 1 tablespoon borax (sodium tetraborate). Stir 10 seconds until you dissolve as much sodium tetraborate solution as possible.
7. In a second cup, put 2 tablespoons water and 2 tablespoons clear glue. Mix 20 seconds.
8. Pour glue solution into sodium tetraborate/glow juice solution and stir 1-2 times
9. Pull out slime and play with it until it bounces on table (note: it may be squished back together if it breaks).
10. Place slime under a long wave UV light and it will fluoresce!
11. When you are finished, slime may be stored in the refrigerator or freezer and thawed in a microwave

# Glowing Slime Data Table

Experiment with adding different amounts of borax or glue to see how each affects your slime.

Record in the following table:

Cup #1	Cup #2	Results
4 T Glow Juice + 1 T Borax	2 T water + 2 T clear glue	
4 T Glow Juice + 2 T Borax	2 T water + 2 T clear glue	
4 T Glow Juice + 1 T Borax	2 T water + 3 T clear glue	

## Reading

Imagine a plate of spaghetti. The noodles slide around and don't clump together, just like the long chains of molecules (called polymers) that make up slime. They slide around without getting tangled up. The pasta by itself (fresh from the boiling water) doesn't hold together until you put the sauce on. Slime works the same way. Long, spaghetti-like chains of molecules don't clump together until you add the sauce ... until you add something to cross-link the molecule strands together.

The sodium-tetraborate-and-water mixture is the "spaghetti" (the long chain of molecules, also known as a polymer), and the "sauce" is the glue-water mixture (the cross-linking agent). You need both in order to create a slime worthy of Hollywood filmmakers.

There are a lot of everyday things that fluoresce, or glow, when placed under a black light. Note that a black light emits high-energy UV light. You can't see this part of the spectrum, just as you can't see infrared light found in the beam emitted from the remote control to the TV. This is why "black lights" were so named. Stuff glows because fluorescent objects absorb the UV light and then spit light back out almost instantaneously. Some of the energy gets lost during that process, which changes the wavelength of the light, which makes this light visible and causes the material to appear to glow

## Exercises

1. What is the "spaghetti" in this experiment? What is the "sauce"?
2. What are polymers?
3. Is your slime a solid, a liquid, or a bubbly gas?
4. What causes the glow juice to glow?

### **Answers to Exercises**

1. What is the “spaghetti” in this experiment? (sodium tetraborate and glow juice mixture) What is the “sauce”? (glue and water mixed together)
2. What are polymers? (long chains of molecules)
3. Is your slime a solid, a liquid, or a bubbly gas? (Answers will vary. The best slimes have all three states of matter simultaneously: solid chunks suspended in a liquid form with gas bubbles trapped inside!)
4. What causes the glow juice to glow? (it absorbs the UV light and spits out visible light, which appears to glow)