

Toy chemistry

Today's challenge is to mix two liquids together to form a gooey solid that you can mold and stretch into weird shapes. This is chemistry at its craziest!



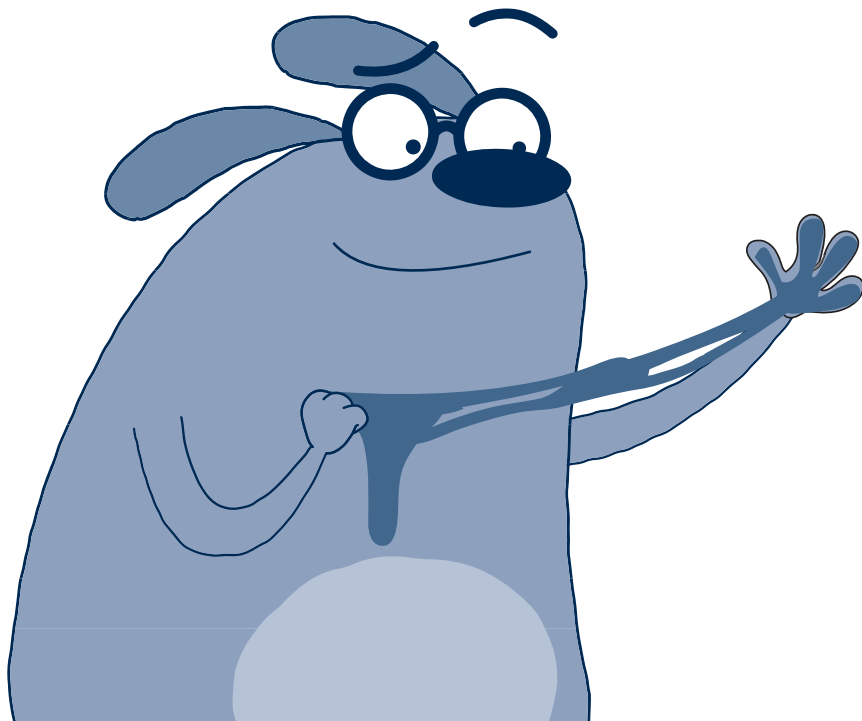
1 Get what You need.

- 2 tsp. white glue • ¼ tsp. borax • 4 tsp. water
- Measuring spoons • Food coloring • 2 clear plastic cups • Plastic spoons • Plastic knife
- Plastic ziplock bag for storage • Paper towels

2 Mix the ingredients. In a cup, mix 2 tsp. of water with 2 tsp. of glue. Then add 2 drops of food coloring. In another cup, mix 2 tsp. of water with ¼ tsp. of borax.

3 combine the mixtures. Pour the borax mixture into the glue mixture and stir. When the two are mixed, what happens? Take the goop into your hands and play with it.

4 Experiment and make observations. Does your slimy goop act more like a liquid or a solid—or a little like both? Find out all the things it can do: try to stretch it, bounce it, flatten it, twist it, roll it, jiggle it, rip it apart, or use your knife to cut it into shapes. Does it keep its shape if you leave it alone for a while?



safety Tips

- Keep mixtures away from clothes, eyes, and mouth.
- Goop should not touch fabric or paper, only hard surfaces, since it sticks to things easily.

chew on This!

You just created a *polymer*. Many polymers are flexible plastics, like balloons, plastic water bottles, and the soles of your sneakers. But so are gelatin and nylon windbreakers. Some polymers, like a skateboard wheel, are strong and hard, yet flexible enough to absorb shocks and allow for a smooth ride. Other polymers, like chewing gum or the slimy goop you just made (which contains mostly water), are soft and stretchy.

How did you make a polymer? Combining the borax and glue mixtures caused a chemical reaction. By themselves, glue molecules move about freely (until they dry). But when you add borax, it binds the slippery glue molecules together in a web, so they can't move around as much. Borax turns the watery glue into a denser, more rubbery substance.

Cool science Jobs!

Like making goop and playing with polymers? Then you might love one of these jobs.



POLYMER scientist

The sky's the limit for polymer scientists. They design everything from sandwich bags to satellites. They even help the environment. Did you know that polymer scientists have discovered ways of turning recycled plastic milk jugs into park benches, picnic tables, and yes, even DOG houses? Now, that's creative—and good for the planet!

TOY chemist

Who puts the bounce in a ball, the color in a crayon, and makes all kinds of things glow in the dark? Chemists do! Some of the best toys ever invented were created by chemists—and polymers are one of their favorite materials. What a job—playing with toys all day!



Watch the related FETCH! episode, "Just Toying with Ruff," on PBS KIDS GO! (check local listings) or visit the FETCH! Web site at pbskidsgo.org/fetch.



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Fold

Fetch!

TOY chemistry

Blossom's been hinting that she'd like a cute catnip toy for her birthday—something fluffy and pink. But I like to give presents of the stranger, slimier variety.

Hmmm . . . I've got it! Design a weird, sticky, stretchy toy for Blossom.

And if she doesn't like it, well, I know I sure will!

GOOO
FETCH!

