

Gloppy Goopy Gak

Can you make a new material from scratch? Chemists do it all the time. You can see what it's like by mixing up a batch of the strange, gloppy, gooey stuff called Gak!

You will need:

White glue
Water
Borax laundry booster
Sauce pan
Large stirring spoon
Measuring cup
Plastic or Styrofoam cup (8 to 12 oz.)
Food coloring
A craft (or Popsicle) stick
An Adult to help!

Try this:

1. Ask an adult to help with this part. Add 1-1/4 cup of water to a sauce pan and heat on the stove until you see steam. Add 1/8 cup (2 tablespoons) of Borax and stir until it looks fairly clear (2 to 3 minutes). Set the Borax solution aside. (Wash the pan as soon as possible. Once the solution dries, it is difficult to clean.)
2. Mix 1/4 cup of white glue with 1/4 cup of water in a plastic cup. Stir, using a craft stick.
3. Add a few drops of food coloring to the mix and stir.
4. Add 1/3 of a cup of the Borax solution to the glue-water mix and stir. How does the mix feel? Is it harder to stir? This rubbery, smooth, droopy, blobby, gooey stuff is called Gak.
5. At a sink, lift the glob out of the cup and knead it with your hands. Pour off excess liquid. Try stretching the Gak slowly and pulling it apart quickly. Think of some ways Gak is different from the ingredients you used to make it.

What's Happening?

Q. Why does Gak stretch, even though glue and Borax don't?

A. Mixing materials can cause a chemical reaction. The chemical reaction creates a new material (in this case Gak) different from the two original materials.

Q. How does the chemical reaction work?

A. Glue is made up of long, spaghetti-like molecules that sometimes get tangled together. That's why glue doesn't flow fast like water. Borax reacts with the glue to loosely tie the long molecules together. The molecules of the new material, Gak, look more like a poorly woven rug than a plate of spaghetti. The new material feels and looks different from what you started out with.

Q. Can we find substances like Gak in everyday products?

A. Like the plastic used to make soda bottles or the nylon fabric of a windbreaker, Gak is a kind of polymer—a type of chemical we use in our daily lives. Can you think of a way we could use Gak?

Visit the California Science Center's Materials Bar in the Creative World Gallery to make another gooey material—Slime—and to explore other strange and wonderful kinds of materials! Materials Bar explorations happen every weekend at the Science Center.

