

OH WOW! Moment

Activity by Audra Carlson, Education Manager

Grade Level: suitable for all ages

## Gikkety Gak Fun

### AT A GLANCE:

Make a polymer putty that kids love to feel and hear.

### STUDENTS WILL BE ABLE TO:

Demonstrate the process of science inquiry by posing questions and investigating phenomena through language, methods and instruments of science.

### BACKGROUND INFORMATION:

A polymer is a chemical compound formed from long chains of the same molecule group, repeating over and over.

### PRINCIPALS:

Polymers are all around us. Polymers are stretchable, pliable, and flexible.

### DETAILED EXPLANATION:

Polymers are not brittle, hard or rigid. When cross-links are formed in a polymer, its chains of molecules are connected in several places, producing a stronger and more elastic polymer. In this putty, glue is an existing polymer. Borax is added as a cross-linking agent. Borax pulls the long chains of glue molecules together into a stronger web of material that allows you to hold it in your hand and stretch it, unlike glue.

Examples of common polymers are plastic bottles, Styrofoam, latex paints, and chewing gum.

### MATERIALS:

- One 8 oz. bottle of multipurpose white glue (washable glue works too, but not as well)
- Water
- 1 teaspoon 20 Mule Team Borax Powder
- Food coloring

### PROCEDURE:

1. Pour entire bottle of glue into large mixing bowl.

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2. Re-fill glue bottle with lukewarm water and mix with glue in bowl.
3. Add 5 drops of desired food color to glue and water mixture.
4. Dissolve 1 teaspoon of Borax into  $\frac{1}{4}$  cup warm water.
5. Stir Borax solution into glue mixture .
6. Keep stirring until compound reaches a putty-like texture.
7. Now have fun playing with your new polymer!

### Try this:

- Try using glow in the dark glue- just be sure to keep equal parts water & glue.
- Try different types of glue (non-toxic of course!). How does the putty compare?
- Experiment with your putty. Leave some to dry out. How does it look the next day?

How does adding a cross-linking agent affect the consistency of a polymer?

What do you notice or observe?

What conclusions can you make?

What can you do differently next time?

