

## Fabulous Flubber

For many artists, experimenting with the surface they color is an important part of their art work. After painting, dying, or putting color on a surface in some way, some artists then change the shape of the surface by folding, stretching, twisting, bending, cutting, or hanging the work in different ways. Depending on the art work, changing the surface in this way can give a sense of motion or depth that might be more difficult to do with a flat painting. In this activity, you can color a material that is fabulously flexible.

### Materials:

- Elmer's glue
- 20 Mule Team Borax (be sure to read and follow all cautions on the Borax box label)
- 2 small plastic cups
- Popsicle stick
- Water
- Water soluble markers

### Procedures:

1. Place 2 teaspoons of water in a small plastic cup. Add 1/4 teaspoon of borax and swirl until as much borax dissolves as possible.
2. Place 2 teaspoons of water in another cup and add 2 teaspoons of Elmer's glue. Mix with a Popsicle stick.
3. Continue mixing the glue and water solution, and have your partner slowly add the borax solution. You will only need to use a small portion of the Borax solution.
4. When you have some nice thick Flubber, pull it off the Popsicle stick and move it back and forth between your hands.



5. Flatten your Flubber into a pancake and use the markers to make a face or other design on the Flubber.
6. Pull and stretch the Flubber so your Flubber design changes in weird and wild ways!



Think about this ...

Pulling, stretching, and twisting your colored Flubber can make some interesting art work. Next time, try making two or three blobs of Flubber of different colors and combining them in a flubber work of art! One way to do this is to use colored water instead of regular water to mix with the Elmer's glue. Simply add 1 drop of food coloring to about 1/4 cup of water to make your colored water and then follow the Flubber directions above!

### Where's the Chemistry?

Elmer's glue has a chemical in it called polyvinyl acetate. This is a very long and flexible molecule. Borax solution has a chemical in it called boron. When the borax solution is added to the glue solution, the boron atoms help link the long polyvinyl acetate molecules to each other so they cannot move and flow as easily. When enough polyvinyl acetate molecules get hooked together in the right way, the glue solution changes from being very liquidy to a rubbery kind of stuff that we call Flubber!

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