

Chemistry 1120 report examples

[Environment](#), [Water](#)



Take Home Experiment Report

Observations: I dissolved as much of the borax as possible in 500 ml of water. I added the glue and stirred. A solid ball formed that when squeezed more glue would come out. Putting it back in the water and working it in would make more solid. After kneading the solid, I could form it into a ball that bounced. The amount of water went down about 10 ml.

Partner Identity, Reactions, and Questions: My lab partner was my mom. Both of us were surprised that the gooey solid was formed from glue and a liquid. It was strange to see the solid being formed while kneading the glue back into the solid ball. She asked me if I knew what happened but I was not sure so I decided to see if I could find an explanation.

Possible Chemistry: Elmer's Glue contains polyvinyl acetate suspended in water. The polyvinyl acetate is a repeating carbon chain that has $-COOCH_3$ (acetate) groups available for reaction. Borax is sodium tetraborate ($Na_2B_4O_7$ plus $10 H_2O$) and when it is dissolved in water it makes borate ions, $B_4O_5(OH)_4^{2-}$. When mixed with the polyvinyl acetate, borate acts as a cross-linker linking the carbon chains together to form a solid. The possible reaction product below shows how the cross-links might look if the borate replaces two acetate groups on each chain. One way the water could go down is if water gets trapped between the cross-linked chains. The trapped water makes the solid gooey and as the solid dries and the trapped water evaporates it becomes less gooey.

Possible Reaction Product