

CUSTARD BOUNCY BALLS

Focus: Chemistry

Polymers are made up of many molecules all strung together. How things made of polymers look, feel and act depends on what kinds of molecules they're made up of and how they're put together. Some are rubbery, like a bouncy ball, some are sticky and gooey, and some are hard and tough, like a skateboard. The glue used in this activity (PVA) is a polymer. The custard powder contains mostly starch which is a polymer made up from glucose. The borax acts as a cross-linking agent and binds the two polymer chains together.



To investigate whether it is possible to make a bouncy ball out of custard.

Equipment:

- PVA glue
- Plastic cups
- Spatulas
- Pipette
- Stirring rods
- Borax powder (irritant)
- Borax solution (1 spatula of borax to 10cm³ water).
- Measuring cylinder
- Custard powder
- Cornflour
- Food colouring

Instructions:

1. Put on eye protection and cover your work area.
2. Make up a borax solution of 1 spatula of borax powder in 10cm³ of warm water.
3. Pour 15cm³ PVA glue into a plastic cup.
4. Add 2 spatulas of dry custard powder and 1 spatula of borax powder.
5. Add a drop (0.5cm³) of the borax solution and stir vigorously. Keep stirring until the mixture is smooth.
6. Scoop out the mixture, shape it into a ball and roll it in your hands for 2 mins. The ball should start feeling more elastic.
7. Test the ball see how well it bounces.
8. Repeat the process to make 2 other balls:
 - a) by replacing the custard powder with cornflour and a drop of food colouring.
 - b) by adding 1cm³ borax solution, 2 spatulas of dry borax powder and two spatulas of custard powder to the glue.

Discuss:

1. What did you discover? What makes the best bouncy ball, custard or cornflour?
2. What is the highest bounce your class recorded? Why do you think this ball was most bouncy?
3. What happened to the final ball? Why?



Tweet or email your ultimate bouncy ball method, conclusions or your findings to:

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