



Make a Bouncy Custard Ball



Activity

EQUIPMENT

Custard powder (or cornflour and food colouring), white PVC glue, borax (available in chemists' shops), water, 2 plastic cups, tablespoon, 2 plastic teaspoons.



SUGGESTED CLASS LEVEL

5th – 6th

PREPARATION

This activity is very messy at one stage, so clear the desks well! However it becomes quite clean in the end, as the ball sticks together, and all washes off with soapy water!

BACKGROUND INFORMATION

The glue and the cornflour (or custard powder, which contains cornflour) are both long-chain molecules. You can think of them as looking like miniature strings of cooked spaghetti. The borax reacts with these long chains, 'zipping' them together with short bridges (like rungs of a ladder). This long bendy 'rubbery ladder' can be pulled, stretched, rolled up, etc. It is very elastic, which is the important property for a bouncy ball.

TRIGGER QUESTIONS

What happens a ball when you drop it?
Why does it go towards the ground?(Gravity).
How many kinds of balls do you know?
(Football, tennis ball, golf ball, basketball, ping pong ball, etc.)
Do they all look the same?
Do they all feel the same?
Do they all bounce in the same way?
Does it make any difference what kind of surface you bounce them on?
Do balls bounce well on sand?
When you squeeze a ball in your hand what do you feel the ball is trying to do?
(Push back to its original shape).
What are good materials for making bouncy balls? (Rubber is one.)
What do you think is inside balls?
(Some have air, e.g. footballs and tennis balls, some are solid, e.g. golf balls).

CONTENT STRANDS

Materials – properties change. Energy and forces

SKILLS

Experimenting, Investigating



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ACTIVITIES

In one plastic cup make up a borax solution by adding half a teaspoon of borax to two tablespoons of water and stir until dissolved.

Pour one tablespoon of PVA glue into the other plastic cup.

Add two teaspoons of custard powder to the PVA glue. Stir together.

Add one teaspoon of borax solution to the glue mixture. Stir well until the mixture becomes stiff. Knead it until it becomes elastic. This is the very messy part, but keep going! Rub the mixture between your hands and it soon starts to stick together and becomes drier and more pliable.

Roll it into a ball and bounce it!

What if it is;

Too brittle? Too much borax

Too soft? Too little borax

Too dry? Not enough water

Too wet? Add more custard powder

When finished with the custard ball put it in a sealed plastic bag.

Why? (It will get a crust/go mouldy).

SAFETY

Children with sensitive skin may need to wear rubber gloves, as borax can irritate sensitive skin.

FOLLOW-UP ACTIVITIES

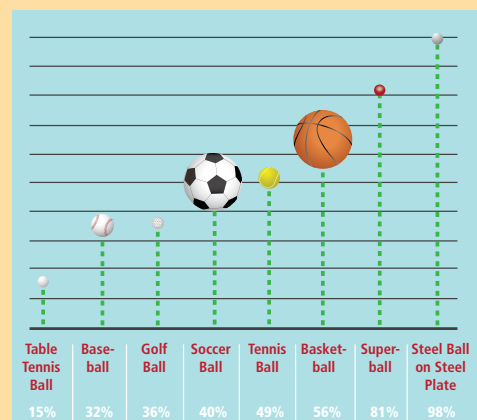
Have a bouncing competition

Have a stretching competition – who can make the best 'Stretch Armstrong'?

Set up a scientific investigation to explore what happens when you vary the proportions of ingredients.

The following investigations could be carried out: (the height of the bounce is measured each time)

1. Drop different balls from the same height onto the same surface and measure the height of the bounce.
2. Drop the same ball from the same height onto different surfaces, and measure the height of the bounces.
3. Drop the same ball from different heights onto the same surface and measure the height of the bounce.



USEFUL WEBSITES

http://www.exploratorium.edu/baseball/bouncing_balls.html

For lots of interesting children's questions about bouncing balls, and the answers they were given, have a look at <http://www.van.physics.uiuc.edu>