Cornflour Slime

Solid or liquid? You be the judge!

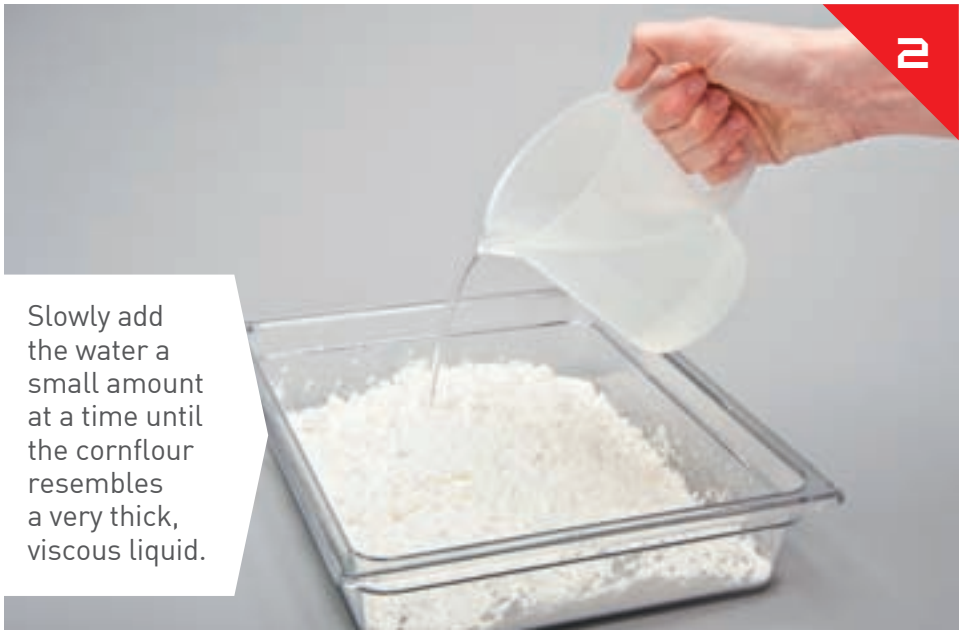
Grab this stuff:

- **A** Cornflour
- **B** Water
- **C** Plastic tray
- **D** Tablespoon

Cornflour Slime

1

Put 4 tablespoons of cornflour in a bowl.



2

Slowly add the water a small amount at a time until the cornflour resembles a very thick, viscous liquid.

3

Now you can play with the cornflour – try stirring it in a bowl with a spoon. Is it a liquid or a solid?

4

Roll the cornflour into a ball in your hand and see what happens when you stop.

Cornflour Slime notes

Aims

- Predictions – pose questions and try to investigate the answers.
- Properties of materials – discover there are materials that can behave like both a solid and a liquid depending on what you do to them.

Practicalities and preparation

- To mix the cornflour slime, start by placing the cornflour in the bowl, and then add the water a little at a time. If you start with the water and then add the cornflour you run the risk of creating a very watery slime that will not work. If this happens you may find you do not have enough cornflour to create the consistency required.
- Ensure your cornflour is in date.
- Cornflour slime can make a great deal of mess, although once it has dried it can be easily swept or vacuumed up. You may want to wear an apron. If cornflour does get onto your clothes, it will wash out with no problems.
- Having access to a sink will help with washing of hands after the activity is finished. If a sink is not available, a bucket of water will be sufficient.

Safety information

Cornflour is non-toxic, but we do not recommend the consumption of the cornflour slime.

The science – an introduction

The cornflour does not dissolve in the water – it creates a suspension called a non-Newtonian fluid. Cornflour consists of billions of tiny irregularly shaped particles of starch. When water is added, the liquid flows around each starch grain and acts like a lubricant, making the mixture runny by helping the particles to slip over each other.

When a sudden large force is applied, the starch grains jam together, squeezing some of the water out from between them. Without the lubricating effect of the liquid, the particles cannot slide past each other and so the mixture starts to behave like a solid. However these effects are only temporary. As soon as the force is removed and the mixture is allowed to ‘relax’, the water surrounds each of the particles again and the mixture becomes runny once more.

Discussion

- What happens if I just let my fingers gently run though the cornflour?
- What happens if I apply a force to the cornflour, such as tapping it with my fingers or punching it?
- If you let your hand sink into the cornflour, can you pull your hand out quickly?
- How hard is it to remove objects from the bottom of the bowl?

Extensions

- Instead of cornflour, you can use custard powder. Custard powder has sugar in it, so your slime will be sticky as well.
- If you have an inflatable pool (and enough slime!), you could run across the surface of cornflour slime. It is advisable to do this activity outdoors. Get the children to remove their shoes and socks before they run across the slime. Have large bowls of water ready for the children to wash their feet in.
- You can add food colouring to the water and create different colours of slime. But bear in mind that some food colourings can stain hands and clothes.

Links to real life

Engineers are now exploring using non-Newtonian fluids in body armour, such as bulletproof vests.

Links to the Science Museum

Galleries:

- Challenge of Materials