

Activity 2.3 slime – what is its state?

Activity type



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Making slime

What to use:

Each **GROUP** will require:

- 1 cup of water
- 1 cup of cornflour
- a container
- stirring rod or spoon
- food colouring (optional).

Each **STUDENT** will require:

- *Science by Doing* **Notebook**
- safety glasses.

What to do:



Making your slime - Step 1

Pour the cornflour into the container.

Making your slime - Step 2

If using food colouring add two drops.

Making your slime - Step 3

Slowly add water and mix gently. Add water until the mixture thickens.

Observing your slime - Step 1

Stir the cornflour slime slowly then quickly using the spoon. Which is harder?

Observing your slime - Step 2

Using two fingers, hit the slime very quickly. What happens? Now slowly place your fingers into it. What is different?

Observing your slime - Step 3

Pick up a blob of slime and roll it into a ball between your hands. How does it feel? Now stop rolling. How does its behaviour change?

Discussion:



- Is your slime a solid, liquid or gas? Explain your answer.

?

What state of matter is slime?

What substance test could you use to help you classify slime?

Record your observations in your **Notebook**.



KEEP GOING ➔

Activity 2.3 Slime – what is its state? Continued

With just two simple ingredients, you made a slime that is so complicated even the most powerful supercomputers can't model it.



What's happening?

FLUIDS ARE MATTER WHICH FLOW. This means that both gases and liquids are fluids.

Cornflour slime is a special type of fluid that doesn't follow the usual rules of fluid behaviour. When a pressure is applied, its viscosity increases and then it becomes thicker. At a certain point, slime actually seems to lose its flow and behave like a solid.

The cornflour mixture is similar to sand and water. If you run along the beach, it is much easier to run on wet sand than on dry sand. However if you stand still on the wet sand you start to sink.



Where might you have experienced this in real life?

Activity 2.3 Slime – what is its state? Continued

Newtonian and non-Newtonian fluids

What to do:

Find out more

Use reference materials to answer the following questions.

? Most fluids are Newtonian fluids. Cornflour slime is a non-Newtonian fluid. How do the behaviours of Newtonian and non-Newtonian fluids differ?

? What are examples of Newtonian and non-Newtonian fluids? What are shear-thickening and shear-thinning fluids? Give examples of each.

Although there are lots of shear-thinning and shear-thickening fluids, nobody has a really good idea why they behave the way they do. The interactions between atoms in the fluids are so complicated that even the world's most powerful supercomputers cannot model what is happening. This can be a real problem for people who design machinery that involves shear-thinning fluids, because it makes it hard to ensure that they will work.