Bright Sparks Science CIC

Rear Office, 33 Northcourt Road, Abingdon, OX14 1PJ

SUPER SLIME

It oozes between your fingers when you pick it up, yet it doesn't stick to your skin. At times it acts like a liquid, but at other times it appears to be a solid. What is this strange substance? You guessed it, SLIME! Slime, slime, slime!

Making slime is a popular activity for many budding scientists. There are numerous ways to make slime, but the end result is always a cool concoction that can provide hours of fun, act as a great stress reliever, and provide a platform for learning many important science principles. So here's a kit you can get hands-on with and find out more about this oozy fluid!

We DO use Borax! The slime activator uses a 3.5% borax (disodium tetraborate) and laundry detergent solution. Borax is a naturally occurring compound, that in low concentrations, is generally considered non-toxic and poorly absorbed by the skin. Prolonged explsure can cause skin irritation so condsider taking adequate precations, such as wearing eye protection and gloves, to avoid contact with broken skin.

THE SCIENCE OF SLIME

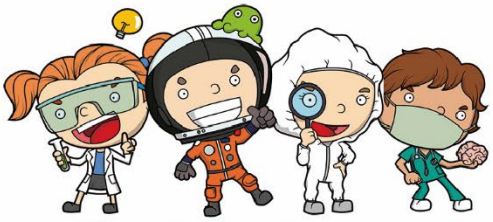
Slime is defined as a non-Newtonian fluid. A non-Newtonian fluid has a variable viscosity based on the force applied to it, called shear stress. Examples of shear stresses are squeezing, stirring, agitating, or applying mechanical pressure to the surface of a fluid. Any of these things can greatly affect the viscosity of a non-Newtonian substance.

The most common everyday example of a non-Newtonian fluid is corn flour dissolved in water. The behaviour of this fluid can be described as like quicksand. When you squeeze it and apply stress, it forms a solid ball, but when you stop squeezing, it becomes a liquid again.

Other types of slime can be produced naturally by creatures such as slugs and snails that enable them to move over rough surfaces and leave a scent trail to find their way home. Hagfish however can produce large quantities of slime in a matter of seconds, and use it as a defence mechanism when they are attacked by a predator.

The slime in this experiment is made by a chemical reaction between a polymer (PVA glue) and borax. PVA glue is made of long chains of polyvinyl alcohol molecules. These chains slide past one another fairly easily, enabling the glue to be poured from the bottle. But when the borax is added to the glue, a highly viscous, very resilient form of slime is formed. This type of slime forms as a result of cross-linking between the protein molecules of the glue and the borate ions of the borax solution.

Cross-linking involves the formation of bonds that tend to link together large molecules in such a way that they are no longer free to slide past one another. The result is a tangled mass that we know and love as slime.



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RECIPE FOR AWESOME SLIME

YOU WILL NEED

- 30ml PVA glue (white or clear)
- Paint or food colouring
- Glitter and sparkles
- Slime activator (shake well before use)
- 3ml Pipette
- Lolly stick

INSTRUCTIONS TO MAKE SLIME:

1. Taking the pot of PVA glue, mix in the paint or food colouring and sparkles.
2. Add approximately 2-4ml of the slime activator mixture, a few drops at a time, mixing thoroughly.
3. Stir with the lolly stick until it becomes stiffer and comes away from the sides of the pot, leaving the pot clean and forming a ball around the stick. You may need to scrape the slime off the stick (on the side of the pot) as you mix it, to get the right consistency throughout.
4. Remove the slime and knead it to check consistency and add a drop more activator onto your hands if necessary.

SAFETY WARNING Not for consumption. Not suitable for children under 3 years.

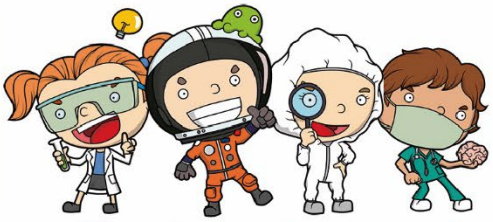
TOP TIPS

- We recommend using slime in the kitchen or on a wipe able surface!
- Slime can be stored in pot with lid for up to 6 months!
- The 'sliminess' can be adjusted by altering the amount of activator used or by diluting the PVA at the start.
- This slime can be stretched, pulled, beaten, and shaped. But remember, as a non-Newtonian fluid, slime will become a liquid again if you keep it still and may cling to your hands. If you keep it moving from one hand to another you should be able to get most of it off!

MIX IT UP

- Try adding a teaspoon of cornflour to white PVA at the start to create bouncy putty.
- Try adding a teaspoon of hair conditioner to white PVA at the start to create silky slime.
- Try adding a teaspoon of shaving foam to a mix of white and clear PVA at the start to create fluffy slime.

Have a slime-tastic time!



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WHAT IS A SLIME ACTIVATOR, AND HOW SHOULD IT BE USED?

Using a slime activator is necessary to create and maintain the chemical reaction that results in slime. Our slime activator uses a 3.5% borax (disodium tetraborate) and laundry detergent solution.

The chemical reaction that results in slime weakens over time and can cause your slime to become sticky. Simply re-activate your slime by adding small amounts of activator and kneading it in until the desired slime texture is achieved.

Only add small amounts of activator at a time to get your slime the right consistency.

CAUTION:

- Too much activator can make the slime to become hard, stiff and less stretchy (called "overactivated" slime)
- Not enough activator causes your slime to become sticky or even liquefied (called "under activated" slime).

SLIME LIKES...

- cool temperatures because it will keep it nice and non-sticky.
- clean hands because they will keep it clean and germ-free.
- to be stored in an airtight container to prevent it from drying out.
- small amounts of activator every now and then.

SLIME DOESN'T LIKE...

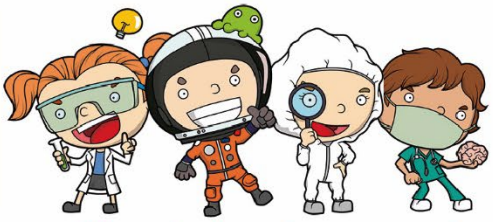
- warm temperatures because it will make it sticky.
- dirty hands because they will make it dirty and germy
- fabric of any kind because it will stick to it and sink in
- to be left outside of its container for too long because it will cause it to dry out

HELP, MY SLIME GOT IN CONTACT WITH FABRIC AND STICKS TO IT!

EASY FIX: Since slime is water-soluble it can easily be removed from fabric by soaking in cold water and washing it in your washing machine or carefully dabbing it out with a wet cloth.

WARNINGS

- DO not eat slime!
- Avoid contact with eyes, mouth and nose. In case of contact wash thoroughly with water!
- Keep away from clothes, carpet, furniture, pets, and hair!
- Do not use if you have a wound, swelling or eczema on your hands or arms!
- Do not use if you show symptoms such as a rash or itchiness after playing with slime!
- Always wash your hands before and after handling slime!



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