SCIENCE EBOOK

DIY Slime Recipes

7 Popular Slime Recipes Your Kids Will Love

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DIY SLIME RECIPE

Simple Slime

What You Need:

- ☐ Glue
- ☐ Water
- ☐ Borax
- ☐ 2 Bowls
- ☐ Food Coloring

This version of slime (also called Gak and Glue Slime) shows you how to make slime with glue and Borax. This is a fast and easy slime recipe!

What You Do:

1. In one bowl mix 1 oz. glue (about ¼ of the glue bottle) and ¼ cup water. If you want colored slime, add food coloring to the glue and water mixture.

2. Lift some of the solution out of the container with the stir stick and note what happens.

3. Add ¼ cup of liquid Sodium Tetraborate (Borax) Solution (find recipe below) to the glue and water mixture and stir slowly.

4. The slime will begin to form immediately. Lift some of the solution with the stir stick and observe how the consistency has changed from Step 1.

5. Stir as much as you can, then dig in and knead it with your hands until it gets less sticky.

Video Tutorial

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Science Lesson

The glue has an ingredient called polyvinyl acetate, which is a liquid polymer. The borax links the polyvinyl acetate molecules to each other, creating one large, flexible polymer. This kind of slime will get stiffer and more like putty the more you play with it. Experiment with different glues to see if they create slime. (e.g., carpenter glue, tacky glue, etc.)

Pro Slime-Making Tips

This is a messy experience but is necessary because it allows the two compounds to bond completely.

Don't worry about any leftover water in the bowl; just pour it out.

When not in use, store the slime in a plastic bag in the fridge to keep it from growing mold.

SOLUTION RECIPE

Borax Solution Recipe

What You Need:

- ☐ 8oz. Plastic Bottle
- ☐ Borax
- ☐ Permanent Marker
- ☐ Water

What You Do:

1. Label an 8 oz. plastic bottle “Sodium Tetraborate (Borax) Solution” with a permanent marker.
2. Fill the bottle about ¾ full with water.
3. Add 4 teaspoons of sodium tetraborate to the water.
4. Shake until mostly dissolved.
5. Fill the bottle to the top with water
6. Shake again to completely dissolve the sodium tetraborate solids.

DIY SLIME RECIPE

Glooze Slime Recipe

What You Need:

- ☐ Skim Milk
- ☐ Baking Soda
- ☐ A Coffee Filter
- ☐ Vinegar

If you're wondering how to make slime without borax, this Glooze slime recipe is an excellent option. This slimy substance is made from skim milk, vinegar & baking soda!

What You Do:

1. Add 7 tablespoons of skim milk to a cup and add 1 tablespoon of vinegar to the milk.
2. Gently stir the mixture until solids have formed.
3. Let the solids sink to the bottom of the mixture and then drain off the liquid using a filter (a coffee filter works best).
4. Let the solids drain for a few minutes.
5. Add ¼ teaspoon of baking soda to the solids and knead together to form a slimy mixture from milk.

Science Lesson

When you added the vinegar to the milk, it caused the milk's protein, **casein**, which is also a **polymer**, to separate from the liquid part of the milk and clump together to form solids. Casein is used in adhesives, paints, and even plastics. The baking soda **neutralizes** the acid added, which allows the casein to go back to its liquid form.

DIY SLIME RECIPE

Super Slime Recipe

What You Need:

- ☐ Polyvinyl Alcohol
- ☐ Borax
- ☐ Food Coloring
- ☐ Beaker

This is the same clear gooey kind that you see in the movies. Try making the real gooey deal!

What You Do:

1. Pour ½ cup of the polyvinyl alcohol (PVA) solution into a beaker, jar, or bowl.
2. If you want colored slime, add food coloring to the PVA solution and stir with a stir stick.
3. Add 2 teaspoons of the Sodium Tetraborate (Borax) Solution into the PVA solution and stir slowly.
4. Try lifting some of the solutions with the stir stick.
5. Note what happens. Once the slime has formed, you can play with it. Just don't eat it!
6. Your slime will last longer if you seal it in a plastic bag and keep it in the fridge, otherwise it will dry out or mold.

Hazard Notice

This slime is non-toxic, but still, keep these slime ingredients away from unsupervised children and wash your hands after playing with the slime.

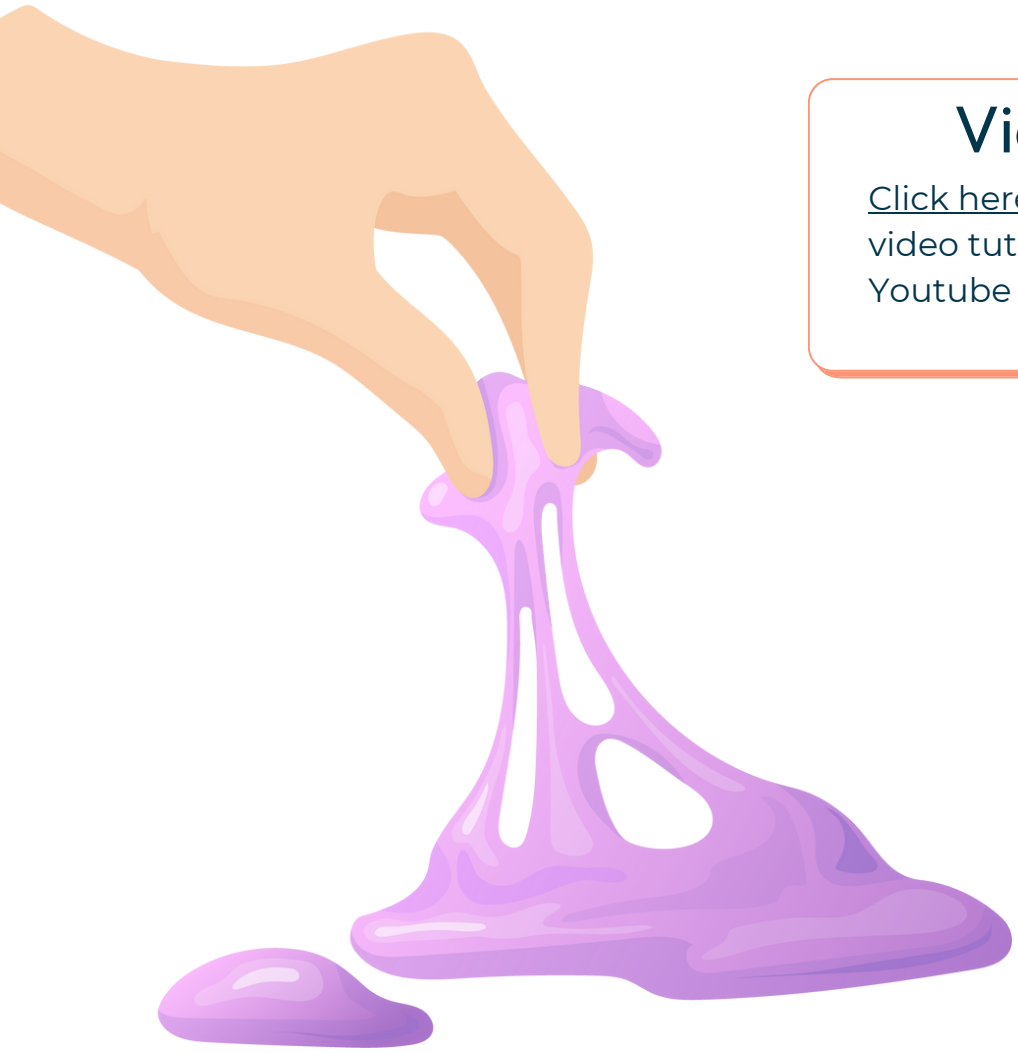
Science Lesson

Polyvinyl alcohol (PVA) is a liquid polymer and is therefore formed from long chains of connected molecules.

The **sodium tetraborate** forms hydrogen bonds with oxygen present in the PVA chains. **Hydrogen bonds** occur when the positive charge of the hydrogen atoms attracts the negative charge of the oxygen atoms within the compound.

The hydrogen bonds link the individual PVA strands to each other, creating a “blob” of slime.

Since hydrogen bonds are weak, they will break and reform as you hold the slime or let it ooze onto a flat surface.



Video Tutorial

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DIY SLIME RECIPE

Oobleck Slime Recipe

What You Need:

- ☐ Corn Starch
- ☐ Water
- ☐ Large Bowl

This is another slime recipe without borax or glue. Make a **non-Newtonian** fluid that resembles quicksand using cornstarch.

What You Do:

1. In the plastic mixing bowl, combine small amounts of water and cornstarch together to form a mixture that looks like heavy whipping cream and has the consistency of honey.

2. The approximate ratio of the cornstarch to water mixture is 2 cups of cornstarch to 1 cup of water. So if you use all of a regular-sized box of cornstarch (about 16 oz.), you will use about 1½ cups of water. It is best to start with less water and slowly add it until the desired consistency is reached.

3. After making your mixture, gently lay your hand on the surface of the cornstarch-water mixture. You should notice that your hand sinks in the mixture like you would expect it to do.

Video Tutorial

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Observations:

Move your hand through the mixture, slowly first and then trying to move it really fast. Was it easier to move your hand slowly or quickly through it? If your mixture is deep enough to submerge your entire hand in it, try grabbing a handful of the mixture and pulling your hand out quickly. Then try again, this time relaxing your hand and pulling it out slowly. Did you notice a difference?

Carefully, try punching the cornstarch-water mixture. Hit the substance hard and pull your fist back quickly. Did the substance splatter everywhere or did it remain in the bowl? (If it splattered, add more cornstarch.)

Whenever you gently and slowly move your hand through the cornstarch-water mixture, it behaves like a liquid. But when you try to move your hand through it quickly or forcefully hit the substance, it behaves like a solid. This cornstarch-water mixture behaves similarly to quicksand.

Science Lesson

The flow and movement of fluid are affected by its **viscosity**, or how sticky and thick it is. Quicksand and the cornstarch-water mixture are both **non-Newtonian** fluids. Non-Newtonian viscosity changes with the type of force applied to it. The **viscosity** of Newtonian fluids (such as water and honey, which follow Sir Isaac Newton's law of viscosity) is dependent only on the temperature and pressure of the fluid, not the force applied to it. For instance, warm honey (less viscous) flows much more freely than cold honey (more viscous).

Since the ability of a non-Newtonian fluid to move depends on the force or stress applied to it, these fluids do not act like ones we are more familiar with (e.g., honey or water). A light pressure, such as pouring or gently pressing the cornstarch-water mixture, allows it to move like a liquid.

DIY SLIME RECIPE

Glow in the Dark Slime

What You Need:

- ☐ Small Bowl
- ☐ Measuring Cup
- ☐ Glow in the Dark Powder
- ☐ Elmer's Clear Glue
- ☐ Food Coloring
- ☐ Liquid Laundry Starch

What You Do:

1. Place a bowl on the table. Add one cup of glue and 1/2 a cup of water into the bowl.
2. Add green food coloring and your glow in the dark powder, and stir.
3. Fill your measuring cup 3/4 of the way full of starch. Carefully pour the starch into the glue cream mixture while you stir.
4. It's easy to add too much starch to slime, so stop adding starch as soon as the slime "gels." But, if your slime is really sticky, you may need to add a bit more starch.
5. Place the slime outside in bright sunlight for an hour, then bring it back inside

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DIY SLIME RECIPE

Slime Bubbles

What You Need:

- ☐ Straw
- ☐ 5 oz. bottle Elmer's clear school glue
- ☐ 1/2 cup Sta-Flo Liquid Starch
- ☐ Paper Towels
- ☐ Bowl
- ☐ Spoon
- ☐ Food Coloring

You can make ooey gooey slime using just a few ingredients, then experiment with this amazing polymer by blowing air through a straw to create slime bubbles!

What You Do:

1. Pour the whole bottle of glue into a bowl and mix in a few drops of food coloring.
2. Pour a small amount of liquid starch into the colored glue and mix it thoroughly. It will begin to form a clump.
3. Add a little more starch and stir it in well.
4. Continue adding starch and mixing with the spoon until you can't stir it anymore, then it's time for the fun part: use your hands!
5. Add more starch and knead it into the mixture. It will feel slimy and may still stick to your hands.
6. Try to scrape as much of the mixture out of the bowl and off the spoon and your hands as you can, then mix it in.
7. As you knead it, it will begin to dry off a little. Stretch the slime with one hand and watch what happens.

What You Do:

8. If it's really stretchy, it's a great slime that is a lot of fun to play with. Separate it into two parts and set one back in the bowl.

9. Add a little more starch to the other part and continue kneading and mixing (it may separate into strands, but keep squishing and it will come back together).

10. When you stretch it, does it break off? If not, keep adding a little starch at a time.

11. Once your slime is stiff enough, pull of a bouncy-ball sized piece, make it into a ball, and stick a straw into it.

12. Press the slime around the straw and hold it firmly so no air can escape, then slowly blow through the open end of the straw. This may take some practice, but you should be able to get a decent bubble!

When you're finished, use paper towels to wipe the extra bits of slime off of your dishes before washing them in the sink. Store your slime in a ziploc bag when not in use (it should keep well for a week or two). Wash your hands after touching the slime.

Science Lesson

Slime is a **polymer**, which is a long chain of molecules that gives it stretch and flexibility. Glue is also a polymer, so why doesn't it behave the same way as this slime? Well, when you added starch to the glue, it caused the glue molecules to link together in a way that made them flexible and more solid than liquid. This is called **cross-linking**. Cross-linked molecules are bigger and less liquidlike than regular polymers. The chains of polymers already in the glue were linked together by the starch molecules, making them less fluid and more stretchy!