



NORTHLAND
POTATOES

Magic Mud | Part 1



Materials Needed

- 5 lb. Bag of Potatoes
- Water
- Food Processor (optional)
- Knife
- Stove Access
- Saucepan
- Kettle
- Strainer
- Jar
- Fork
- Tonic Water
- Black Light

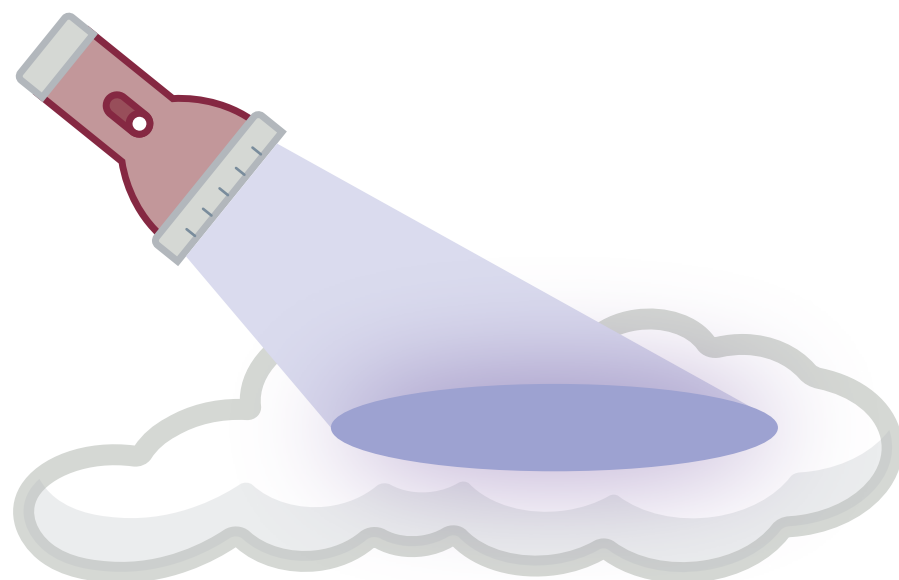
Instructions

1. Find an adult to help you with this activity! You may need to use a knife and you will use the stove, so make sure to work carefully!
2. Wash a bag of potatoes in the sink.
3. Put your potatoes in the food processor and grind them into small pieces, or have an adult help you chop the potatoes into tiny pieces with a knife.
4. Dump the chopped-up potatoes into a mixing bowl.
5. Heat about 6 cups of hot water in the microwave or on the stove.
6. Carefully dump the hot water over the potato bits in the mixing bowl.
7. Stir the potatoes for a few minutes. What do you notice happening as you stir? The water actually changes color.
8. After about two minutes, place a strainer over an empty clear mixing bowl. Pour the potato water through the strainer to separate the liquid from the potato bits. Pay close attention to the liquid in the mixing bowl! What do you see happening? After 10 minutes, the liquid separates into two layers. The bottom of the bowl is white, while the reddish-brown liquid stays on the top. The white stuff you've removed from the potatoes is the potato starch. The starch is the necessary ingredient in making your non-Newtonian magic mud.
9. When this separation has happened, dump the top layer of liquid into the dirty mixing bowl. You should be left with just some white goop. The white goop looks a little dirty, so we are going to separate it even further.
10. Stir in about a cup of fresh water with the goop and pour it into a clear jar. Shake it up for 30 seconds and then let the jar sit for 10 minutes. You should notice that, once again, the liquid separates into two layers. The impurities stay on the top while the white goop sinks to the bottom.
11. Dump out the top layer of liquid. This should remove the impurities. You're left with a milky-white substance. What does this substance feel like? Play with it! What do you notice about it? How does it act when you apply pressure? Try to roll it into a ball. What happens when you stop rolling? You'll notice that when you stir it or roll it, the substance seems more firm, but when you stop applying pressure, it looks more like a liquid.



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Magic Mud | Part 2



Make it glow!

Instructions

1. Leave your magic mud in the jar for at least 24 hours. It will harden from a goopy slime into a solid.

2. Before you recreate your magic mud, take a look at your tonic water under a black light. Turn the black light on and the lights in the room off. What do you notice about the tonic water? It should be a glowing blue! The reason the tonic water is fluorescent under black lights is because of the ingredient quinine. (Don't worry, the quinine in the tonic water is totally safe and non-toxic.)

Fluorescent objects absorb ultraviolet light that we can't see, but they emit light than we can see. Read more here:

<http://www.scientificamerican.com/article/shining-science-explore-glow-in-the-dark-water/>

The quinine in tonic water causes it to glow under a black light, so anything you mix with tonic water will also fluoresce! We are going to use tonic water to make your magic mud fluorescent. Turn the lights back on and let's get going!

3. Use a fork to break up the solidified magic mud. It will easily crumble into a white powder.

4. Carefully add tonic water into the white powder. Add small amounts at a time and stir until the powder returns to its former goopy consistency.

5. Play with your new goop! What do you notice? It should behave exactly as it did before you let it dry. Here's the big difference: When you turn on a black light, your magic mud will now eerily glow blue! For more fluorescent fun: Remember when we used tonic water to concoct glowing beverages for Halloween? Check it out here: <http://discoveryexpress.weebly.com/blog/halloween-science>.