

## OOBLECK - The water and cornstarch experiment

### Materials

- Cornstarch (a 16 oz. box is good for every 2-3 participants - but more is always better)
- Water
- Food coloring (we always say it's optional, but it does make it more fun - don't use too much or you could end up with colored hands...and clothes...and curtains)
- A large bowl
- A camera - you're probably going to want to take pictures.

### Procedure

Everyone should roll up their sleeves and prepare for some gooey fun. This is so easy.

**Safety Note:** Make sure you do not dump the goo down the drain - it can get caught in the drain trap and take the joy out of your day of science. Dump it in the trash, or even mix it into the soil in the garden.

Pour the cornstarch into the bowl. Don't rush to add water - take time to feel the cornstarch. Cornstarch does not feel like any other powder. It has a texture that can be compared to that of whipped cream. The grains of cornstarch are so small that they will fill into grooves of your fingerprints and make the prints stand out.

After you've taken-in the feel of the powder, it is time to add water. (You should add the food coloring to your water before adding it to the powder.) There are no exact formulas regarding how much water to add, but it will end up being about 1/2 cup (120 ml) of water per cup (235 ml) of cornstarch. The secret is to add the water slowly and mix as you add it. Don't be shy here - dig in with your hands and really mix it up. This is usually when you notice that this is not your average liquid. Add enough water so that the mixture slowly flows on its own when mixed. The best test is to reach in and grab a handful of the mixture and see if you can roll it into a ball between your hands - if you stop rolling it and it "melts" between your fingers - success!

Now just dig in and explore. Notice that the goo does not splash (or even move) if you hit it quickly. Squeeze it hard and see what happens. How long can you get the strands of goo to drip? What happens if you let the goo sit on the table for a minute and then try to pick it up? How does it feel? How does it move? Try bouncing a ball on the surface of the cornstarch. You get the idea - explore!



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## Clean Up

So now goo is everywhere and you're thinking you should probably start cleaning. Actual clean-up of the goo is a snap. A bucket of warm water will quickly get it off your hands. It will brush off clothes when it dries, and it is easily cleaned off surfaces with a wet rag.

## How's it works

The cornstarch goo is what scientists call a "Non-Newtonian" liquid. Basically, Sir Issac Newton stated individual liquids flow at consistent, predictable rates, a Newtonian liquid. As you likely discovered, cornstarch goo does NOT follow those rules - it can act almost like a solid, and then flow like a liquid. Technically speaking, the goo is a SUSPENSION, meaning that the grains of starch are not dissolved, they are just suspended and spread out in the water. If you let the goo sit for a while, the cornstarch would settle to the bottom of the bowl. So why does this concoction act the way it does? Most of it has to do with pressure. The size, shape, and makeup of the cornstarch grains causes the cornstarch to "lock-up" and hold its shape when pressure is applied to it.

## Ag Connection:

Corn starch is a common ingredient in many of our favorite food dishes. Corn starch comes to your pantry from the field. Explore how corn starch gets to your pantry.

## Download Corn Starch Process sheet

There are a few types of corn grown in Indiana. First there is field corn that is made into many edible and industrial products. Then there is popcorn, which is the only corn that can pop into a flavorful fluffy treat. Indiana Corn, is another that is colorful, typically grown for fall decorations. Lastly, sweet corn, the only sweet juicy corn that we eat as a side dish. Even though they are different types of corn they all have important uses for you and I in our daily lives. Utilize the Corn Poster to complete the worksheet, Corn Products in My House.

## Download Corn Products sheet

## Download Corn Products in My House worksheet

Bartholomew and the Oobleck by Dr. Suess

Learn where the Oobleck experiment came from, watch as the video reads

Bartholomew and the Oobleck to you:

<https://www.youtube.com/watch?v=r9bo5N2N5zI>