

OCTOBER THIRD GRADE LESSON

Many Uses of Corn

Show students the following videos about the many uses of corn:

Uses Of Corn – Kernels of Knowledge

https://www.youtube.com/watch?v=DjDlfsk_3s0 (2:26)

(This video focuses on Nebraska corn; you can share with students that our Kansas corn crop is very similar.)

Products from Corn

<https://www.youtube.com/watch?v=wyjs00xIAOM> (3:36)

Making Oobleck

This lesson is a fun, hands-on activity designed to engage students by using corn-based materials to make “Oobleck” and experiment with the properties of solids and liquids! Just like the videos showed, making oobleck utilizes a corn by-product--corn starch!

You’ll find directions for making oobleck along with some additional background information about the activity included here.

Two Ways to Make Oobleck

Included in this kit is the “less messy” option for making oobleck. Instead of bowls, we’ve provided baggies for kids to mix the corn starch and water in; as the mixture is formed, they can observe the properties of oobleck in the baggie!

If you don’t mind a little mess, the activity can also be done in bowls in the same manner of mixing cornstarch and water together. While this may be a little more messy, it also allows the kids a more “hands-on” experience of handling the oobleck.

Finally, the directions here are for kids making individual bags/batches of oobleck. You can make this a group project by simply increasing the amounts of corn starch and water. Mix is a 2:1 ratio (corn starch: water). If your mixture is too dry or wet, simply add a little more of either ingredient.

EXTENSION ACTIVITIES

- **Kansas Connections Corn Reader:**
<https://cdn.agclassroom.org/ks/resource/connection/corn.pdf>
- **Corn By-Products list:** Have students read through the list (individually or as a class), and mark all of the products they use/have in their house.



**SCAN TO ACCESS
DIGITAL VERSION**

Introduction

Why is it so hard to get out of quicksand? Is it a solid? Is it a liquid? Can it be both? In this activity, you will make a substance that is similar to quicksand—but much more fun. Play around with it and find out how it acts differently from a normal liquid and a normal solid.

Other, more familiar substances change states (from solids to liquids to gases) when we change the temperature, such as freezing water into ice or boiling it away into steam. But this simple mixture shows how changes in pressure, instead of temperature, can change the properties of some materials.

Background

Applying pressure to the mixture increases its viscosity (thickness). A quick tap on the surface of Oobleck will make it feel hard, because it forces the cornstarch particles together. But dip your hand slowly into the mix, and see what happens—your fingers slide in as easily as through water. Moving slowly gives the cornstarch particles time to move out of the way.

Oobleck and other pressure-dependent substances (such as Silly Putty and quicksand) are not liquids such as water or oil. They are known as non-Newtonian fluids. This substance's funny name comes from a Dr. Seuss book called Bartholomew and the Oobleck.

Observations and results

What is happening when you squeeze the Oobleck? What is happening when you release the pressure? Does the Oobleck remind you of anything else?

The Oobleck mixture isn't your typical liquid—or solid. The cornstarch-and-water mixture creates a fluid that acts more like quicksand than water: applying force (squeezing or tapping it) causes it to become thicker. If you were trapped in a tub of Oobleck, what would be the best way to escape?

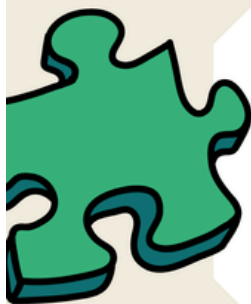
<https://www.scientificamerican.com/article/oobleck-bring-science-home/>



MAKE A NON- NEWTONIAN LIQUID

PHENOMENON:

The molecules in all states of matter (solid, liquid, and gas) behave differently, which changes the physical properties.

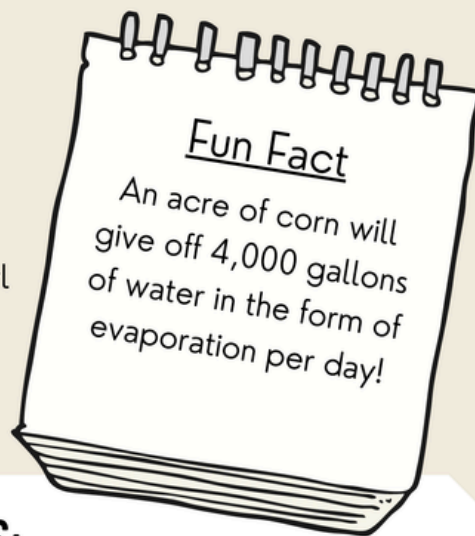


CHALLENGE:

Make a type of slime that behaves like a solid AND a liquid!

INSTRUCTIONS:

- Place 4 teaspoons of cornstarch in a bowl.
- Add 2 teaspoons of water to the cornstarch.
- Add a few drops of food coloring to the bowl (optional).
- Blend the mixture with a fork. It should flow when the bowl is tipped but feel solid to the touch. Add water or cornstarch as necessary.
- Play and have fun!



BEHIND THE SCENES:

Although Oobleck looks like a liquid, it does not always behave a liquid. Oobleck is a "non-Newtonian" type of fluid. Non-Newtonian fluids respond differently depending on how quickly you try to move it around. When a force is acted on Oobleck quickly, it will behave like a solid because the pressure forces all the particles of the corn starch together. When the force is slower, the particles of the corn starch have time to move around the object, just as a normal Newtonian liquid would.