Making Oobleck by using Different Liquids in Place of Water

5th grade

Logbook:

1/22 I decided to make my project about oobleck because i wondered if you could make oobleck with other liquids than water

2/2 i started thinking about what liquids i should use. I thought of: Coke, sugar water, salt water, And lemon juice.

2/15 i started to gather materials and then do some research on oobleck.

One interesting thing that i learned was that "the name Oobleck comes from the 1949 children's book, <u>Bartholomew and the Oobleck</u>, by Dr. Seuss. In the story, a sticky liquid falls from the sky as a result of the king becoming bored with normal weather."

Also oobleck is a non-newtonian fluid (also know as a viscoelastic fluid) which means when you put pressure on it, it makes a hard ball. But when you release the pressure it oozes through your fingers.

These are some examples of non newtonian fluids: honey and cream.

I also learned that the behavior of oobleck is from the cornstarch particles. They are long and thin and they don't dissolve in water. When you move the mixture slowly, the particles slide past each other. When you move it fast, the particles get tangled up and acts like a solid.

2/22 I made my ooblecks today. I decided to not do the sugar water because I had the coke. I got out my materials and made my control first

Bibliography: Imagination Station Toledo science museum

https://www.sciencelearn.org.nz/resources/1502-non-newtonian-fluids

https://www.scienceworld.ca/resource/oobleck/



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2025 Safety Form

I have written a research plan that includes the following:

- o The question or problem being addressed and the expected outcome
- Describes in detail the method and procedures including all safety precautions Includes all procedures to be used for data collection and/or building your prototype, if an engineering project
- Identifies any potential risks and safety precautions to complete the project safely
- Who will be supervising your project? For approval, an adult over 18 must be present and supervising during experimentation or prototype development and building.

I have reviewed this research plan with my:

- o Teacher
- o Parent/Guardian

• Any other 18+ Adult who will be supervising the project (if not listed above)

I have reviewed the rules for The Academy of Science – St. Louis Science Fair and verified with my teacher that my project adheres to the rules.

I have reviewed the additional rules that apply if my project involves any of the following:

- Mold
- o Bacteria
- o Humans

I acknowledge that all of the above safety precautions will be followed and that this project will be completed in a safe manner. I also acknowledge that no humans or animals (vertebrates or invertebrates) will be harmed in any way.

Print or Type Student Name	Student Signature	Date
Isadora Honstair	Solora :	2/22/25
Print or Type Parent/Guardian Name	Parent/Guardian Signature	Date
saskia honstain	Jaken	2/22/25
Print or Type Teacher Name	Teacher Signature*	Date
Brendan Kearney	Freedankenny	1-16-2025

*You may include a project approval email from your teacher in lieu of a teacher signature.

Questions? Contact your science teacher, or the Academy Fair Director at sciencefair@academyofsciencestl.org

Revised for 2025 Fair

Visit sciencefairstl.org for more information.

Question: How does changing the liquids in oobleck affect the consistency?

Prediction: I think if I change the liquid in oobleck then the consistency will become more liquid like and not make a true oobleck anymore. I think that because the contents of the different liquids will interfere with the chemical structure of the oobleck.

Procedure:

- 1. First I made the control (regular oobleck: 3 tablespoons of cornstarch and 1.5 tablespoons of water)
- 2. Second I made the oobleck with a salt water solution. (1 teaspoon of salt, 1.5 tablespoons of water, and 3 tablespoons of cornstarch.)
- Third I made the oobleck with a lemon juice as the liquid. (3 tablespoons of cornstarch, 1.5 tablespoons of lemon.)
- 4. And last I made the coca cola oobleck (3 tablespoons of cornstarch, 1.5 tablespoons of coca cola.)
- 5. Then I made observations and wrote notes about the texture of each oobleck mixture.

Background:

I chose this project because i was wondering if the oobleck would change depending on its liquid- i was curious if they would change because of the sugar or lemon or salt. I also love making oobleck and i love to experiment with recipes.

One interesting thing that i learned was that "the name Oobleck comes from the 1949 children's book, *Bartholomew and the Oobleck*, by Dr. Seuss. In the story, a sticky liquid falls from the sky as a result of the king becoming bored with normal weather."

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This project is important because it taught me that specific ingredients matter.

Constant Conditions:

Independent Variable: the liquid in the oobleck water, saltwater solution, lemon juice, coke.

Dependent Variable: consistency of the oobleck mixture. Looking for a true oobleck or non newtonian fluid.

Constant Conditions: all content measurements and cornstarch amounts will remain the same (3 tablespoons of cornstarch and 1.5 tablespoon of liquid.)

Data and Trials:



Data and Observations

Fig 1. Control - water as liquid - True Oobleck consistency Fig 2. Salt water liquid - True Oobleck consistency no difference to Control. Fig 4

Fig 3. Lemon juice liquid - Crumbly, kind of feta cheese texture, smelled strange and was yellow in color. Not a true Oobleck.

Fig 4. Coke liquid - Crumbly, brown in color and hard chalky texture. Not a true Oobleck.

Conclusion and Reflection:

I found out that... oobleck was name after a book by Dr. Seuss! I also learned that substituting the liquid in from water to something else in oobleck can change the texture of the cornstarch mixture and the color of the mixture. You can't just change the liquid from water in the recipe to anything else because it could not become oobleck. Oobleck has to have certain properties and if you change them it will not be a non newtonian fluid.

I was surprised that...the salt water solution in place of plain water actually worked. I thought it would change the texture but it did not. I thought the lemon juice as the liquid would work well but it completely dried up the mixture and was not a good substitute for water.

If I did this project again...I would probably change the measurements of the materials to see if that affects the consistency.