

Observing the Behavior of Non-Newtonian Fluids with Cornstarch

Some fluids don't behave like normal liquids. They can act like a liquid one moment and a solid the next! In this experiment, you will explore how a cornstarch mixture (a non-Newtonian fluid) changes its behavior depending on the force applied.



Name: _____

Date: _____

Experiment #: _____

MATERIALS

- 1 1/2 cups cornstarch
- 1 cup water
- Large mixing bowl
- Spoon or whisk
- Measuring cups
- Tray or baking sheet (to contain mess)
- Your hands!

SAFETY FIRST



- This experiment is non-toxic but not for eating.
- Keep the experiment area clean to avoid slips.
- Wash hands after the experiment.

PROCEDURE

- 1 Measure 1 1/2 cups of cornstarch and pour it into the mixing bowl.
- 2 Measure 1 cup of water.
- 3 Slowly add the water to the cornstarch while stirring with a spoon or whisk. Mix until the mixture is smooth and there are no dry lumps.
- 4 The mixture should be thick enough to resist quick movement, but runny enough to flow slowly. If it's too runny, add a little more cornstarch. If it's too thick, add a little water.
- 5 Place the bowl on a tray to contain any spills.
- 6 Test the mixture with the activities below.
- 7 Record your observations in the table and answer the questions.

ACTIVITIES TO TRY

- Slowly press your finger into the mixture.
- Quickly jab your finger into the mixture.
- Scoop some mixture into your hand and squeeze slowly.
- Scoop some mixture into your hand and squeeze quickly.
- Try moving your hand across the surface slowly, then quickly.
- Drop a small ball or object gently onto the mixture.
- Drop the same ball or object from a higher height.



OBSERVATIONS

Record what happened for each activity.

ACTIVITY	WHAT DID YOU OBSERVE?
Slowly press your finger	
Quickly jab your finger	
Squeeze slowly	
Squeeze quickly	
Move hand across surface (slowly vs. quickly)	
Drop object gently	
Drop object from higher	



CHALLENGE (OPTIONAL)

Research another non-Newtonian fluid used in real life (like ketchup, oobleck, or quicksand). How is it similar to or different from the cornstarch mixture you tested?

ANALYSIS QUESTIONS

1. How did the mixture behave when you moved slowly? Why do you think that happened?

2. How did the mixture behave when you moved quickly? Why do you think that happened?

3. In your own words, what is a non-Newtonian fluid?

4. Where in real life might people use non-Newtonian fluids?



DID YOU KNOW? Non-Newtonian fluids can help protect people and objects! Some body armor, shoe soles, and even car parts use materials that get harder under impact.

