

Oobleck: Breaking the Rules

Solids and liquids and gasses have predictable physical properties. Solids maintain their shape, liquids flow to match the shape of their container, and gasses expand to fill a space entirely. Substances are typically either solid, liquid, or gas, and only display properties matching their state. Not Oobleck! Oobleck has properties of both solids and liquids at the same time!

Try This!

Making Oobleck is really easy— simply mix cornstarch and water in a bowl. Be sure to measure a 2:1 ratio of ingredients. For example, 2 cups of cornstarch and 1 cup of water.

Once mixed, experiment by applying different levels of force to the substance!

What happens if you cup Oobleck loosely in your hands, or forcefully squeeze it? Can it be poured? Sculpted? If you had enough of it, do you think it would be easier to swim in, or walk on top of?

Materials

A Bowl

2 Cup Cornstarch

1 Cup Water

What's Happening?

Oobleck is a liquid that changes its *Density* and *Viscosity* when a force is acting on it. The stronger the force acting on it, the greater its density and viscosity, transforming from liquid to solid.

DENSITY

Density is the mass of an object divided by its volume, or... how much “stuff” is in a specific amount of space. It is the reason why oil floats on water. Oil has less mass per volume than water, and so oil is less dense. Normally, density is stable, and low density fluids will float on higher density fluids. But Oobleck *changes*, becoming more dense when squeezed.

VISCOSITY

Viscosity is a fluid's resistance to flowing. Think of how water flows compared to molasses. Molasses has much higher viscosity, as it is more resistant to flowing. Viscosity is stable for most liquids, but again, Oobleck's viscosity can change! As force is applied to Oobleck, its viscosity increases.