“Oobleck” still holds some surprises

Mixing corn starch and water in appropriate amounts produces a slurry that is liquid when stirred slowly but hardens when you punch it—a substance colorfully dubbed “oobleck.” (The name derives from a 1949 Dr. Seuss children’s book, *Bartholomew and the Oobleck*.) High-speed imaging and force measurements have revealed another surprising property of oobleck drops hitting a flat surface, according to a new paper published in the journal Physical Review Letters.

As previously reported, in an ideal fluid, viscosity largely depends on temperature and pressure: Water will continue to flow regardless of other forces acting on it, such as stirring or mixing. In a non-Newtonian fluid, the viscosity changes in response to an applied strain or shearing force, thereby straddling the boundary between liquid and solid behavior. Stirring a cup of water produces a shearing force, and the water shears to move out of the way. The viscosity remains unchanged. But for non-Newtonian fluids like oobleck, the viscosity changes when a shearing force is applied.

Ketchup, for instance, is a shear-thickening non-Newtonian fluid, which is one reason smacking the bottom of the bottle doesn’t make the ketchup come out any faster; the application of force increases the viscosity. Yogurt, gravy, mud, pudding, and thickened pie fillings are other examples. And so is oobleck.

The underlying physics principles of this simple substance are surprisingly nuanced and complex, and thus fascinating to scientists. For instance, back in 2023, molecular engineers at the University of Chicago used dense suspensions of

piezoelectric nanoparticles to measure what is happening at the molecular level when oobleck transitions from liquid to solid behavior.

https://arstechnica.com/science/2026/04/oobleck-still-holds-some-surprises/