

Mischievous Materials

Things aren't always what they seem. Hot ice, sand that refuses to get wet, slime with a mind of its own. Materials that look similar to something familiar often have unexpected properties.

Hot Ice



While it may look like a solution of pure water is turning to ice, what has really happened is that a solid *dissolved* in the water is starting to **crystallize** (basically “undissolved”). Normally, when solids

crystallize in water, you get a mixture of liquid and solid, but in this case the water gets **TRAPPED** in the solid. It is a little bit like how water can get TRAPPED in a sponge. The solids crystallize so quickly because the water has been “tricked” into dissolving more solid than it normally would. This is called super-saturation.



IDEA! Make your own super-saturated solutions with sugar and water. First, with cold water, see how much sugar you can add before it stops dissolving. Repeat the experiment using boiling water (ask a parent for help). Watch as the sugar crystallizes (it may take days) are there differences in the solids that form?

“Magic” Sand



Why doesn't **Magic Sand** get wet in water? It has a special oil-based coating that makes it repel water. Just like cooking oil and water don't mix, the dried oil coating on the **Magic Sand** keeps it dry.



IDEA! Compare what happens with **Magic Sand** and regular sand when you put them in water. Now add a few drops of dish soap. Do you see any changes?

Magic Sand vs Kinetic Sand

Both of these materials have a coating to make them repel water. For **Kinetic Sand** the coating material is like silly-putty or glue, which makes it a bit sticky. With **Magic Sand** the coating is more like oil, so the grains of sand don't stick together. Learn more about the chemistry here:

<https://cen.acs.org/articles/93/i12/Magic-Sand-kinetic-Sand.html>

Sneaky Slime



Slime is a great starting point for a lot of chemistry experiments. It has fun physical properties that don't change when you add other materials.

Magnetic **slime** has a bit of iron oxide powder.

Hypercolor **slime** has a temperature sensitive dye added (we call these dyes thermochromic) and Glow in the Dark **slime** has some Glow in the Dark paint mixed in (see Day 1 for more Glow in the Dark discussion).



IDEA! Determine how strong a magnet you need to make the magnetic **slime** move.



IDEA! Can you figure out at what temperature the hypercolor **slime** changes color? How many different colors can you make?