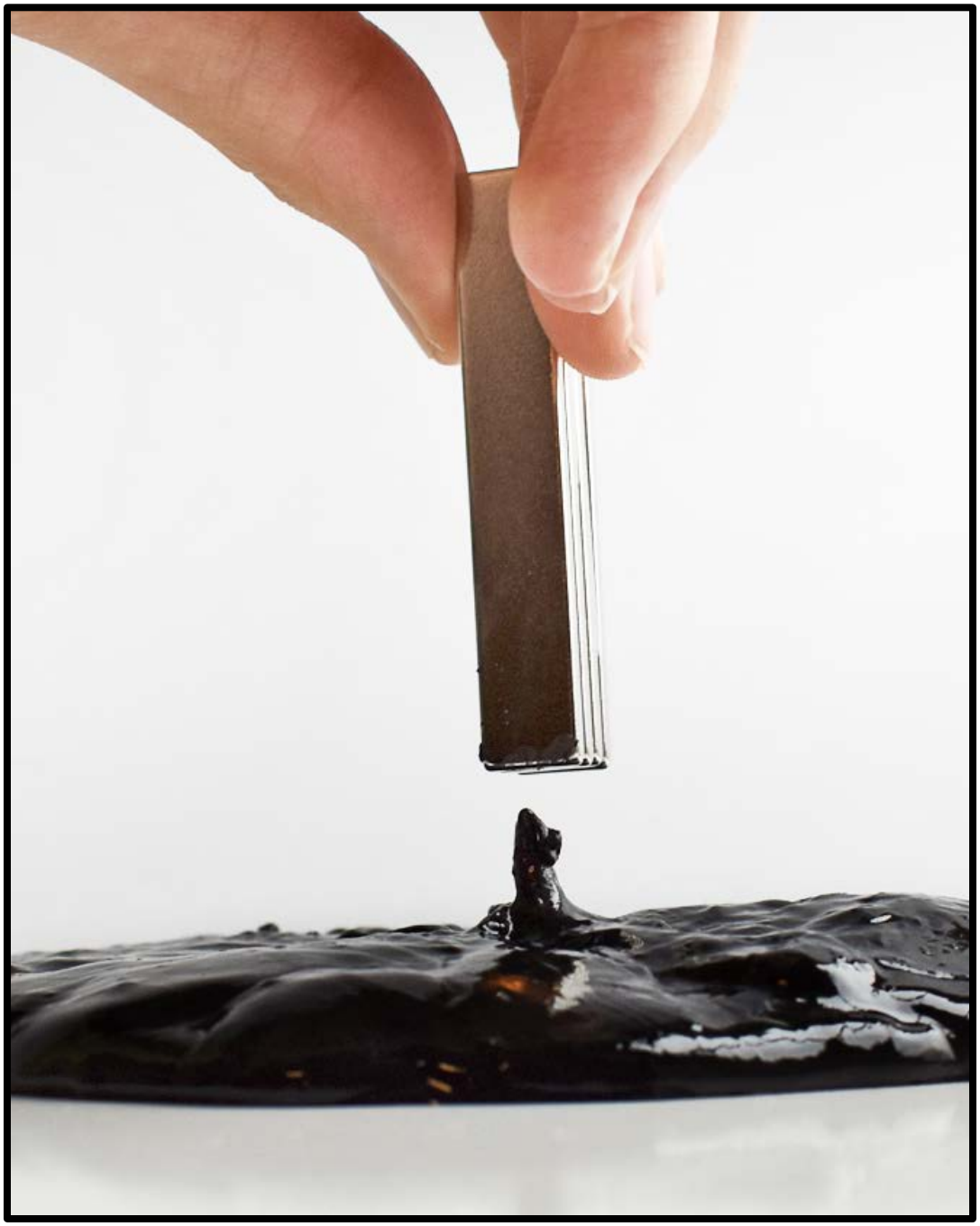
How to Make Magnetic Slime



MAGNETIC SLIME

Name: _____ **Date:** _____

There are two scientific components that make up magnetic slime. There's the ***magnetic*** part, and there's the ***slime*** part. Let's start with the slime.

There are three states of matter: solid, liquid, and gas. Slime doesn't fit neatly into any of these categories. It's referred to as **"non-Newtonian fluid"**. It's not a gas. It's not quite liquid, but it's not quite solid either. Non-Newtonian fluid isn't as rare as you might think. Ink, blood, and toothpaste all fit into this category, as does glue!

Glue is a **polymer**. A polymer is a long chain of repeating molecules. Because of its makeup, a polymer slides around easily and pretty loosely. When liquid starch is added to the glue, a process called **cross-linking** occurs. During cross-linking, this added protein turns the glue's molecules into much larger and stronger molecules. They're no longer able to slide past each other. Thus, cross-linking turns the sloppy glue into something much thicker, sturdier, and more elastic: slime.

A magnet is a material that produces a magnetic field. This field attracts substances or materials that contain iron. In this experiment, iron oxide powder is added to the slime. When a magnet is applied to the slime, it pulls at the iron in the powder.

Magnetism isn't the only force at work here. The slime is working to keep the iron in place. It's doing this in two ways. **Adhesion** is the force that holds molecules of different substances together (the slime gripping the iron powder). Meanwhile, **cohesion** is the force that holds molecules of the same substance together (the slime keeping itself together). These two forces are battling the force of magnetism. This conflict is why it takes a special powerful magnet to make the slime move.

MAGNETIC SLIME

Name: _____ **Date:** _____

1. What is a polymer?

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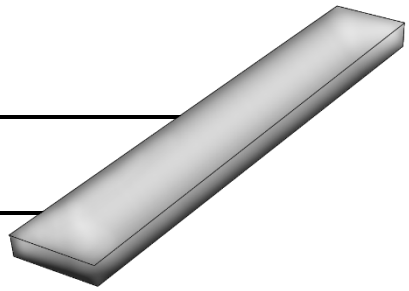
2. What does a magnet do?



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3. How are adhesion and cohesion the same? How are they different?

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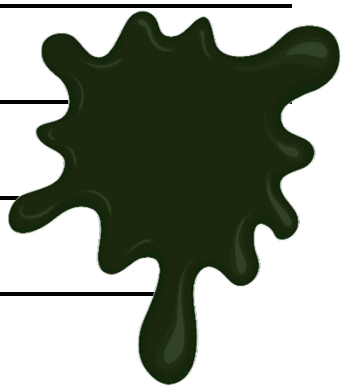


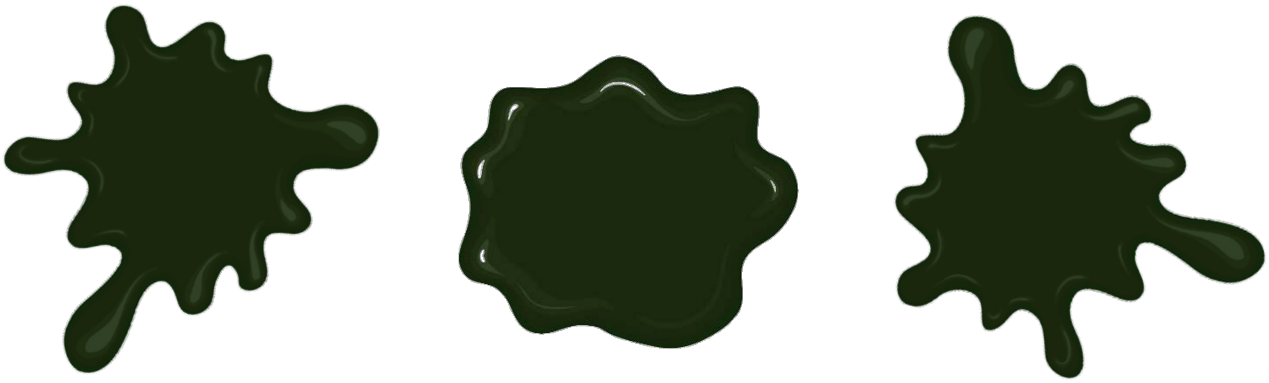
MAGNETIC SLIME

ANSWERS

1. What is a polymer?
A polymer is a long chain of repeating molecules.

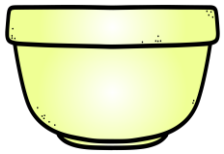
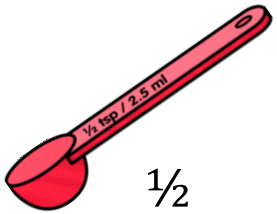
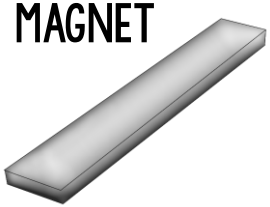
2. What does a magnet do?
It attracts any material that has iron in it.

3. How are adhesion and cohesion the same? How are they different?
They are both forces that keep certain types of molecules together. Adhesion keeps molecules of different substances together, while cohesion keeps molecules that are the same together.



Magnetic Slime

WHAT YOU NEED

DISPOSABLE GLOVES 	 DISPOSABLE BOWL	STIRRING STICK 
 ½ TEASPOON	 ¼ CUP	NEODYMIUM MAGNET 
 LIQUID STARCH	 WHITE GLUE	 BLACK IRON OXIDE POWDER

Magnetic Slime

Gather your supplies. Be sure to use disposable materials.

Magnetic Slime

Pour ¼ of a cup of liquid starch into your bowl.

Magnetic Slime

Carefully mix four tablespoons of the iron oxide powder into the bowl with the liquid starch.

Magnetic Slime

The powder is harmless, but it is a bit messy if you are not careful. It can smear all over clothes and must be washed off hands with soap and water.

Magnetic Slime

Carefully mix ¼ of a cup of white glue into the iron oxide/liquid starch mixture. Keep mixing until most of the liquid is absorbed.

Magnetic Slime

Wear disposable gloves for this step. Pull the slime out of the bowl and blot it with a paper towel to remove any excess liquid.

With your hands, thoroughly knead the slime for a couple of minutes. Pat it dry again. After it is fully dry, it will no longer be messy, and you can remove the gloves.

Magnetic Slime

Have fun moving the slime around with the neodymium magnets.

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Thanks!
Jennifer Findley