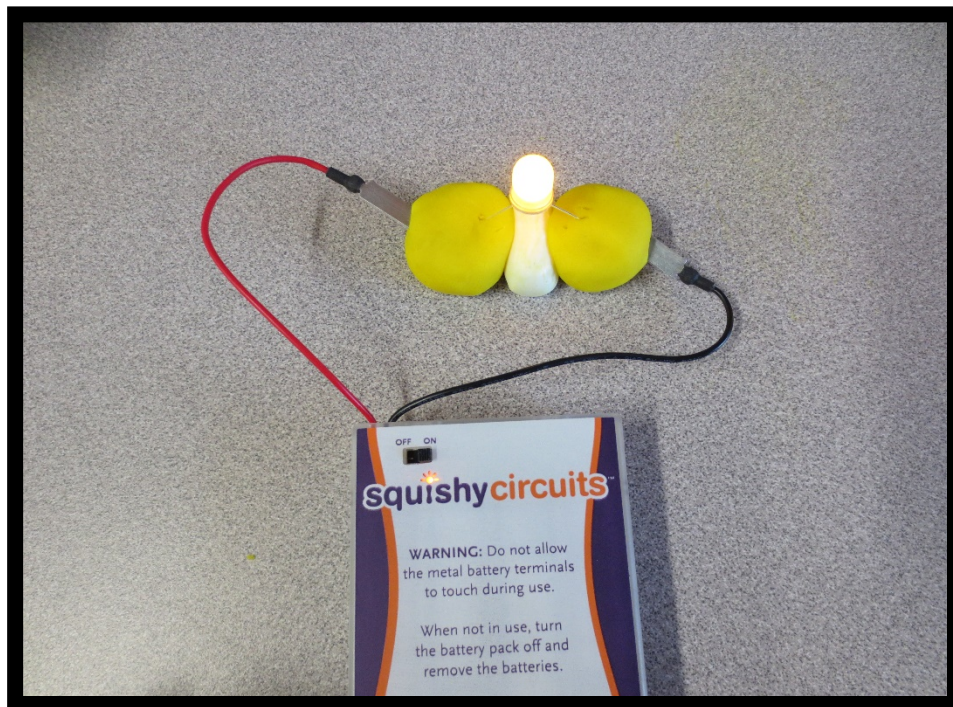


SQUISHY CIRCUITS

Introduction to electricity concepts.



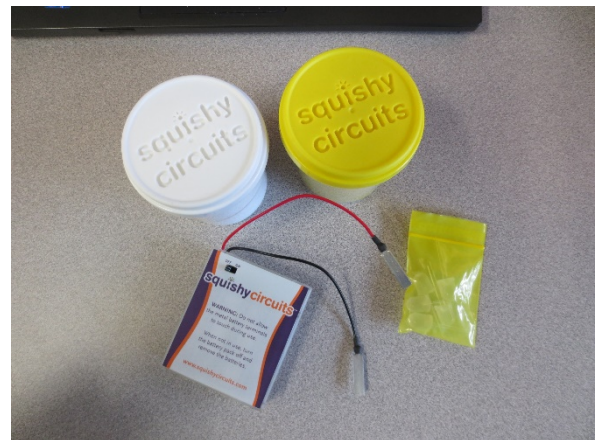
S.D. #33 - Chilliwack



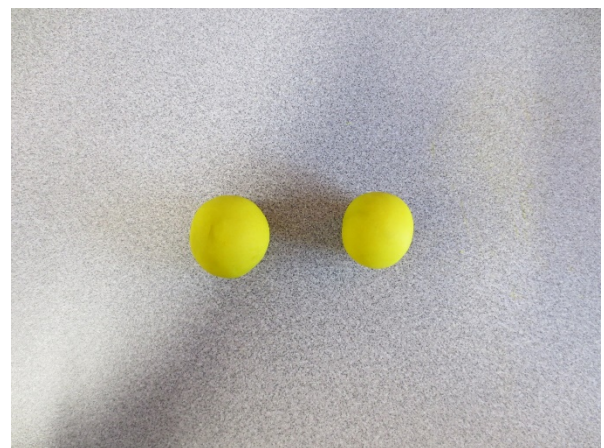
Tools & Materials:

- 4 AA Batteries
- Battery Pack with leads
- Assorted LED mini lights
- Conductive playdough
- Insulator playdough

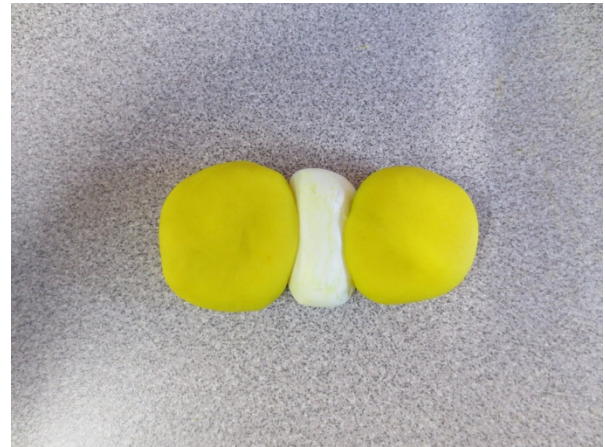
1. Gather Materials



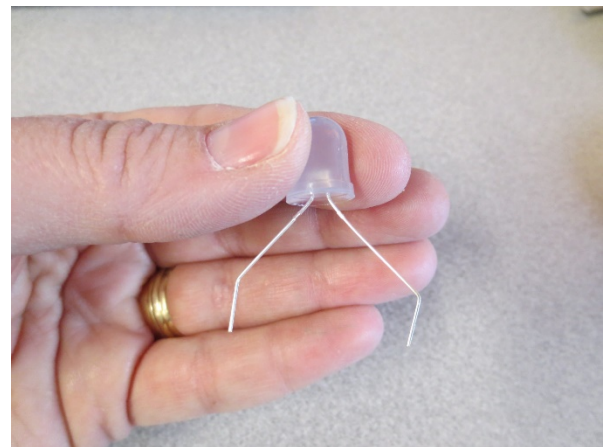
2. With the conductive playdough make 2 shapes and place them on your desk. Leave a space between.



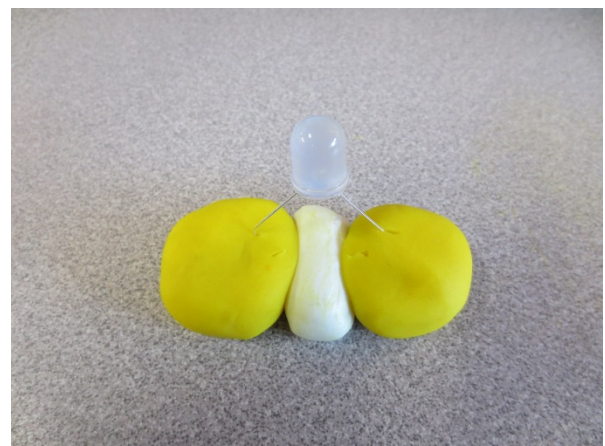
3. Now using the insulator playdough (which should be white) make a shape that will fit between the two coloured shapes from step #2



4. Select one LED and bend the legs out so that they will be able to bridge the gap made by the insulator dough.



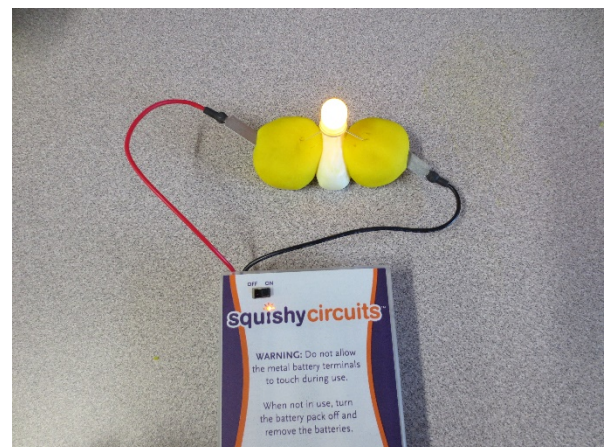
5. Place the LED legs, one into each of the coloured shapes of the conductive playdough.



6. Making sure the battery pack is OFF place the Positive lead from your battery pack into the same shape that you placed your LED + leg into. Then do the same for the Negative lead on your battery pack.



7. To complete your circuit you can now turn on the battery pack. Make sure that while your battery pack is ON, the battery leads do not touch.



8. Now try making different shapes or adding different loads, like a buzzer motor or fan.



Making Conductive Dough



Ingredients

- 1½ Cup (355 mL) Flour
- 1 Cup (237 mL) Water
- ¼ Cup (59 mL) Salt
- 3 Tbsp. (44 mL) Cream of Tartar*
- 1 Tbsp. (15 mL) Vegetable Oil
- Optional: food coloring
- * 9 Tbsp. (133 mL) of Lemon Juice may be substituted

Conductors allow electricity to pass through them.

In this recipe, the salt and water allow electricity to flow and bring your Squishy Circuit creations to life.

Many purchased doughs are salt based so they can be used (results may vary).



Step 1:

Mix water, 1 cup of flour, salt, cream of tartar, vegetable oil and food coloring (if using) in a medium-sized saucepan.

A non-stick pan works best.

Step 2:
Cook over medium heat, stirring continuously. The mixture will thicken, and lumps will begin to form.



Making Conductive Dough



Step 3:

Continue heating and stirring until the mixture forms a ball and pulls away cleanly from the sides of the saucepan.

Step 4:

Turn the dough out onto a floured surface. Use caution, as it is very hot at this point.



Step 5:

Allow the dough to cool for a few minutes before kneading flour into it until the desired consistency is reached.



Storage:

Keep the dough in a sealed container or bag for several weeks. For longer periods, the dough can also be frozen.

While in storage, water from the dough may create condensation inside the container; this is normal. Knead the dough after removing it from the storage container to refresh its pliability.

Making Insulating Dough



Ingredients

- 1½ Cup (355 mL) Flour
- ½ Cup (118 mL) Sugar
- 3 Tbsp. (44mL) Vegetable Oil
- ½ Cup (118 mL) Deionized Water

(Note: distilled or regular tap water can be used, but the resistance of the dough will be lower)

Insulators do not allow electricity to easily pass through them. **Resistance** is a measurement of how insulating something is.

This dough is resistive which means little electricity can flow through it.

Instead of insulating dough, you can also try artist's clay, which is highly resistive.



Step 1:

Set aside ½ cup flour to be used later. Mix remaining flour, sugar, and oil in a pot or large bowl.

Step 2:

Mix in a small amount (about 1 Tbsp.) of deionized water, stirring until the water is absorbed.

Repeat this step until large, sandy lumps begin to form.



Making Insulating Dough



Step 3:

Turn the dough out onto a sheet tray or a floured countertop, gathering it into a single lump.

Step 4:

Add small increments of flour or water to yield a dough-like, pliable consistency.



Storage:

Keep the dough in a sealed container or bag for up to a week. For longer periods, the dough can be frozen.

While in storage, the oil may separate and the dough may lose its dough-like consistency. Simply add additional flour to remove the stickiness before using again.