

# Squishy Circuits

## Electrical circuits with play dough !

### You'll need...

**Conducting dough:** 1 tbsp. vegetable oil  
1 cup water ★ 1½ cups flour ★ ¼ cup salt  
3 tbsp. cream of tartar ★ food coloring

**Insulating dough:** 3 tbsp. vegetable oil  
1½ cup flour ★ ½ cup sugar ★ ½ cup of  
deionized (or distilled) water

4 AA batteries ★ battery holder (e.g. RadioShack) ★ a few 10mm diffused lens LEDs  
(e.g. Evil Mad Scientist's website) ★ piezo buzzer (optional, e.g. RadioShack)

### Conductive play dough

Mix all ingredients except ½ cup flour in a saucepan over medium heat, stirring continuously. Add food coloring (this will differentiate the two types of dough). The mixture will begin to boil and get chunky. Keep stirring until a ball forms in the center of the pan, then remove the saucepan from the heat. **CAUTION:** The dough will be very **hot!** Allow it to cool before handling. Once cooled, mix flour into the dough until it is firm but moldable.

Repeat this recipe several times with different food coloring for more fun !

### TIP

Store your play dough in an airtight container, it will keep for up to three weeks.

### Insulating play dough

Mix the oil and all the solid ingredients (setting aside ½ cup flour) in a bowl or pan. Mix in 1 tbsp. deionized water and stir. Continue to add deionized water one tbsp. at a time until the mixture becomes moist and doughlike. Remove it from the bowl and slowly knead in the flour until the desired consistency is reached. Done ! :)

### Want to know more ?

- ★ [courseweb.stthomas.edu/apthomas/SquishyCircuits/](http://courseweb.stthomas.edu/apthomas/SquishyCircuits/)
- ★ [www-tc.pbs.org/teachers/includes/content/scigirls/activities/tech/doughcreatures.pdf](http://www-tc.pbs.org/teachers/includes/content/scigirls/activities/tech/doughcreatures.pdf)
- ★ [www.explainthatstuff.com/electricity.html](http://www.explainthatstuff.com/electricity.html)

Expanding Your Horizons - January 31th, 2015  
This activity was organized by the student association  
Physics and Astronomy for Women at Penn State.

Squishy circuits are a project from the Playful Learning Lab, University of St. Thomas.  
We thank the AAUW branch of State College for their financial support.