

Squishy Circuit Handout

If you are interested in doing this yourself at home, here is all the information you'll need to get started...

Basic Supplies

- Dough (conductive and insulating dough...see recipe below)
- Battery Packs and AA batteries (1 battery pack, 4 batteries per pack)
- LEDs (voltage should match output of battery packs) (3 each)
- Zinc Galvanized Nails (4 each)
- Copper Wire (bent and not too short) (4 each)
- Cutting boards (to prevent a mess on the tables)

Conductive & Insulated Dough Recipes

All recipes and procedures were taken from the website below:

<http://courseweb.stthomas.edu/apthomas/SquishyCircuits/howTo.htm>

Conductive Dough

Required supplies:

- 1 Cup Water
- 1 ½ Cups Flour
- ¼ Cup Salt
- 3 Tbsp. Cream of Tartar*
- 1 Tbsp. Vegetable Oil
- Food Coloring

*= 9 Tbsp Lemon Juice may be substituted

Procedure:

1. Mix water, 1cup of flour, salt, cream of tartar, vegetable oil, and food coloring in a medium sized pot.
2. Cook over medium heat and stir continuously.
3. The mixture will begin to boil and start to get chunky.
4. Keep stirring the mixture until it forms a ball in the center of the pot.
5. Once a ball forms, place the ball on a lightly floured surface.

- a. **WARNING:** The ball will be very hot. We suggest flattening it out and letting it cool for a couple minutes before handling.
6. Slowly knead the remaining flour into the ball until you've reached a desired consistency.
7. Store in an airtight container or plastic bag. While in the bag, water from the dough will create condensation. This is normal. Just knead the dough after removing it from the bag, and it will be as good as new. If stored properly, the dough should keep for several weeks.

Insulated Dough

Required supplies:

- ½ Cup Deionized (Or Distilled) Water
- 1 ½ Cup Flour
- ½ Cup Sugar
- 3 Tbsp. Vegetable Oil

Procedure:

1. Mix solid ingredients and oil in a pot or large bowl, setting aside ½ cup flour to be used later.
2. Mix with this mixture a small amount of deionized water (about 1 Tbsp.) and stir.
3. Once your mixture is at this consistency, knead the mixture into one "lump".
4. Knead more water into the dough until it has a sticky, dough-like texture.
5. Now, knead in flour to the dough, until a desired texture is reached.
6. Store in an airtight container or plastic bag. While in the bag, water from the dough will create condensation. This is normal. Just knead the dough after removing it from the bag, and it will be as good as new. If stored properly, the dough should keep for several weeks.

Additional/Optional Supplies

- Buzzers
- Solar Panels
- Motors
- Multi-colored LEDs