

# INTRODUCTORY SpaceDough

At a Glance



*Fashion*  
through science

## Troubleshooting

### Common Reasons LEDs Don't Light Up

#### 1. Is there a short in the circuit?

- Check to see that the SpaceDough balls are not touching
- Check to see that the LED legs or battery leads are not touching
- Check that both battery leads and both LED leads are not inserted into one piece of SpaceDough

#### 2. Are the battery leads securely connected to the SpaceDough?

- Try pushing on them or re-inserting them into the Space Dough

#### 3. Are the LEDs connected in the right direction?

- Flip the LEDs to test - the long leg should be connected to positive in the circuit (red) and the short leg should be connected to negative (black)

#### 4. Are there too many components in the circuit?

- This happens most often in a series circuit. Try with no more than two LEDs

#### 5. Are you adding too much resistance with SpaceDough?

- Try using smaller pieces of SpaceDough and placing components closer together.

#### 6. If none of this works, try different batteries, battery packs, or LEDs.

## Electrical Components

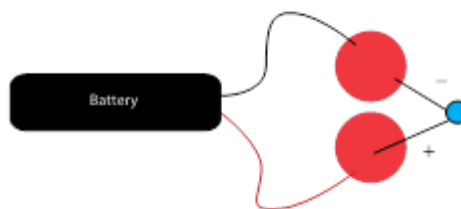
- Power Source – Battery pack
- Light Source – LED
- Conductive Material - SpaceDough

## Conductors/Insulators

- Conductor – allows energy to flow freely (metals, water, salt)
- Insulator – Des not allow energy to flow freely (plastics, wood, etc.)

## Polarity

Circuit Setup



Battery pack:

- Positive (+) – RED
- Negative (-) – BLACK

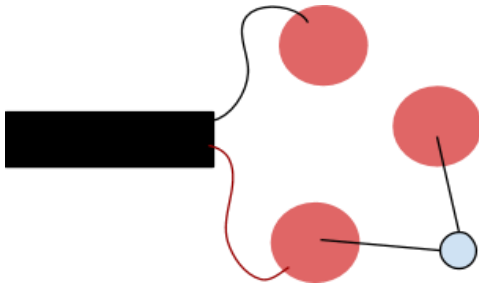
LEDs

- Positive (+) – LONG LEG
- Negative (-) – SHORT LEG

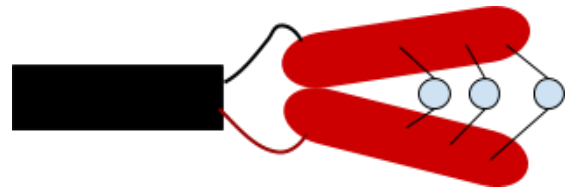


## Circuits

**Open Circuit:** A break in the circuit path  
– could be intentional as with a switch,  
or unintentional.



**Short Circuit:** A highly-conductive  
connection between the positive and  
negative terminals.



**SAFETY NOTE:** The battery packs used in this exercise can pose a burn hazard if not properly used. Leaders are strongly recommended to explore the “protecting power sources” guide to making safer battery packs. If protected battery packs are not an option, battery packs must be handled carefully: leaders must make sure students NEVER allow bare positive and negative wires to touch and batteries MUST BE REMOVED from packs before storing.