Squishy Circuits

LED = Light Emitting Diode

There are different kinds. We will use RGB ones, and Red ones.

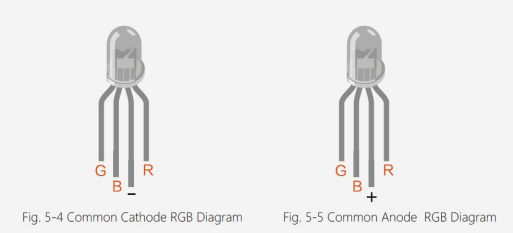
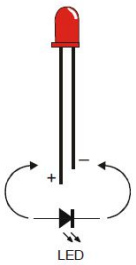


Fig. 5-4 Common Cathode RGB Diagram Fig. 5-5 Common Anode RGB Diagram



SAFETY FIRST!

Do:

- Experiment with dough, LEDs and wire to test different circuits
- Test materials for conductivity
- Have an adult nearby when experimenting

Don't

- Touch the battery ends together directly
- This will cause a short circuit, without the play dough in between, it will cause the battery to heat up.

Electricity

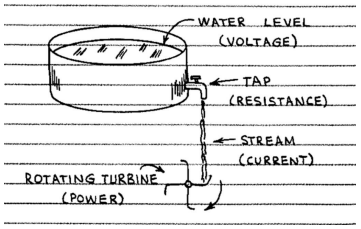
Electricity is electrons o wing through objects. Some materials are better at allowing electrons to o w - like metal. We call these **Conductors**. Some materials stop electricity from o wing. Such as plastic. We call these **Insulators**. Power cords at home are designed to allow electricity to o w through them from end to end, but not to your hands or walls.

Static Electricity is when a bunch of negatively charged electrons that hang out on a surface. Static also means 'not moving' or 'still'. Ions that are missing electrons are therefore positively charged. Negative electrons are attracted by positive ions. So the static electricity will start to move if suddenly attracted by positive ions. Think of zapping a door knob or something after walking on carpet in polyester socks! You pick up extra electrons walking around, and then they are attracted to something positively charged. ZAP!

Voltage is the electrical pressure o wing through something. Measured in volts.

Resistance is something that slows electricity down. Measured in ohms.

Current is the amount of electricty o wing through the something. Measured in amps.



Getting Started in Electronics
by Forrest M. Mims III

If you think of water o wing through pipes instead, Voltage is water pressure going into the pipe. Resistance is the size of the pipes. Current is the stream when it comes out.

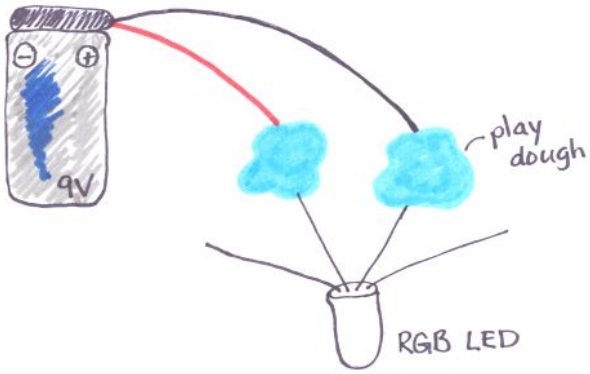
So...

Our batteries provide Voltage to power things. The play dough provides resistance to the electricity. 9V is a lot of electricity - more than the LEDs can handle! By using play dough, less pressure is applied to the bulb.

Squishy Circuits

Kit Contents:

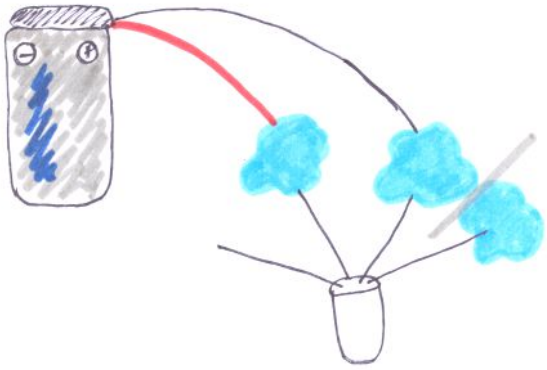
- play dough
- 9V battery and harness
- LEDs
- wire (optional)
- insulating materials like paper and craft foam (optional)



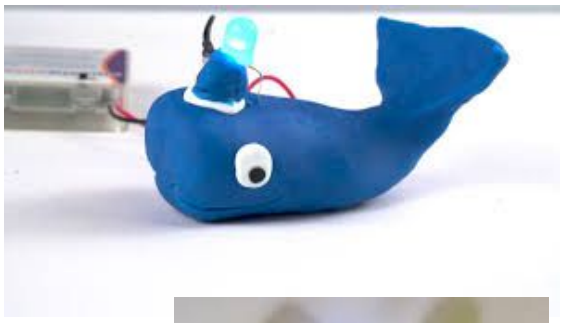
Experiment and Question

- What colour will it be?
- Try reversing the red and the black wires.
- What happens if you add more dough to the other legs?
- Try making a bridge out of wire to connect different blobs of play dough to see what happens.

LEDs only allow electricity to pass one way through them. If it doesn't light up - switch (+) and (-)



Compare these two blobs touching and with paper in between. What happens?



What can you create?
Combine dough with your friends to make different colours.