



IT'S ELECTRIFYING!

Introduce your section to the wonder of circuits with this conductive dough



MESS RATING
3

THE SCIENCEY BIT

The dough contains water, which is a conductor. Water has a low resistance to electricity, meaning that electricity can pass through it much more easily, so the presence of the water in the dough – even in its solid form – means that electricity can pass through it.

However, what makes the dough an even better conductor is the salt in the water. Salt molecules are made of sodium and chlorine ions – an ion is an atom that has an electric charge – each of which conducts electricity.

TOP TIP

If you want to create a 'control' dough to test your conductor dough against, make it using sugar instead of salt.

ACTIVITY Suitable for Scouts

You will need

- water 230ml
- table salt 160g
- saucepan
- plain flour 160g
- cream of tartar 2 heaped tbsps.
- vegetable oil 1 tbsps
- pastry cutters (optional)
- battery pack and wires (buy online or from electronics shops)
- LED lights or a buzzer (buy online or from electronics shops)
- crocodile clips (buy online or from electronics shops)

Instructions

- 1 Ask a young person to add the water and the salt to a saucepan and to bring it to the boil, bubbling until most of the salt has dissolved.
- 2 Next, ask another young person to add the flour, cream of tartar and oil and to stir continuously over a medium heat until a dough ball forms.
- 3 Carefully remove the pan from the heat and turn the dough onto a floured work surface. Now your section can each take it in turns to knead the dough ball until it reaches a firm consistency. You can use the pastry cutters to make the dough into interesting shapes.
- 4 Now you can all begin experimenting with circuits! Ask the young people to roll two small balls of dough and put one on each of the connectors of the battery pack. There should be one red wire (the positive) and one black wire (the negative). Make sure the battery pack is switched off. Now another young person can take an LED light and fix each of its legs into one of the doughballs – the longer leg is the positive leg and should go in the same doughball as the positive (red) wire and the shorter, negative leg should go into the same ball as the negative

TIME NEEDED

60 minutes

BADGE



IET partners the Scout Electronics Activity Badge

PARTNER



OUTCOMES

Your section will get a good grasp of how circuits can be created, as well as what is required to create a strong connection.

TAKING IT FURTHER

Why not look into other circuit experiments using salt water? You can even create a salt-water 'battery'! Look for ideas online – just google 'salt-water circuits'.

MORE INFORMATION

Visit scouts.org.uk/iet for more information on the Institution of Engineering and Technology, one of the world's largest professional engineering institutions, which aims to encourage young people to consider further learning and careers in the engineering and technology sector.

(black) wire. Turn your battery pack on and voila, you have light!

- 5 Keep experimenting – what happens when they add a third doughball and another LED light to the circuit? Or when they remove one of the LEDs and simply touch the positive doughball to the middle ball? You can expand your circuit using crocodile clips. Keep playing to see what variations on the circuit you can create.