

Energy Theme: What is Static Electricity?

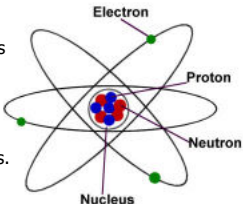
Suitable for All
Students



To discover what electricity is and where it comes from you need to meet the building blocks of the universe atoms.

Atoms make up everything around you including you atoms are very small so small that even a drop of water contains billions of billions of atoms.

When scientists show you pictures of atoms they've made them so big that you can see them but we can't see them without the use of fancy technology.



This Photo by Unknown Author is licensed under [CC BY-SA](#)

Each Atom is made-up of smaller pieces called protons neutrons and electrons the protons and neutrons huddled together in the middle to form the nucleus.

The electrons are free moving they whizz around the outside being pulled towards the protons. Why not learn more by labelling and colouring in the image of an atom on the next page



It's the electrons that are involved in electricity.

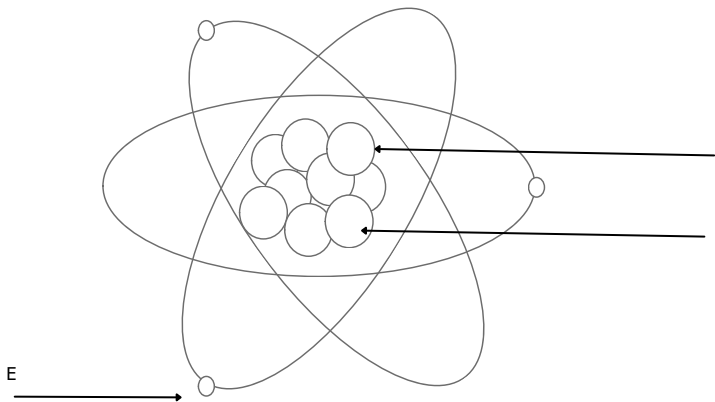
Some of the parts of our atom have charges electrons have a negative charge and protons have a positive charge. An opposites attract it's this attraction that usually makes electrons want to stay spinning or whizzing around their proton.

Neutrons have no charge, they are neutral. Normally the number of protons and electrons in an atom is balanced but sometimes electrons aren't attached very strongly. And the atom loses some electrons so the atom is left unbalanced, quite unbalanced charges and the lost electrons are free to move.



Energy Theme: What is Static Electricity?

Suitable for All
Students



Finish labelling the image of an Atom and colour it in, you can add a + beside the Protons and a - to the Electrons, but remember Neutrons are neutral so no sign needed. .

Energy Theme: What is Static Electricity?

Suitable for All
Students



Electricity is the movement of free charged electrons. Electrons can actually create two types of electricity current and static. When electrons flow freely you get current electricity current electricity is what powers electrical items in your home like your TV or your games console.

If electrons build up in one place you get static electricity. Static electricity is created when different materials rub together, some electrons move from one material to the other creating opposite charges.



Because opposite charges attract, static electricity makes things stick together.

The ancient Greeks were the first to notice this. They performed experiments with amber which is hardened tree SAP and the fur of animals, by rubbing the amber on the fur they created a static charge, they used this static charge to pick up light objects such as feathers.

The word electricity comes from "electron" the Greek word for amber.



In the video we shared on our you tube channel, 'Create a Static Jump', we show static electricity in action.

There are other ways to see it working if you had a balloon and a mirror, or a fellow student to be your test subject, you could see static electricity and action.

Rub the balloon your hair or your classmates, and the electrons moving will creating a charge. Then hold up the balloon over your own head or your classmates to see the opposite charges attract to each other.

What you'll see is the hair on your head standing up.

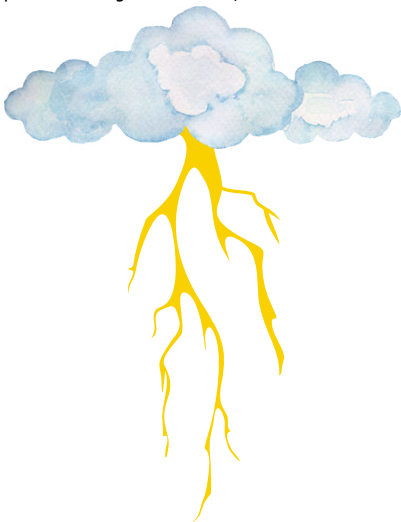
Energy Theme: What is Static Electricity?

Suitable for All
Students



It's too much static electricity builds up electrons may jump. You may have felt this when you touched some metal and you got what felt like an electric shock, put on the small one. It's caused by those electrons jumping between you and the metal. Shuffling your feet in rubber soled shoes on the carpet can give you static charge, so if you did this and went to open the door the handle might give you a shock.

Static electricity can also build up inside of storm clouds, huge charges build up as atoms in the storm clouds crash against each other. When the charge is big enough electrons jump and create a giant spark of lightning if you could capture a lightning spark it'd be a powerful enough to toast 100,000 slices of bread. Stop



Energy Theme: What is Static Electricity?

Suitable for All
Students



Why not try some static experiments of your own:

What you will need:

- A balloon
- a comb
- a plastic Pipe
- tissue paper
- running water

Experiment 1: In the video we shared on our YouTube channel, 'Create a Static Jump', we show static electricity in action. using a balloon and tissue paper watch it back for instructions.

Experiment 2 : By Rubbing a balloon on your hair or your classmates, and the electrons moving will creating a charge. Then hold up the balloon over your own head or your classmates to see the opposite charges attract to each other.

What you'll see is the hair on your head standing up.

Experiment 3: Bending Water -

Water or H_2O is a polar molecule - meaning one end is slightly more positive than the other. the H_2 side is more positive than the O . When we give a balloon, or plastic comb or plastic pipe a static charge by rubbing it. It becomes negatively charged. Opposites attract so if we hold that object near the water it will bend.

so try to charge your object by rubbing it, and place it near a small amount of running water from a tap.

