

Activity: Shrinking Plastic

On SCOPE's Things That Are... Really Small episode, you saw Julia shrink plastic. Here's how she did it:



What you need:

Lots of polystyrene (PS) plastic (the ones with recycling code '6' written on them):

- Yoghurt tubs
- Plastic plates
- Plastic cutlery
- Plastic coffee cups
- Plastic meat trays

Scissors

Permanent markers

Oven

Oven tray

What to do:

Young scientists should get an adult to help them with this experiment.

1. Cut some shapes out of the plastic items. Remember, they will shrink to half their size in the oven, so they don't have to be very detailed!
2. Use the pens to decorate the shapes.
3. Put the shapes on the oven tray.
4. Bake at 180 degrees in the oven. Young scientists should get an adult to help with this part.
5. Watch the creations shrink in the oven. They will shrink very quickly, so be careful not to over-bake them!
6. Once they are half their original size, remove the tray from the oven and allow them to cool.

What's happening?

Polystyrene plastic is made up of polymers. Polymers are a collection of molecules strung together to form really long chains. Polymers will act differently depending on what type of molecules they're made up of and how they fit together. For polystyrene plastic, the polymers are all stretched out in straight lines.

When these polymers are heated up though, they scrunch up into tight, tangled balls. This is a more natural arrangement for the molecules, because they use less energy in this formation. They also take up less space in this arrangement, so the polystyrene creations shrink!