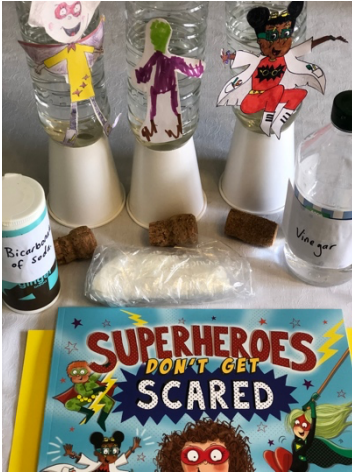
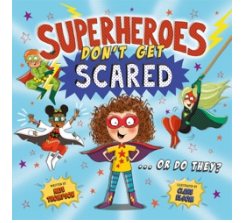


# MAKE YOUR OWN SUPERHERO BOTTLE LAUNCHER



*Why not make your very own superhero bottle launcher and watch it zoom off into the sky?!*

*This activity is a really great mixture of art and science and is lots of fun!*

## You Will Need:

- A plastic bottle - any size will work, but the bigger the bottle, the more vinegar you will need!
- A cork - make sure that you find one that is a snug fit into the mouth of the bottle
- Clear vinegar
- Bicarbonate of soda
- A paper cup
- Kitchen roll
- Pens, paper/card, scissors and sticky tape/glue

## What To Do:

1. Draw your very own superhero on paper. Make sure that it is the right size to stick to the bottle you are going to use.
2. Cut out your superhero (ask your grown-up for help if you need it).
3. You may want to reinforce your superhero using some card.
4. Stick your superhero onto the side of your bottle - make sure their feet are at the lid end, so that they're the right

way up when they launch (unless you want them to launch upside down!).

5. Carefully pour some vinegar into your bottle until it is about  $\frac{2}{3}$  full. A jug or funnel can help avoid spillages! Put the lid on to keep the vinegar inside.
6. Put 1-2 heaped teaspoons of bicarbonate of soda onto some kitchen paper and roll it up to make a sausage-shaped package filled with the powder. Make sure you roll the package tightly so it fits through the top of the bottle when you're ready to launch.
7. Ask a grown-up to help cut out the bottom of a paper cup to make a launching pad for your bottle.
8. Now you're ready for the big launch!! Go outside and find a large open space. If you are launching on grass, take some water to rinse off any vinegar after you're done.
9. Place your paper cup upside down (with the cut-out bottom upwards) and then stand safely out of the way!
10. Your grown-up needs to take off the bottle lid, push the bicarbonate of soda-parcel into the bottle, push the cork in the top and stand the bottle in the paper cup launch pad... and then step back quickly!
11. Your superhero bottle will zoom into the air!

You can take this experiment further by seeing what difference it makes to use different amounts of vinegar and bicarbonate of soda, and different bottle sizes.

## What Is Happening?

You have just carried a scientific experiment involving a chemical reaction between bicarbonate of soda (which is what science calls a 'base') and vinegar (which is an 'acid'). Mixing them together produces a gas called carbon dioxide.

The carbon dioxide expands inside the bottle until there is no more space and then the pressure pushes out the cork launching the superhero bottle into the air!