



Science by ME

Blowing up a Balloon without Air

How do we blow up a balloon without air? Air contains roughly 77% nitrogen, 21% oxygen, 1% argon, 0.04% carbon dioxide, and small amounts of other gases. Pez shows you how in our Science by ME video:

[[Pez and Chemistry](#)]

You will need:

1 x balloon [30cm]

1 x funnel

3 x tablespoon of bi-carbonate of soda [bi-carb]

150ml's of vinegar [acetic acid]

1 x empty 600ml water bottle

What to do:

Place the vinegar in the bottle.

Put the bi-carbonate of soda in the balloon using the funnel [I just roll up paper for a funnel]

Carefully place the balloon over the bottle mouth without spilling any of the bi-carb powder in the bottle. When the balloon is secure on the bottle, lift the balloon, spilling all the bi-carb into the bottle. Make sure you hold on tight to the balloon and the bottle.

What can you see?

The vinegar is mixing with the bi-card and frothing up. This mix is filling the bottle and the balloon with gas. You're watching a chemical reaction!



What about the science?

When you mix the bi-carb [a base] with the vinegar [an acid] you create a chemical reaction that creates carbon dioxide - a gas. As the gas is created it expands and forces the balloon to blow up [without you using 'air']. What is the liquid left in the bottle? Well it is sodium acetate in some water. Sodium acetate is the 'vinegar' flavour they put on your salt and vinegar chips!

Want to do more?

Well what happens if you add more bi-carb, or what happens if you use a smaller balloon? Is the bottle hot or cold, and why? You will have to look this up to find out. Good luck!

David
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Science by ME has been developed by Museum Express as part of its commitment to inspiring young people with science.

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