TURN A TEA BAG INTO A ROCKET

Find a tea bag and become a rocket scientist!

YOU WILL NEED

- A tea bag (the type with an attached piece of string with a paper label at the top)
- A match or lighter

WHAT YOU DO

Step 1

Take the tea bag and carefully remove the piece of string with the label attached.

⚠ This experiment must be done under the **supervision of an adult** to ensure safety when working with fire.

Step 2

Remove the contents of the tea bag and open it up into a cylinder.

Step 3

Stand the hollow tea bag cylinder on its end and use a match or a lighter to light the top of the teabag.

Step 4

When the tea bag burns to the bottom, watch it shoot upwards like a rocket!

THE SCIENCE BEHIND IT

Everything is made from atoms. Atoms are like tiny little building blocks that are so small you cannot even see them with a microscope!

Atoms join together to make molecules. The air around us contains lots of different molecules, including the oxygen that we breathe. When the air gets hot, it rises upwards - you may have seen this before when hot air rises from a radiator, or when you are cooking on the stove or over a fire (flames always burn upwards).

This happens because the density of the air, which means how close together the air molecules are, has decreased. When you heat up the air, the molecules get energy and start moving around faster. This leads to them being further apart from each other than when it is cold, meaning the air has decreased in density.

Helium is a gas that is less dense than air, which is why balloons float upwards, and the same thing is happening here; the air inside the teabag cylinder is getting hot from the flame and expanding, decreasing in density.

Because the air inside the tea bag cylinder is now less dense than the air outside the tea bag, it rises upwards. And so, when the tea bag is almost completely burnt away, the ash skeleton of the tea bag that is left is so light that it is carried upwards by the hot air, shooting off like a rocket!

This is a great way to show how convection works. Convection is the movement of liquid or gas caused by temperature, with hotter molecules rising and colder molecules sinking under the influence of gravity. Therefore, convection allows heat to be transferred from a hot, less dense liquid or gas to a colder, denser liquid or gas.

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