

# The Invincible Balloon

When a balloon goes up against a candle there seems like there can only be one winner! Think again, here's how to make your balloon invincible and learn a thing or two about conductivity too!

## What do I need:

- Candle
- Matches
- Balloon (or two!)

## How do I do it?

**STEP 1** - Make sure you've got an adult to help out. The first step is to light the candle. Then inflate your balloon. If you want to prove what you know will happen you can try lowering your balloon over the flame.

**WARNING:** Your balloon will pretty quickly go pop!

**STEP 2** - Let's make the balloon invincible. Fill your balloon up with water, then inflate it. This means there'll be a small puddle of water in the bottom of the balloon.

**STEP 3** - Slowly lower your balloon down on top of the flame of the candle. Hold it there, does it go pop? You can lower it right down and actually put the candle out with the balloon. Finally, make sure to have a look at the bottom of the balloon.

## What's going on?

Well, why does the balloon go pop when there is no water inside it? It's really just the heat from the candle melting the outside of the balloon until it's so weak that it can't contain the pressure of the air that's inside of it!

How does the water make a difference? That puddle of water inside of the balloon pulls the heat away from the surface of the balloon. This is called conduction. So, instead of the balloon skin getting so hot it melts, the heat is spread (or 'dissipated') into the water that's inside the balloon. That water slowly starts to get warmer but the balloon doesn't pop.

## More Fun Please - Experiment like a real scientist!

- Try adding different amounts of water to the balloon, does that make a difference?
- How about if you blow the balloon up really full of air?

