

# Invisible Extinguisher

## What you need:

- Baking soda
- Vinegar
- Tall drinking glass or large plastic cup
- Short drinking glass or small plastic cup
- Tea light
- Matches or lighter

## Instructions:

- Place the tea light in the short drinking glass.
- Using a long match or safety lighter, light the tea light while leaving it in the glass.
- In the tall glass, pour 1/2 cup of vinegar.
- Slowly sprinkle 1/2 tsp of baking soda into the tall glass containing the vinegar. You can dump it all in at once but be ready for a big eruption!
- Let the reaction slow down until the foam has disappeared.
- Slowly tilt the tall glass on its side over the tea light as if you were pouring the air over it.
- If the flame doesn't go out on your first try, pour another scoop of baking soda into the vinegar and repeat steps 5 & 6.

## What happens and why:

The baking soda/vinegar reaction results in a gas called carbon dioxide ( $\text{CO}_2$ ).  $\text{CO}_2$  is more dense than normal air, which means that it will sink! Because  $\text{CO}_2$  sinks, it stays in the glass instead of floating away like a normal mix of air would. This means you have a glass full of  $\text{CO}_2$ !

The candle burns thanks to a combustion reaction that requires Oxygen ( $\text{O}_2$ ), something we find in abundance in the air around us. When you pour your glass of  $\text{CO}_2$  into the glass containing the candle, the  $\text{CO}_2$  sinks to the bottom of the glass and surrounds the candle. This displaces (or pushes up) all the normally mixed air, along with all that  $\text{O}_2$  the fire needs to burn. And Voila! Your candle is extinguished invisibly!

