

# ▶ Gas Expansion

*Approximate Experiment Time: 10 minutes*

## BACKGROUND

You might know that propane is a gas. But did you know that the propane inside delivery trucks is actually liquid? That's because propane can transform from liquid to gas at high temperatures. It's kind of like a magic trick.

## WHY IT MATTERS

Understanding this "magic trick" is important for propane professionals, because gas takes up more space in a propane tank than liquid. That means delivery drivers need to leave some extra space in the propane tank when refilling it, so the fuel has extra room to expand when it transforms from liquid to gas.

**⚠️ PROPANE SAFETY:** Because gas expands (like in our experiment), propane tanks have pressure valves to make sure the right amount of propane is inside the tank.

## SUPPLIES:

- ▶ Warm water
- ▶ (2) quart-size plastic storage bags
- ▶ Box of Alka-Seltzer
- ▶ Safety goggles

## PROCEDURE



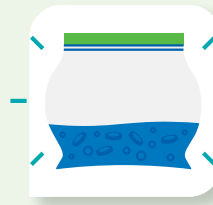
**1.** First, we'll fill the plastic bag about a third full of warm water.



**2.** Then, we'll add two Alka-Seltzer tablets to the water, and seal the bag.



**3.** Watch as the bag fills the rest of the way with gas and expands. While wearing safety goggles, you can feel how full the bag is with water and gas. This is similar to what happens in a propane tank.



**4.** Now, we'll see what happens when there is too much gas inside the bag. We'll open the bag, drop several more tablets in the water, and reseal it. We're going to set the filled bag on a flat surface and let the bag fill up with gas until it bursts.

## GROUP DISCUSSION

Do you think propane is easier to deliver as a liquid or a gas? Why?