

Space at Home: Rocket Launch Experiment

This experiment demonstrates Newton's third law of motion; for every action, there's an opposite and equal reaction. You can make your own paper rockets and launch them into the air using Alka-Seltzer tablets and water. Make sure to launch your rockets outside and to stand well back. This is a messy activity and adult supervision is required. You can watch the demonstration video on our YouTube channel [here](#).

Materials Needed:

- Card or paper
- Empty film canister with lid that snaps inside
- Coloured pens
- Sticky tape
- Scissors
- Original effervescent formula Alka-Seltzer or other effervescent type tablets
- Water
- Safety glasses
- Metric tape measure or meter stick (*optional*)

Instructions

- Decorate the card / paper- get creative! This will form the body of your rocket.
- Roll the card into an 8-inch-tall tube. Slide the empty film canister into the tube so that the canister opens at one end of the tube. Securely tape the paper to the canister. You do not want these two parts to separate.
- Tape closed the 8-inch-long seam of the paper tube.
- Cut some triangular paper fins and tape them onto the body of the rocket.
- Make a small paper cone and tape it to the top of the rocket to make a nose cone.
- Hold the rocket upside down and add water to the canister to one-quarter full.
- Put your safety glasses on.
- Add half a tablet of Alka-Seltzer to the film canister and quickly snap on the lid.
- Place the rocket on the ground, lid down. Be careful when launching your rocket. Stand back 2 meters and don't point it at anyone.
- Count down to lift off and make sure you time how long it takes for your rocket to return to earth!

What Happened?

When you mix Alka-Seltzer (which is an effervescent tablet) with water, a chemical reaction takes place between the citric acid and sodium bicarbonate contained in the tablet and the water. As the Alka-Seltzer tablet fizzes, carbon dioxide is released inside the film canister. Pressure from the gas builds and eventually pops the lid off. The thrust of your rocket is related to how much pressure built up inside the canister before the top popped off. It goes up because gas is building inside the closed film canister and since the lid is the weakest point of the canister, the lid pops off and all that gas comes rushing out of the end of the canister. This is exactly how all rockets work whether you use an effervescent tablet as your fuel or a chemical rocket propellant like they do at NASA. Why not repeat your experiment to see what gives the best rocket launch? You could change the design of your rocket, use more or less fuel (effervescent tablets and water) or use hot or cold water. Why not change your fuel and try baking soda and vinegar instead? Remember that when you are conducting experiments you only want to change one thing at a time. Keep everything else the same in order to see how the thing you changed (the variable) affects the outcome of your rocket launch.