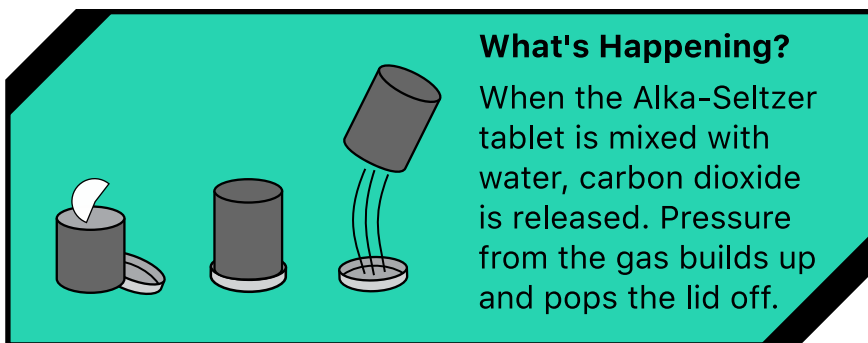


# Alka-Seltzer Rocket!

Newton's 3rd Law states that every action has an equal and opposite reaction. And that is exactly what students can learn about when creating their Alka-Seltzer powered rockets. The rocket works because the key ingredients in these fizzy tablets are sodium bicarbonate (baking soda), and citric acid. These ingredients are super reactive, but luckily, when these ingredients are in solid form, they aren't reacting with each other. But when they're able to move, such as when in water, the molecules can mix, causing an acid-based reaction!



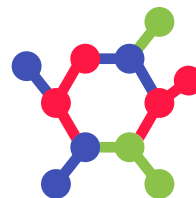
## What's Happening?

When the Alka-Seltzer tablet is mixed with water, carbon dioxide is released. Pressure from the gas builds up and pops the lid off.

## MATERIALS

- Nose cone and fins
- Alka-seltzer tablets
- Empty film canister
- Cup of water \*\*\*
- Pencils/markers \*\*\*
- Tape \*\*\*
- Scissors \*\*\*
- 1 tsp measuring cup \*\*\*
- Knife & cutting board \*\*\*

\*\*\* Materials found at home



## WE CHALLENGE YOU TO

Design, build, and test your own Alka-Seltzer rocket and observe the chemical reaction

## AND LEARN ABOUT

- Newton's 3rd Law of Motion
- Making observations and interpreting data
- Observing chemical reactions between water and alka-seltzer tablets
- How molecules change when their state changes

## FURTHER EXPLORATION

**Imagination Station** | <https://www.imaginationstationtoledo.org/educator/activities/rockets>

**Alka-Seltzer** | <https://www.alkaseltzer.com/science-experiments/rockets>

**Zero Gravity Alka-Seltzer** | <https://www.youtube.com/watch?v=bgC-ocnTTto>

## DESIGN

- 1) Decorate your rocket (optional)
  - a. Use colored pencils to decorate your nose cone and fins to give the rocket some style.



## SAFETY TIPS



- Be careful with scissors!
- Keep a safe distance from the rocket after you set it down!

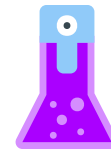
## BUILD

- 2) Assemble the rocket
  - a. Use tape to attach the nose cone to the bottom of the film canister.
  - b. Tape the side fins to the side of the film canister.
  - c. Make sure not to cover the opening of the tube so you can easily open and close it.



## TEST

- 3) Add water to your rocket
  - a. Remember, the amount of water you add determines how high your rocket will fly.
  - b. Start with 1 teaspoon of water for the first launch.
  - c. For future launches, try adding one teaspoon of water each time
- 4) Add your reaction agent **\*With Adult Supervision\***
  - a. Cut or break your Alka-Seltzer tablets in half
  - b. Add half an Alka-Seltzer tablet to the water and quickly seal.
  - c. It's important to seal the canister immediately so pressure can build up inside the canister.
- 5) Place your rocket on a flat surface outside
  - a. If you can, try placing near a wall, post, or other vertical object in order to compare the maximum height reached.
- 6) Clean up
  - a. What goes up must come down, and that includes your rockets. Make sure to collect all pieces of your rocket and clean surfaces if needed.



## DISCUSS

- A. Did your rocket fly high? Do you think it can reach greater heights?
- B. What forces the lid of the film canister to come off?
- C. What would happen if you used a different amount of water or tablets next time?