

CANISTER ROCKET

This small but mighty experiment is perfect for a quick demonstration of Newton's Third Law.

INSTRUCTIONS:

STEP 1: Print out the rocket template and cut out with scissors.

STEP 2: Tape the rocket to each side of your canister.

STEP 3: Fill the canister with water.

STEP 4: Find a good location to launch your rocket.

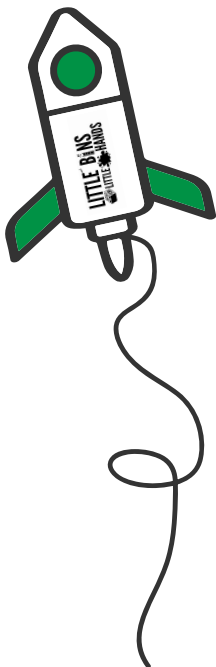
STEP 5: Put on your safety glasses!

STEP 6: Now drop two antacid tablets into the water and really quickly put the cap on and set down your canister.

STEP 7: Now stand back and watch the fun!

Materials

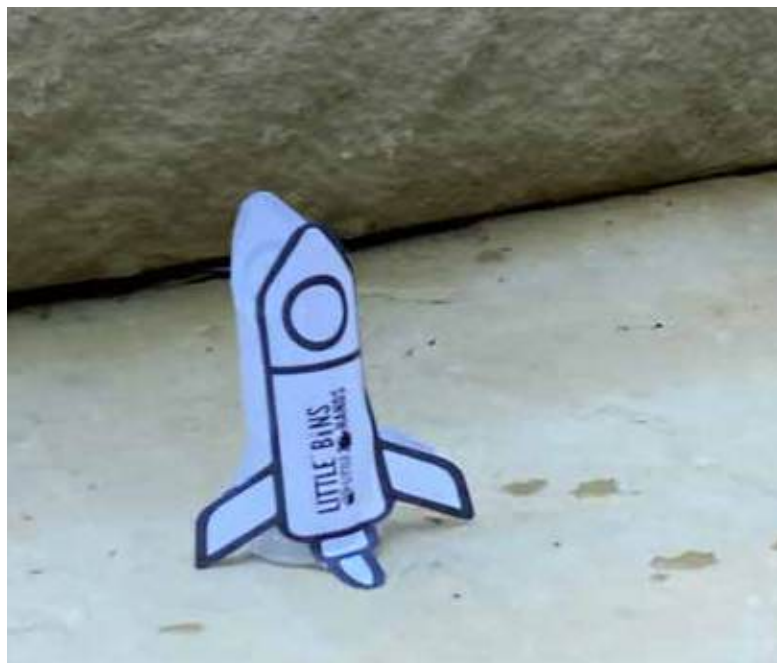
Rocket template
Scissors
Film canister
Antacid tablets
Water
Safety glasses



THE SCIENCE

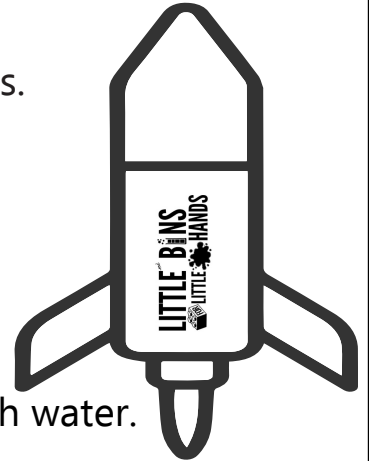
When Alka-Seltzer dissolves in water, it undergoes a chemical reaction between sodium bicarbonate (baking soda) and citric acid, both of which are in the tablet. This reaction produces carbon dioxide gas (CO_2). The buildup of CO_2 gas creates pressure inside the sealed canister, and when the pressure becomes too great, it forces the lid off, propelling the canister upwards like a rocket.

In this experiment, energy is stored as potential energy in the form of pressure within the canister. When the lid pops off, the potential energy converts to kinetic energy, propelling the canister upward. The height and speed of the rocket are determined by how much pressure (and thus energy) is built up before the launch.



Canister Rocket Experiment

Use this worksheet to process and evaluate your observations.



Observe how the tablet reacts when it comes into contact with water.

Does it dissolve quickly or slowly?

What is the role of the canister lid in the rocket's launch?

What kind of sound is produced during the launch?

What chemical reaction is happening in the canister?

What did you learn about carbon dioxide?

