



Rocket Blast Off!

Brought to you by:
Maria Mitchell Association

Become a rocket engineer! Blast off your own chemistry rocket.

Materials:

- Film canister
- Alka seltzer tablets
- Water

Note: It is best to do this project outside. If working indoors, be sure that there is nothing breakable up high and know that the floor will get wet.

Instructions:

- 1) Break the alka seltzer tablet into approximate quarters.
- 2) Fill your film canister 1/3 of the way with water.
- 3) Drop 1/4 of an alka seltzer tablet into the canister with the water and quickly close the lid. Make sure it seals tightly!
- 4) Flip the canister over and put it on the ground so the lid is on the bottom and **stand back!**

You might have to wait a few moments... or maybe not!

Troubleshooting: If the rocket does not take off, the lid probably did not seal. Try wiping off the rim and make sure to snap it closed tightly next time. You might also try using slightly different amounts of water and alka seltzer.

Extra fun:

- Decorate your rocket! Try using stickers or masking tape and markers.
- Experiment! Try using different temperatures of water or different amounts of alka seltzer. Do you find any differences?
- How high do you think your rocket gets? Can you find a way to measure or estimate it?

How does it work?

When the alka seltzer touches the water, it causes a chemical reaction that releases carbon dioxide. The carbon dioxide gas builds up inside the sealed container and increases the pressure until it exerts a force strong enough to break the seal on the lid and rushes out! Since all of this gas is whooshing out the bottom and exerting a force going downwards, the canister has to shoot upward to balance out the forces in both directions. This is Newton's third law of motion: for every action (or force), there is an equal and opposite reaction.

Rockets that are designed by scientists and engineers at NASA to go into space work on a similar principle. Rocket engines burn fuel and turn it into hot gas that gets pushed out the back of the rocket, propelling the rocket upward.

A real life rocket engineer:



Tiera Fletcher is an aerospace engineer at Boeing, a company that makes airplanes and rockets. She is working on a project to build a rocket that will one day take humans to Mars! Tiera discovered she liked math when she was six years old and she decided she wanted to study aerospace engineering when she was eleven. [Photo credit: Michael A. Schwartz]

Participate and Win Prizes

Scan this QR code and fill out a quick questionnaire to be entered to win a prize for participating in the Nantucket Science Festival 2021!



Video and Photography Contest

Take part in this science festival **technology** challenge. Make a video or shoot photographs of you or others engaged in STEAM (Science, Technology, Engineering, Art, Math) activities, post it on FaceBook or Instagram with #ACKSciFest and tag @The Maria Mitchell Association and @Nantucket Community School and be automatically entered to win one of our great prizes. You can choose activities below or come up with your own experiment or challenge.

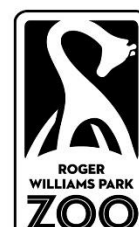
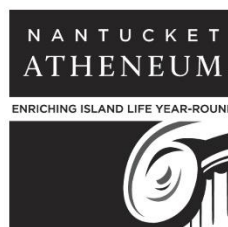
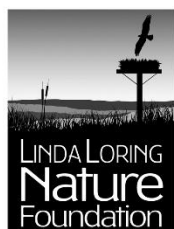
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