

Sample Experiment Write-Up

POP YOUR TOP OFF

Problem: How many times will the top pop off of a film canister using water and Alka-Seltzer?

Research: When water and Alka-Seltzer come in contact with one another, they undergo a chemical reaction in which CO_2 gas is released. When this gas is contained in a film canister, it will blow the top off.

Hypothesis: If I test to see how many times the top will pop off the film canister, then it will be 6 times.

Materials List:

1. 1 film canister with a tight-fitting top
2. 200 ml of water
3. 3–5 Alka-Seltzer® tablets
4. paper towels
5. tape
6. a partner

Procedure:

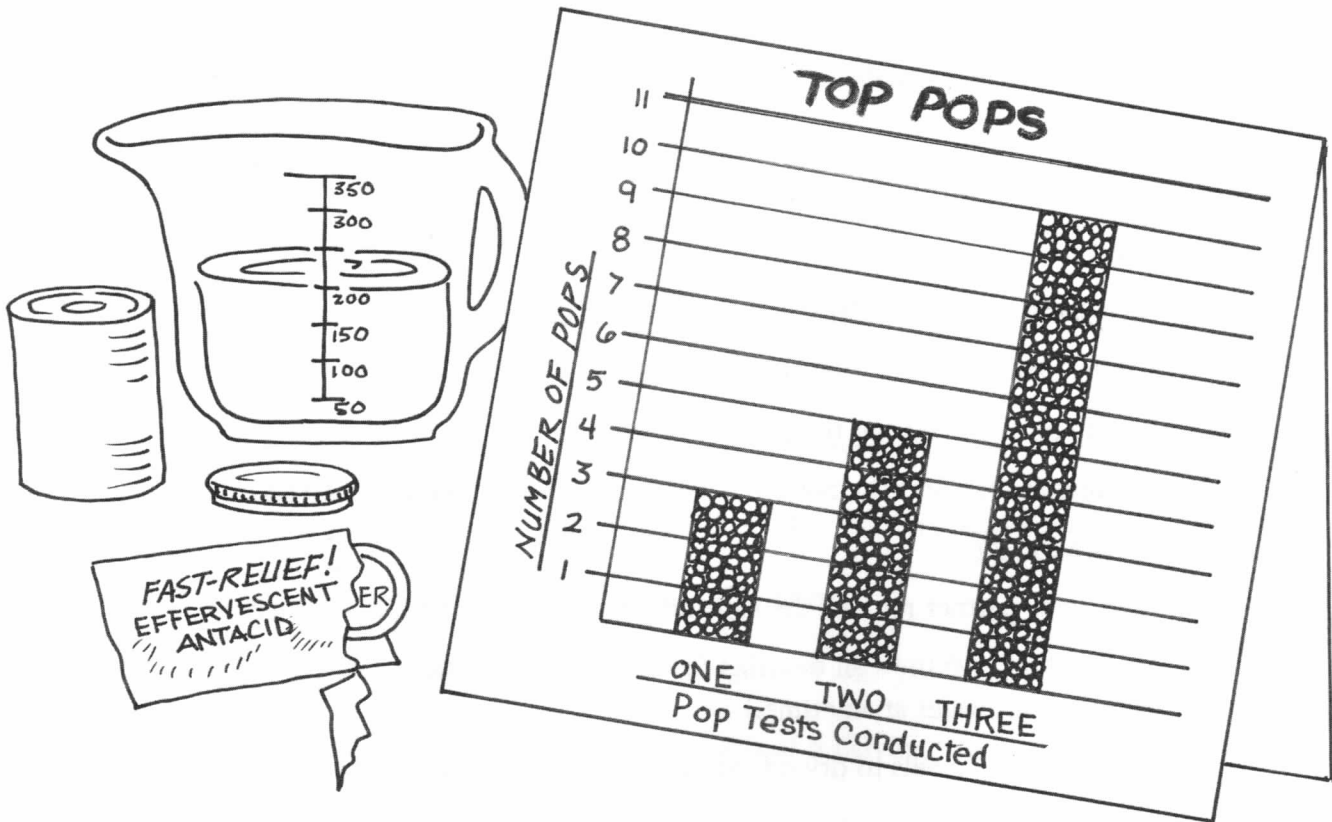
1. Tape 1 Alka-Seltzer under the top of the film canister.
2. Fill the canister $\frac{1}{2}$ full of water.
3. Tightly place the top on the film canister.
4. Holding the top and the bottom, shake up and down for about 10 seconds.
5. Release the top.
6. Have your partner retrieve the top and put it back on the film canister.
7. Repeat steps 4–6 until all the Alka-Seltzer and gas is used. (You may refill the film canister with water at any time.)
8. Use the paper towels to dry off the canister before taping another Alka-Seltzer to the lid.
9. Repeat the experiment at least 3 times; record the number of pops for each trial.

SAMPLE EXPERIMENT WRITE-UP (continued)

Data:

TOP POPS

TESTS CONDUCTED	NUMBER OF POPS
Test one	3 pops
Test two	5 pops
Test three	10 pops



SAMPLE EXPERIMENT WRITE-UP (continued)

Sample Conclusion:

My hypothesis was not correct because I said the top would pop off 6 times and it did not. It popped off 3 times in the first test, 5 times in the second test, and 10 times in the third test. However, if I calculate the average of the 3 tests, the result is 6 times.

The variable I was testing was the number of times the top would pop off of the canister. Variables I controlled in this experiment were the type of canister used, the amount of water added, the amount of Alka-Seltzer used, and how long I shook the container. Variables I could not control were how high the top flew, how far the top flew, how long it took my partner to retrieve the top, how much water came out with the gas, and if the Alka-Seltzer flew out with the gas. I could not control these variables because they all depended on the amount of gas building up inside the container.

A few extensions of this experiment, or examples of what I could have done differently, are to use baking soda and vinegar instead of water and Alka-Seltzer, or to combine all of these ingredients at once. I also could have tested and recorded how high or how far the top popped off, instead of the number of pops. Lastly, I could have used more Alka-Seltzer and more water with each test.

One concept this experiment taught me was that Alka-Seltzer and water produce a chemical reaction. Another concept I learned was that the production of bubbles indicates a gas is present. I also learned that this chemical reaction can get rather messy if the top is pointed toward you or someone else when it is released. Do not point the top of the canister toward your face.