

Airwaves  
Validation Report  
5-15-08  
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For our experiment we are going to send a jar of shaving cream into the air to see if it will expand.

## Purpose

The purpose of this report is to test our equipment to see if shaving cream will expand with a rise in altitude.

## Experiment procedures

- 1) First you will need a jar, a check valve, a syringe, shaving cream, graduated cylinder and some thing to stir with. Make sure to record your data on a table as you go along.
- 2) Then spray a little bit of shaving cream into the graduated cylinder and stir with the stick.
- 3) Measure what the shaving cream is at.
- 4) Then place it in the jar and secure the lid tightly. Make sure there are not any leaks in the jar or lid this will cause inaccurate results.
- 5) Then take out 30ml of air at a time. Measure the volume of the shaving cream after every time.
- 6) Repeat the process until you have enough data.

Height of Foam		Ml of air taken out
First	Second	
9	3	30
9	3	60
9	3	90
9	3.5	120
9	3.5	150
9	3.5	180
9	3.5	210
9.5	3.5	240
9.5	4	270
9.5	4	300
9.5	4	330

10	4	360
10	4	390
10	4	420
10	4	450
10	4	480
10	4	510
10	4	540
10	4	570
10	4	600
10	4	630
10	4	660
10	4	690
10	4.5	720
10	4.5	750
10	4.5	780
10	4.5	810
10	4.5	840
10	4.5	870
10.5	4.5	900

## Analysis

Looking at this data you can see that every 900 ml of air taken out we get the shaving cream to expand 1.5 ml. This means that if the shaving cream goes 1000 ft. into the air the pressure will decrease 3.5 kPa and the shaving cream will expand 1 ml. give or take .5 ml. One thing that can mess this up is big air pockets in the shaving cream. If there are air pockets in the cream it won't expand the correct way. Another problem is the different temperature when we go up in altitude caused by the sun. If the jar is warmed up by the rays of the sun it will change the outcome of the experiment. This experiment is good to the nearest .5 ml. We also measured the affect on the shaving cream with the drop of 2 degrees Celsius. When the temperature drops 2 degrees the shaving cream will compress .25 ml.

## Conclusion

There are many factors that can make the experiment go wrong. If we don't insulate the jar from the suns rays right it will affect the results. To keep the sun light out

of the jar and affecting our experiment we are going to cover it in tinfoil to reflect the sun's rays. If the jar isn't sealed right we won't have any results. To make sure that problem doesn't happen we will make sure the seal on the jar is good and without breaks. So for our experiment to work we will have to be very precise in our setup. Once the shaving cream goes 1000 ft. into the air we expect it to expand 1 ml give or take .5 ml according to our data.