

June 2008  
Bubble Experiment

Purpose: To investigate the effects of various chemicals on bubble-blowing.

Materials:

plastic cups	salt
bubble soap	Equal
water	pepper
sugar	bubble wand
paprika	

Procedure;

1. Label 6 identical cups: salt, pepper, paprika, sugar, water, Equal.
2. Put 2 teaspoons of one substance into its corresponding plastic cup.
3. Add ½ cup of bubble soap to each cup.  
The cups are about ½ filled.
4. Stir with bubble wand and blow bubbles.
5. Describe the bubbles made with each substance.
6. Find the chemical names and/or formulas for the substances you added.
7. Record your observations in Data Table 1, below

Results:

Data Table 1:			
Substance	Amount	Formula*	Observations
Salt	2 tsp	NaCl	No bubbles formed.
Pepper	2 tsp	Species: P. nigrum	Formed bubble larger than the control which, but popped as soon as it left the wand.
Paprika	2 tsp	C18-H27- N-O3 C40-H56- O3 C40-H56- O4	Formed an average sized bubble (similar to control) that popped as soon as it left the wand.
Sugar	2 tsp	C12-H22- O11	Formed streams of bubbles that didn't pop immediately, as if there was no additive to the bubble soap.
Water	2 tsp	H-2O	Formed streams of bubbles that didn't pop immediately, as if there was no additive to the bubble soap.
Equal	2 tsp	C14-H18- N2-O5	Created larger bubbles than the control that didn't pop immediately and floated straight down.
Control	0		Bubbles formed as one would expect from plain bubble soap.

Use web or print resources to find the chemical formulas for the substances you added!

Discussion:

The experiment was conducted inside with the windows closed. Upon opening the container of bubble soap I blew a few bubbles with the enclosed wand. These were to serve as the control. I then put 2 teaspoons of salt into one labeled plastic cup, pepper into another, paprika into another, and so on. Then I poured ½ cup of bubble soap into each cup. Each cup was about half full. I then stirred each cup, blew bubbles, blew bubbles a second time, and recorded my findings. I rinsed the wand before going on to another cup, until I had performed the experiment on each cup.

I found that adding water or sugar to the bubble soap didn't appear to affect the bubbles in any way, shape, or form. Bubbles formed as they did with the control experiment. However, with salt added to the soap, bubbles would not form at all. The pepper bubbles were large, but popped before they could float in the air. The paprika bubbles were roughly the size of the control bubbles, but popped as soon as they left the wand. The bubbles with Equal added were large and didn't pop immediately, but floated straight down.

The bubble solution with the Equal added yielded the best bubbles. I define and measure "best" in three steps. The first step is to see if it is a viable bubble, meaning if it leaves the wand. The second step is size, bigger bubbles being better. The third step is duration of the bubble until it pops.

I was careful to avoid contaminating the experiment. I used clean, identical cups for the experiment. I rinsed the wand between each application. I also performed the experiment in the same place and completed the tests within minutes to ensure as little change as possible in the environment. I also had a control experiment for comparing bubbles.

I had an assistant to provide a second opinion on my observations. I performed the experiment inside, without drafts.

If I were to repeat this experiment I would be more exact with measurements of the bubbles. I would stand in the same place, facing the same direction when blowing the bubbles. I would have a stopwatch for timing the duration of the bubbles. I would have an assistant mark where a bubble pops or lands and measure the distance with a tape measure. These steps would provide more exact information for deciding which bubbles are best. I would also be interested to know if the chemicals added changed the refraction of the bubbles, though this would require a spectrometer.

Conclusion:

The bubble solution with the Equal added created the best bubbles. They were the biggest and lasted the longest.

Reflection:

I learned that adding different chemicals to bubble solution changed its properties. From this experiment I can extrapolate that all sorts of things can be influenced by chemical components and that seemingly similar chemicals can have disparate effects.

Source: Wikipedia

[www.jtbaker.com/msds/englishhtml/s7394.htm](http://www.jtbaker.com/msds/englishhtml/s7394.htm)

[www.blurtit.com/q586507.html](http://www.blurtit.com/q586507.html)