

Long Live the Bubble

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Background and Purpose:

Bubbles found in nature or made by man have long been a source of excitement and pleasure for children around the world. Bubbles generally create a sense of awe for only a few fleeting moments. The evaporation of its water content, unpredictable weather conditions and surroundings all factor into its short lifespan. My purpose is to create and produce a longer lasting bubble. I will try to do this by adding hydrating agents to my solutions and showcasing these new bubbles in controlled environments. I will try to improve on one of the worlds most popular and affordable toys.

Hypotheses:

If hydrating agents are added to bubble making formulas and these new bubbles are created in controlled or open air environments the moisture in the bubbles will be retained longer and I believe their lifespan will be greatly increased.

Procedure:

I decided to create my own basic bubble formula, after researching various recipes on the internet. I decided to use 1 litre of distilled water (to ensure no

additives) as a base for my formula. I added 175 ml of glycerin, which will help the bubble take moisture from the air, and 250 ml of a premium dish detergent. I refrigerated my new formula for three days as I have read that cool temperatures will accelerate the aging process, and that the older the solution the better the bubble. Wire wands were made so I could test my formula. Once a bubble was produced I timed the endurance of the bubble in controlled and open air environments, I designed and decorated my plastic house enclosure (controlled environment) to appear fun and to maybe encourage indoor bubble play with younger children after my experiment was over. If my new formulas work and the controlled house makes a difference I will have improved on the "bubble toy". I had already decided on the three hydrating agents; coconut oil, olive oil, and silicone, that I would introduce to see if the lifespan of my bubble would increase. I separated the formula into three jars with 250 ml in each jar, and I added small amounts of one of the hydrating agent to each of these leaving my base formula in the fourth jar. I began with 10 ml of each additive until I reached 50 ml when noticeable lifespan changes in the bubbles were occurring. After each new formula was complete and using the same wire wands, I tested the new solutions using the same controlled and open air environments. A stopwatch was used so I could compare the bubbles lifespan, record any differences, chart, and graph results.

Observations and Results:

With little effort I was able to create bubbles from my basic and new formulas. They were of different shapes, sizes and would pop with a small burst of fluid. After the coconut and olive oil were added and the bubble was created there were noticeable differences. Almost a tear like drop would appear at the bottom of the bubble. As I watched over seconds or minutes, depending on the hydrating agent used, this drop would appear to be sucked back into the bubble, and the bubbles life span was greatly increased. However, the silicone I used did not create the same teardrop bubble and seemed to have no effect on the formula as these bubbles did not last as long as my original formula. A controlled environment created longer bubbles all around. The moisture was retained longer in the bubbles, as there was nothing to interfere with the bubble such as floating into a sharp or dry object. The bubbles (all formulas) lifespan was greatly increased. Some bubbles blown into the enclosed environment were amazing. My coconut formula created bubbles that lived up to 14+ hours!

Conclusion:

I conclude that after adding natural hydrating agents to my solution I could increase the life expectancy of the man made bubble. Open air and controlled environments also play a great role in the lifespan of a bubble. Those in a controlled environment would last more than 10 times that of an open aired environment. I came across an abundance of bubbles with varied life spans. The natural agents (coconut oil and olive oil) produced the more long-lived bubbles. You could actually watch the bubble re-hydrate itself. Silicone was the only man made agent introduced, and produced a limited life span. There were no noticeable observations, and it made little difference. I would like to take my studies further and explore other possible formulas and indoor toy possibilities for the bubble industry. It is interesting to note the bubble, created originally in nature, re-created by man, can be enhanced by natures products.

Acknowledgements:

I would like to thank the following for there assistance in my project; Mr. And Mrs. Emiljanowicz and the Shoppers Drug Mart Pharmacist.

Bibliography:

The following website resources were used during the course of my experiment:

www. Lathercup.com

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http:// www. coconutoil.com/unsaturated.html

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