

Bath Bombs

Materials:

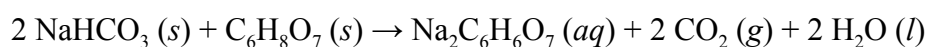
1. 1 cup of baking soda
2. ½ cup of citric acid
3. ½ cup of Epsom salts
4. ½ cup of cornstarch
5. 2 tbsp of water
6. 2 tbsp of essential oil (for scent)
7. 6 tsp of olive oil or caster oil
8. 4-6 drops of food coloring
9. Bowl
10. Whisk
11. Jar
12. Spoon
13. 15 [silicon molds](#)



Procedure:

1. Mix dry ingredients in the bowl with a whisk (i.e. baking soda, citric acid, cornstarch, and Epsom salts)
2. Mix wet ingredients in a jar with a spoon (i.e. water, oils, and food coloring)
3. One teaspoon at a time, add wet mixture to dry mix, whisking quickly and thoroughly until it's like damp sand. Slow down if it looks fizzy. If the bath bombs turned out too crumbly, then the bath bomb mixture might have been too dry.
4. Quickly, press the filling into each half of the bath bomb mold and press the half together. To get different layers, simply add different color fillings. Do not overflow or else it will be hard to remove.
5. Let it dry overnight or leave them in the fridge for 30 mins.
6. Gently tap the bath bomb out of the mold.

The Science behind it:



Baking soda + citric acid → sodium citrate + carbon dioxide + water

Some of you might remember that baking soda (sodium bicarbonate) isn't good for your skin because it's a base, with a high pH. High pH (alkaline or basic) products disturb the skin's acid mantle, which protects your living tissue from the environment, particularly bacteria.

However, when adding the citric acid and water, an *acid-base reaction* occurs, which ends in neutralization and a safe pH.

This reaction also produces tiny bubbles of *carbon dioxide gas*, which is what causes the fizzing. The fizzing helps the bath bomb disperse faster, and combined with heat from the hot water, spreads the scent faster and makes the whole bathroom smell amazing.

Bath bombs can slowly absorb water from the air, using up the acid and sodium carbonate and releasing carbon dioxide prematurely – this is why bath bombs get less fizzy as they get old! Make sure you keep your bath bombs in a dry place until you're ready to use them.

Questions:

1. What happens when you add a drop of the wet mixture?
2. What happens when the bath bombs are placed in the water? Is a bath bomb made from one recipe fizzier than a bath bomb made from the other recipe? Does one take longer to dissolve than the other one? Which do you think worked best? How do you think the amount of cornstarch in the recipes is related to your results?
3. Do the bath bombs take a different amount of time to dissolve depending on water temperature?
4. How do bath bombs made using a citric acid substitute compare with those made using citric acid?
5. If bath bombs are made that don't have cornstarch, how do they compare with those made with cornstarch? Are they very different?

More info:

- <http://diyprojectsforteens.com/diy-bath-bombs-recipe/>
- <https://www.popsi.com/how-to-make-your-own-bath-bombs#page-2>
- <https://labmuffin.com/how-do-bath-bombs-work/>
- https://www.sciencebuddies.org/science-fair-projects/project-ideas/Chem_p105/chemistry/bath-bomb-science#procedure
- <https://www.youtube.com/watch?v=TEqcpMx-6C0>
- <https://www.scientificamerican.com/article/sudsy-science-creating-homemade-bath-bombs/>