

To Mom:

We wanted to show you how much we care, and how much we have learned this year. Please let us treat you to a bath bomb and the science behind it. Thank you for everything you do for your children and helping them achieve everything they have! With love and respect, we honor you today.

This bath bomb is made with citric acid from citrus fruit, and baking soda as well as Epsom salt. The baking soda and citrus acid will not react as solids, but when dissolved in water react to form carbon dioxide making the fizzing action. Epsom salt is a naturally occurring pure mineral compound of magnesium and sulfate which combines with water to make crystals. Magnesium sulfate has many health benefits. As a medication it is used to treat and prevent low blood magnesium and seizures in women with eclampsia. It is also used in the treatment of severe asthma exacerbations, constipation, and barium poisoning.

The bath bomb we are making combines the reaction of carbonates and citric acid to make your bath fizz, and natural Epsom salts to ensure your bath is especially soothing. Enjoy your Chemistry bath bomb <3

**Personal note to mom:**

**PROCEEDURE:**

**STEP 1:** Complete and have verified the attached Challenge Assignment to show your mom!

**STEP 2: I**n partners, put 50mL of Baking soda with 25mL of Citric Acid, 25mL of Epson Salt (Magnesium Sulphate Heptahydrate) and 25mL of Corn starch into a 500mL beaker. Mix well to remove any lumps.

**STEP 3**: In a 250mL beaker mix 3ml of water with 5ml of oil and 4 drops of essential oil. Add food coloring if desired.

**STEP 4**: Add wet mixture slowly to dry mixture, make sure to stir quickly to avoid any reaction.

**STEP 5**: Press the mixture into balls or use a cookie cutter or mold to make shape. Let dry.

**Mom, I want to show you may amazing science skills and explain the science behind the bath bomb**

**1.**

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| --- | --- | --- |
| **Household Name** | **Chemical Formula** | **Molecular Mass** |
| **Baking Soda** |  |  |
| **Citric Acid (lemon salt)** |  |  |

**2. The balanced reaction between Citric Acid and Baking Soda.**

**3. In this bath bomb, 45 grams of baking soda are mixed with 25 grams of citric acid. What is the limiting reagent? How many moles of CO2 are produced?**

**4. At STP the volume of CO2 released is:**