



AGES 8+

**SCIENCE
ACADEMY**

BATH BOMB LAB GUIDE BOOK



⚠ WARNING— This set contains chemicals that may be harmful if misused. Read cautions on individual containers carefully. Not to be used by children except under adult supervision.

⚠ WARNING— CHOKING HAZARD Children under 8 years old can choke or suffocate on uninflated or broken balloons. Adult supervision required. Keep uninflated balloons from children. Discard broken balloons at once.



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INGREDIENTS: SODIUM BICARBONATE NET WT. 150 g / 5.29 OZ., CITRIC ACID NET WT. 60 g / 2.12 OZ., CORNSTARCH NET WT. 40 g / 1.41 OZ., GLYCERIN SOLUTION 20 mL / 0.68 FL.OZ. Glycerin, Water, Butylene Glycol, Phenoxyethanol, Chlorphenesin, RED COLORING 5 mL / 0.17 FLOZ. Water; Butylene Glycol, Phenoxyethanol, Chlorphenesin, Red 40 / CI 16035, BLUE COLORING 5 mL / 0.17 FLOZ. Water; Butylene Glycol, Phenoxyethanol, Chlorphenesin, Blue 1 / CI 42090, FRAGRANCE 5 mL / 0.17 FLOZ. Water; Polysorbate 20, Fragrance / Parfum (Benzyl Alcohol, Benzyl Benzoate, Benzyl Salicylate, Hexyl Cinnamaldehyde, Hydroxycitronellal)

SAFETY INFORMATION

- Bath Bomb Lab is a safe and non-toxic activity kit when used as directed. However, like most activities, this product can be dangerous if used in the wrong way.
- Before starting the activities, carefully read the safety information in this manual. Please keep the safety information for reference.
- Wear the safety equipment provided.
- Keep the caps on bottles when not in use.
- The liquid coloring may stain. Create a clean, uncluttered working area. Put down a tray or plate to protect your work surface. Work near a sink.
- Put any leftover materials in the garbage, not down the sink.
- Wash your hands after completing the activities.
- Store the kit out reach of small children.
- Avoid contacting the materials with your eyes or mouth.

WARNINGS

- This kit is for children 8 years of age and older. The contents include small parts which could present a choking hazard.
- DO NOT store fizzing bath bombs in airtight containers. Pressure buildup may lead to injury.
- DO NOT wash any of the pieces in the dishwasher as they could distort. Wash by hand in warm, soapy water.

PATCH TESTING

The ingredients in this kit are very low allergen, but it is a good idea to perform an initial patch test. Put a small bath bomb into a beaker of cold water. Once the fizzing stops, put a patch of the mixture on the inside of your wrist. Wait five minutes and then wash it off. If there is no itching, staining or irritation on your skin, you can use the bath bomb. Always be careful to keep the bath bombs away from your eyes or mouth.



WHAT'S IN THE KIT?



- 1 150 g Sodium Bicarbonate (Hydrogen Sodium Carbonate)
- 2 60 g Citric Acid
- 3 40 g Cornstarch
- 4 20 ml Glycerine (Glycerol Solution)
- 5 2 Large Measuring Beakers
- 6 Round Bath Bomb Mold
- 7 2 Shaped Bath Bomb Mold Trays

- 8 Lab Gloves
- 9 Goggles
- 10 Spoon
- 11 2 Bottles of Coloring
- 12 Bottle of Vanilla Fragrance
- 13 3 Stirring Sticks
- 14 Bamboo Stick
- 15 2 Balloons (colors vary)
- 16 Balloon Tie
- 17 Pipette

WHAT IS THE BATH BOMB LAB ALL ABOUT?

Since their creation in 1989, bath bombs have become an essential element in bathtime relaxation. Even though bath bombs are relatively new, the concept of using unique scents in baths goes as far back as the 14th century. In his renowned masterpiece *The Decameron*, Giovanni Boccaccio wrote of people being washed with musk and cloves, making this one of the earliest references to what would eventually become aromatherapy.

THE CHEMISTRY

Even though bath bombs use sweet and floral scents as a form of relaxation, the main component that truly makes them unique is the fizz. This fizziness comes from a chemical called Sodium Bicarbonate which is essentially two Carbonate molecules connected to a single molecule of Sodium. The other key active chemical is Citric Acid which is found most commonly in citrus fruits such as oranges, lemons and limes. When this harmless acid mixes with the Bicarbonate in water, bubbles of Carbon Dioxide are created (which also makes your favorite soda and other fizzy drinks fizzy.) Leftover Sodium then bonds with the citric portion of the acid to create a specific form of salt called Sodium Citrate. Starch is also an added component to bath bombs, which binds with glycerine to give you smoother skin.

Throughout this lab, you will see first-hand the unique effects water has on certain elements to help you better understand chemistry, while creating some beautiful-smelling, fizzy bath bombs.

MAKING A FUN SHAPED BATH BOMB!



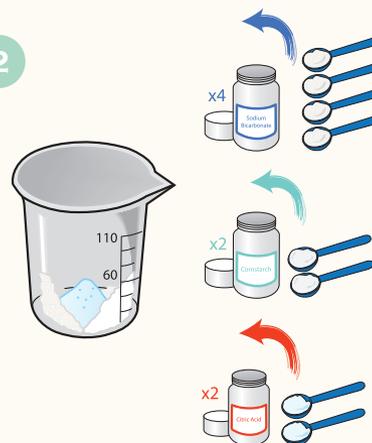
Before starting this activity, put on your glasses and gloves!



1

Make sure your work area is clear and protected by a tray or plate that can catch spills. It is best to work near a sink.

2



Using a clean beaker and clean spoon, add: 4 Spoons of Sodium Bicarbonate. Wipe the spoon clean before adding each of the following ingredients: 2 Spoons of Cornstarch + 2 Spoons of Citric Acid.

3



Add 30 drops of Glycerine to the dry mixture.

4



Add ONLY 2 drops of vanilla to the mixture, followed by 3 drops of the color of your choice. You can even mix the colors to create your own blend!

Continued on page 6

— SHAPED BATH BOMB CONTINUED —

5



You might see a bit of fizzing after adding all of the ingredients – this is perfectly fine! Using a stirring stick, mix the ingredients to combine. The mixture will be crumbly.

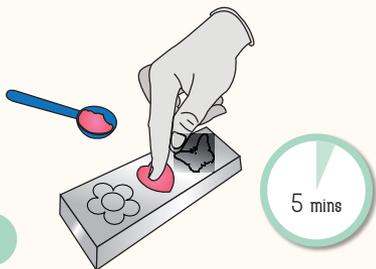
6



Test Your Mix – Squeeze a pinch of mixture to see if it stays in a soft lump. If it is very dry and too crumbly, add 1 more drop of Glycerine and a half spoonful of Cornstarch and stir again.

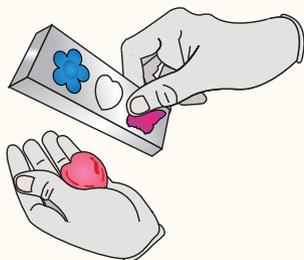
HINT: If your bath bombs still crumble, follow the tips on troubleshooting from page 10.

7



Spoon some of the mixture into a shape of your choice to start, for example the heart shape. Press each spoonful down gently but firmly with your finger. Keep going until the mold is full. Let the mold sit for 5 minutes.

8



After the mold sits to harden, carefully loosen the bath bomb around the edges by gently bending the mold. Carefully tip it into your hand or onto a paper towel.

This part takes some practice. If it doesn't work the first time, break up the mixture and re-pack the mold.

9



Allow your bath bomb to harden for 10 minutes. After your bath bomb is able to harden, it is ready to use. It can also be packaged to give as a gift!

WARNING: Do not store bath bombs in airtight containers. Pressure buildup may lead to injury.

MAKING A SUPER BATH BOMB!



Before starting this activity, put on your glasses and gloves!

1

Follow Steps 1-6 from the Fun Shaped Bath Bomb Lab. You may need to make a few batches to fill up the entire round mold.

2



To pack the mold, use a dry spoon to scoop your mixture into the funnel part of the round bath bomb mold.

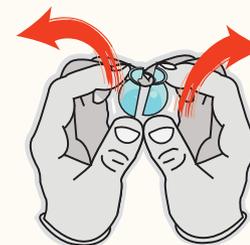
HINT: It is best to do this over a plate to catch spills!

3



After adding a few spoonfuls, pack the mix tightly with your packing stick. **HINT: Do not pack the mixture too hard! The bath bombs may split if they are packed too hard.**

4



Once the mold is full, allow it to sit for a few minutes. Then, carefully pull the mold apart. Gently ease the bomb out of the mold with your fingers. **HINT: You may want to let your SUPER bath bomb sit in the sun for an hour or so, so that it has time to harden.**

WARNING: Do not store bath bombs in airtight containers. Pressure buildup may lead to injury.

If your SUPER Bath Bomb splits in half, try some of these solutions:

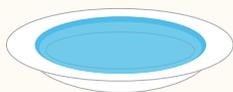
- Try again, but don't pack the material down so hard.
- Put a little more Glycerine and Cornstarch into the mix. See page 10.

MAGIC BALLOON EXPERIMENT



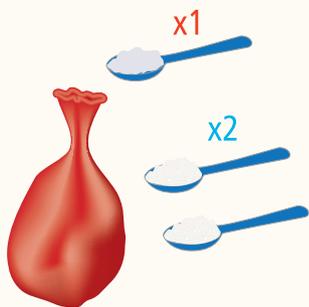
Before starting this activity, put on your glasses and gloves!

1



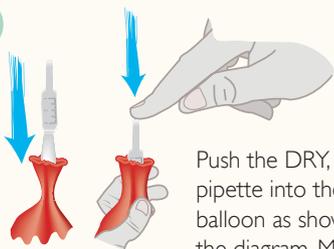
Fill a shallow dish with water.

2



Add 1 spoonful of Citric Acid and 2 spoonfuls of Sodium Bicarbonate directly into one of the balloons. This could be tricky, and might require two people.

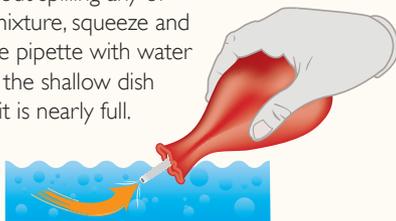
3



Push the DRY, empty pipette into the balloon as shown in the diagram. Make sure to leave the tip sticking out.

4

This part is really tricky! Without spilling any of the mixture, squeeze and fill the pipette with water from the shallow dish until it is nearly full.

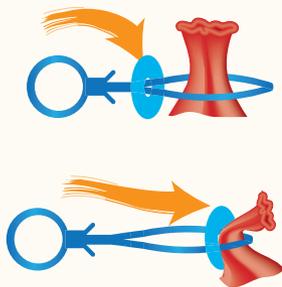


5



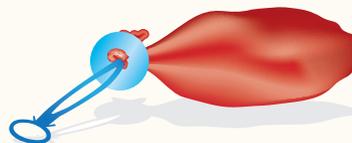
Carefully dry the spout with a paper towel and then push it down into the balloon. **DON'T SQUEEZE YET!!**

6



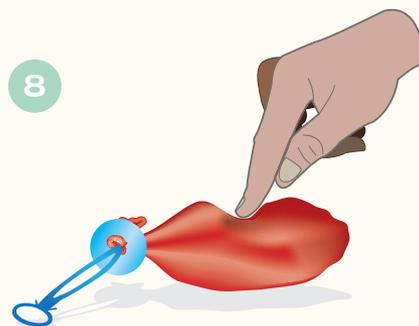
Seal the balloon using the balloon tie as shown in the diagrams above.

7



Gently set the filled balloon down on your surface without inflating.

8



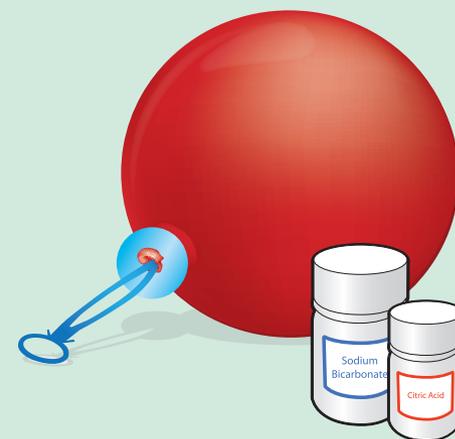
Prepare to amaze your family and friends, as you can INFLATE the balloon without even blowing!! Carefully press on the pipette inside of the balloon so the water can mix with the chemical ingredients! The reaction will inflate the balloon!

You will have to snip your balloon to retrieve your pipette, but you will be able to repeat the experiment again with other balloons.



THE SCIENCE: MAGIC BALLOON — EXPLAINED —

The chemical reaction that happens within the balloon is exactly the same as the bath bombs. When you place the pipette filled with water in the balloon and press on it, the water is released into the mixture of Citric Acid and Sodium Bicarbonate. The water then causes the chemical reaction to create bubbles of Carbon Dioxide. The only difference between this and the bath bomb is now the Carbon Dioxide gas is trapped in the balloon, causing the balloon to expand right before your very eyes.





— MINI EXPERIMENT: WATER AS A CATALYST —

A catalyst is an element added to a mixture that speeds up the process of a chemical reaction, in the instance of bath bombs, water is that catalyst. But another element that can affect the reaction is the temperature of the water. If you'd like to try a mini experiment, fill one beaker with cold water and one beaker with hot water and drop a bath bomb in each at the same time.

You'll notice that the bath bomb in the hot water dissolves faster. That's because the molecules in hot water actually move more quickly than in cold water. The high activity of the hot waters' molecules allows the Carbonate and Citric Acid to react more quickly and make the bath bomb fizz more rapidly.

— TROUBLESHOOTING TIPS —

Is your bath bomb crumbling? Try these tips!

If the mixture is too dry and crumbly, add ONE drop more of Glycerine and HALF a spoonful of Cornstarch to your mix and try again.

Wait for 5 minutes before removing your shaped bath bombs from the tray mold. The bath bombs need enough time to harden!

Loosen the bath bomb from the edges, do not press up in the middle of the tray.

If your bath bombs keep breaking, try rubbing the mold with a TINY bit of cooking oil first.



If the mixture is too soft and fizzy or bubbly, it is too wet. This pushes the bombs apart. It is too hard to rescue this mixture. You will need to start over.

RECORD YOUR FORMULAS AND FINDINGS! —

Keep track of your bath bomb creations in the charts below.

Date Created	
Bath Bomb Shape	
Color Formula	
Date Used	
NOTES:	

Date Created	
Bath Bomb Shape	
Color Formula	
Date Used	
NOTES:	

Date Created	
Bath Bomb Shape	
Color Formula	
Date Used	
NOTES:	



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WARNING:

Only for use by children 8 years of age or older. This kit must only be used under the strict supervision of adults. Not suitable for children under 36 months due to small parts that may present a choking hazard. Do not store bath bombs in airtight containers. Pressure buildup may lead to injury.

Caution! This kit contains some chemicals which present a hazard to health. Do not allow chemicals to come into contact with any part of the body, particularly the mouth and eyes. Read the instructions before use, follow them and keep them for reference. Keep small children and animals away from the experiment. Eye protection for supervising adults is not included. The kit contains fragrance that may cause allergies, before using the products please follow the Patch Testing recommended in the instructions. Do not allow finished bath bombs to come into contact with the eyes or mouth. The coloring may stain. Do not use or apply to textiles or porous surfaces.



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