

CURIOSITY AT HOME

BUBBLE BLAST



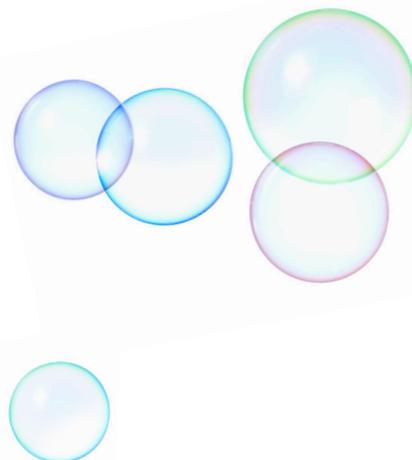
If you blow air through a straw into a cup of water, what do you get?

Bubbles! But do they last?

Chemical engineers use their understanding of chemical properties to design and improve products. Can you use the chemical properties of household products to make a better bubble?

MATERIALS

- 1 cup measuring cup
- 1 tbsp. measuring spoon
- water
- liquid dishwashing soap
- light corn syrup
- 1 stopwatch
- 3 plastic cups
- glycerin (available at most drugstores, or substitute a different slippery substance like hand soap, coconut oil or vegetable oil)
- 3 pipe cleaners
- tape and marker for labeling
- science notebook
- pencil, or something to write with



PROCEDURE

- Label each cup with 'soap only', 'glycerin' or 'corn syrup.'
- Add 1 cup water and 2 tbsp. dishwashing soap to each cup and mix with a spoon.
- Stir 2 tbsp. corn syrup into the cup labeled 'corn syrup.'
- Stir 2 tbsp. glycerin into the cup labeled 'glycerin.'
- You now have 3 bubble-blowing solutions.
- Twist each pipe cleaner into a bubble wand with a handle and an open circle at the top.

Let's Blow Bubbles.

- Go outside and practice blowing bubbles and catching them on your wand.
- When you are ready, catch at least 3 bubbles of each solution and time how long it takes them to pop.
- Which solution makes the longest lasting bubble?
- Record your observations in your science notebook.

EXPLORE MORE

- Cover the bubble solutions and let them sit overnight. Blow bubbles with each solution the next day. Do the bubbles pop any faster or slower than before?
- Make bubble wands of different shapes and sizes.
- Make three-dimensional bubble wands using straws and/or pipe cleaners.

WHAT'S HAPPENING?

A molecule is a group of atoms bonded together. A water molecule has 2 hydrogen atoms and 1 oxygen atom, which we write as H₂O. Water molecules have surface tension, which means they stick together. Adding dishwashing soap reduces the surface tension, allowing bubbles to form. The molecules in corn syrup or glycerin bond with water, slowing down its evaporation and allowing bubbles to last longer before they burst.



Show us how you're being curious! Share your results with us.



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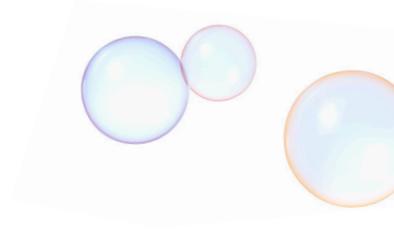
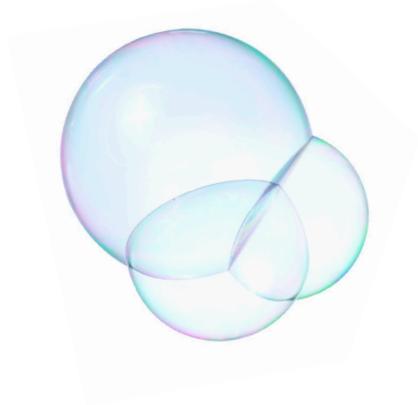
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K-2 GRADE EXPLORATION

Here are some questions you can explore together.

- What happens when you blow slowly to make your bubble?
- What happens when you blow quickly to make your bubble?
- What shape are the bubbles?
- Does a square bubble wand make a square bubble?
- Can you make bubbles that are the same size from different size bubble wands?



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3–5 GRADE EXPLORATION

Explore the following questions and write down your observations on this sheet or in a science notebook.

- What happens when you blow slowly to make your bubble?
- What happens when you blow quickly to make your bubble?
- Can you make bubbles that are the same size from different size bubble wands?
- Using a circular bubble wand, what shape are the bubbles?
- What shape are the bubbles you make with wands formed into other shapes such as a square?

Bubbles form when a gas is trapped inside a liquid or a solid. Think about where else you have seen bubbles. Can you find any around the place you live? *(There are some hints at the bottom of this page)*

Bubbles found trapped in solids:



Bubbles found trapped in liquids:



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6–8 GRADE EXPLORATION

Discovering Surface Tension

Water has a high surface tension, a force created by the attraction of water molecules to each other causing them to come back together. When you blow bubbles into a glass of water those bubbles do not last long because the water molecules attracting each other quickly come back together and burst the bubble. By adding soap, the surface tension is lowered enough to allow the bubble wall to form and remain for a longer amount of time.

When you go to pop a bubble, you break the surface tension. Is it possible to catch a bubble without it breaking it?

Try catching a bubble with some of the following materials:

- your hand
- bubble wand
- another bubble
- a glove
- various types of fabrics
- a plate
- other found objects and materials



Write the name of an object in the first column of the table. Observe what happens when you try to catch a bubble with that object without bursting it. Place an “X” in the appropriate column along with your observations.

Looking at your results, is there anything in common with the materials that kept the bubbles from breaking?

Can you put an object such as a straw into a bubble without bursting it? Hint: How can you match the surface tension of the straw to the surface tension of the bubble?

Explore surface tension a bit more. Try to float a paper clip on the surface of water. Record your observations.

Object	Bubble Intact	Bubble Bursts
Dry Hand		
Bubble Wand		
Another Bubble		

