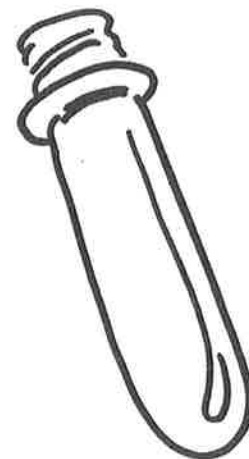


The World's Greatest Test Tube

Written as a Discovery Activity for Children

When you opened your workshop kit, you found four of the world's greatest test tubes! Why are they so neat? Here's your first clue: It may look like a test tube, but it is actually used for something else.



Let's do what scientists do by looking closely at one of the test tubes and making some OBSERVATIONS.

1. What is the test tube made of?
2. What is special about this test tube?
3. Why does the test tube have those grooves on the top?

Most test tubes are made out of glass. This test tube looks like it is made out of glass, but it's really plastic. It does not break if you drop it. There is something else special about this test tube. What are those grooves on the top? It kind of looks like the top of a bottle, but what kind of bottle? Test as many bottle tops as you can find. It might lead you to a most exciting discovery.

The World's Greatest Test Tube Is Really A...

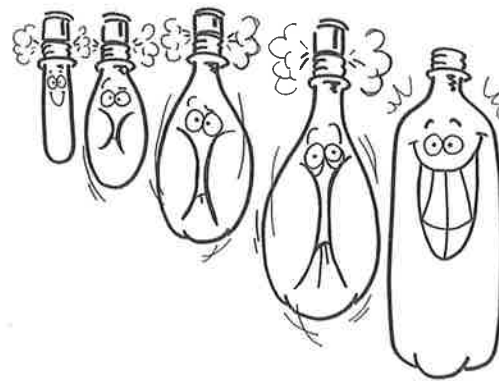
Ok, ok... The suspense is driving me nuts! The World's Greatest Test Tube is really a... Baby Soda Bottle! That's right, your test tube is actually a plastic 2-liter soda bottle before it is blown up into a big bottle. How do they turn the test tube into a 2-liter bottle? The plastic test tube is placed into a mold and heated. Then very hot air is blown into the test tube. This makes the plastic stretch like a balloon and fills the inside of the mold. The test tube grows about 40 times its original size. When the plastic cools, the mold is opened and the bottle falls out.

So, now you know why we call it the world's greatest test tube. Your test tube is actually a Baby Soda Bottle!

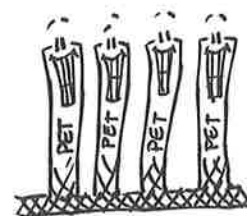


Surprise! It's a 2-liter bottle ready to be filled!

These bottles are made out of a special polymer material called PET. No, not an animal! PET is short for polyethylene. Lots of products are sold in PET containers and a huge amount of this plastic is thrown away each day. It was very important that scientists discover new ways to recycle and reuse PET, so they developed a method to handle the problem.



PET is shredded and made first into flakes, then into pellets, and finally spun into a dense, lightweight, comfortable fabric. Look for the trade name Ecospun™ on a coat label or ask a carpet installer about it. You may be walking on or wearing recycled soda bottles! That's a good thing because, as every Earth-person should know, recycling plays a very important part in keeping this young planet alive and spinning.



carpet fibers

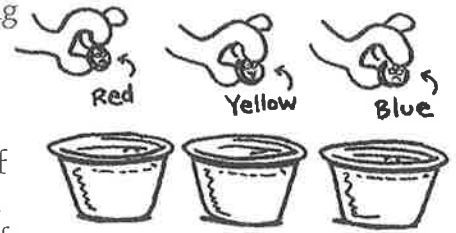
It's more than a test tube... it's a discovery tube!

- **Discovery Tube** - Use the tube to collect all sorts of goodies on your next nature walk. Gather up soil samples, leaves, rock pieces, plant parts, water, seeds, good ol' bugs, and other tiny critters!
- **Liquid Laboratory** - The tube and cap combination makes a sealed container to collect water samples from puddles, ponds, swamps, and streams.
- **Roots with a View** - Grow simple green plants in the tube and watch the sprouting process.
- **Time Capsule** - Use the tube to hold a message, an object, or some other type of information that will be "discovered" in the future (immediate or distant).
- **Layers-o'-Fun** - A simple way to demonstrate density to the students is to fill the test tube with different liquids to see which ones will mix or layer on top of each other. A stable rack makes this much easier to do. How many separate liquids can be layered? Try adding ketchup to cooking oil and waffle syrup. You'll make a mess, but it's all for science!
- **Magnifier** - Fill the tube to the very top with water and seal it with a cap. Hold the filled tube near some newspaper print and see that the letters are magnified.



True Colors Mixing Tablets

As one teacher put it, "Fizzy Tablets are kind of like food coloring but only a bazillion times better!" They are small, pill-shaped tablets that come in three colors - red, yellow, and blue. When the coloring tablet mixes with water, the chemicals inside the tablet react to make tons of carbon dioxide bubbles. Mix two of the colors together to make a new color (yellow + blue = green). Great for color mixing activities. The color-mixing tablets are safe when used to color a wide variety of liquids. Available in specialty toy stores and hobby shops.



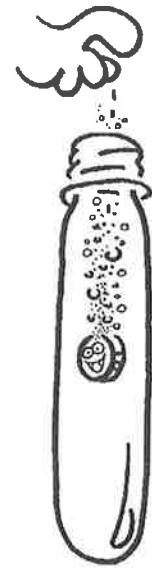
Bubbling Color Mixing

Written as a Discovery Activity for Children

It's time to use a little chemistry to make the water in your test tubes bubble, fizzle, and change color.

PART I

Fill each test tube almost completely full with water. Open the package of colored tablets. Notice that there are three colors - blue, yellow, and red (it looks purple, but it's really red). Place a different colored tablet into each test tube and screw on a cap. What is happening to the tablet? It's bubbling! It's moving! It's fizzing!

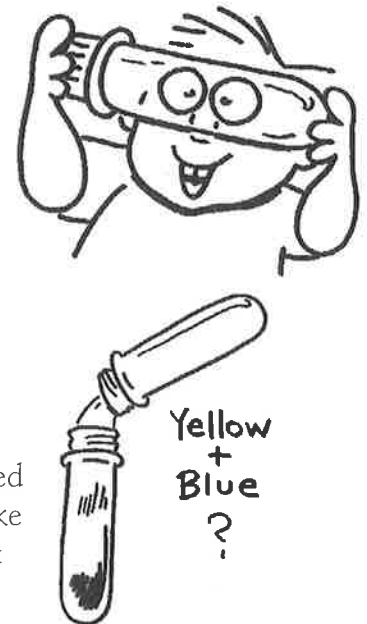


The water changes color because the colored tablets are made out of a special kind of food coloring that is dry like a powder. When the tablets mix with the water, they dissolved. That means they disappeared in the water. There is also a special chemical in each tablet that makes it bubble when it mixes with water. That's chemistry!

PART II

Hold each test tube up to your eyes... resting the tube right on your nose! Look up at the light and notice the color. It's time for a little color mixing. Put the yellow and blue test tubes together and hold them up to your eyes. Do the same with the red & blue tubes, and the yellow & red tubes.

You discovered that the light changes color when it goes through the colored water. Did the water really change color? No, the light changed color as it traveled through the colored water. You made new colors like green, purple, and orange by making the light go through two colors at the same time. Wow! You mixed colors of light.



The Bubbling Blue Blob

Written as a Discovery Activity for Children

In this experiment, you will use one of your test tubes, some cooking oil, water, and a coloring tablet to make a Blue Blob. What... you've never seen a Blue Blob? It slithers and twists around like a snake. Just when you least expect it, the Blue Blob breaks apart into lots of tiny Blue Blobs, and then they join back together.



Find the test tube in your kit that is filled with vegetable oil. This is just plain old vegetable oil from the grocery store. Drop the blue tablet into the test tube with the oil. Does the oil change color? Does the tablet disappear like it did in the water? Why? Add one capful of water to the test tube. Do not screw on the cap just yet... just hold the test tube and watch what happens to the blue tablet as you turn the test tube over. The Blue Blob is beginning to form! Which liquid changed color? The oil or the water?

When the bubbling action stops, fill the rest of the tube up with water so that there is no room for air. Screw on the cap tightly so that the oil does not spill.

How Does That Work?

When you were making your Blue Blob, you discovered some really important things about oil and water. First of all, you found out that oil and water do not mix. The molecules of water do not like to mix with the molecules of oil. Even if you really shake the test tube, the oil breaks up into small little drops but doesn't mix with the water. The blue tablet is a chemical that mixes only with water. That's why it does not color the oil.

When you poured the water into the test tube with the oil, the water sank to the bottom. That's because water is heavier than oil. Scientists say that the water is more dense than the oil. If oil from a ship spills in the ocean, the oil floats on top of the water.

