Science TECHNOLOGY STEM ENGINEERING MATH

HOW TO:

Make a Lava Lamp Jar

Items Needed:
1 water bottles
Liquid food coloring
Vegetable Oil or Baby Oil
Alka Seltzer

Approximate time to complete: 10 minutes
Skill Level: Easy
Budget for materials: $2.00

Project Instructions:
Start by filling up some water bottles or jars about 1/3 of the way with water (just a little less than half), and then the rest of the way with oil. No need to be exact. Drop a few drops of food coloring into the bottles. Since the coloring has to make its way through the oil, it stays in little globular droplets. They sink down and sit on top of the layer of water for a few moments until they suddenly pop through and burst into ribbons of color. Different types of oil will react differently at this point. The clear oils are fun to play with in the bottles, but you get a much better bubbly affect from the antacids with vegetable oil.The colors will sink and pop very quickly in a thin oil like baby oil, but in vegetable oil, they take longer. With the layers separated, now is the time to pop in one of those tablets. Try different amounts and see how the bubbles change.

What's Happening:
As the antacid releases gas, the bubbles of colored water float to the top through the oil and then back down again. When it's done fizzing, you can do it over and over again until it gets too murky. This happens because Alka Seltzer is creating a chemical reaction. Alka Seltzer is composed of sodium bicarbonate and citric acid. These are inert in a dry state, but when they are combined with water, the acid and sodium bicarbonate interact and a large amount of carbon dioxide is created as a byproduct. These bubbles of CO_2 are much less dense than the water or oil. They attach in bubbles in the water to change the density of a droplet. This droplet is even less dense than the oil, so it rises up through the rest of the contents of the bottle. Once the bubble reaches the top, the CO_2 dissipates and the water once again becomes more dense than the oil. The result is droplets of water that fall back down to the base. It is interesting to note that acids catalyse the reaction of AlkaSeltzer and water, so it creates CO_2 even more quickly in stomach acid. Most oils are also acidic in ph, so this helps to speed the reaction along.

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