Shaving Cream Marbling Art

It's swirly, it's whirly, it's... soapy? Here's the science behind making beautiful shaving cream artwork!

Materials

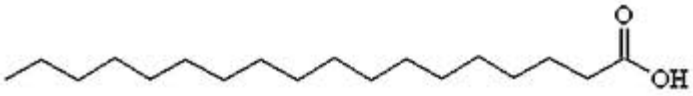
- Shaving cream
- Cardstock
- Food coloring
- Toothpick or coffee stirrer
- Plastic ruler (something with a straight edge)
- Plate or tray
- Paper towels

Experiment

1. Spray shaving cream on a plate or tray. Using your ruler or other tool, spread it out flat (like frosting a cake).
2. Drop a few drops of food coloring anywhere you would like on your shaving cream.
3. Holding your toothpick or coffee stirrer straight up and down, swirl the food coloring around your shaving cream in any pattern you want.
4. When you are finished swirling the food coloring, take your piece of cardstock and lay it on top of your food coloring and shaving cream mixture.
5. Press down on your cardstock lightly and let it sit in the shaving cream mixture for a few seconds.
6. Carefully take your cardstock out of the shaving cream.
7. Using your plastic ruler or other straight edged tool, scrape the shaving cream off of your cardstock and discard. What does your cardstock look like now?

How Does It Work?

Shaving cream is a mixture composed of a solid soap, water, and a gas. Together these components form a lather which can be used as an agent to aid in shaving without damaging the skin. The soap molecules in the shaving cream have a hydrophilic ("water loving") head and a hydrophobic ("water hating") tail.



Food coloring is just dye dissolved in water, and is therefore hydrophilic. When added to the shaving cream, the food coloring can only interact with the hydrophilic heads of the soap molecules and thus has limited mobility.

In paper, on the other hand, the food coloring can move easily. Paper is composed of cellulose, a molecule with polar hydroxyl (oxygen and hydrogen) groups that make it hydrophilic. Because both food coloring and cellulose are hydrophilic, the food coloring can spread easily across the paper to create a more colorful pattern than it did in the shaving cream. This creates the marbling effect on the paper that is clearly distinct from the pattern seen on the shaving cream surface.