

Shaving Cream Marbling

Have you ever opened an old book and been amazed by the marbled paper on the inside? Marbled paper began in 10th century Japan through a technique called *suminagashi* which translates to ink floating on water. This beautiful art form depends on the interaction between the chemicals in ink and the material it rests on.

Marbling is the result of the relationship between hydrophilic (water loving) and hydrophobic (water hating) chemicals. Hydrophilic materials attract water and will easily be dissolved in water, but hydrophobic materials repel water and will not mix with the water.

To make this even more interesting, we aren't using water in this artistic experiment. Instead, we are using shaving cream! Shaving cream is just water and soap mixed together. Soap is actually both hydrophobic and hydrophilic which puts in a category called amphipathic.

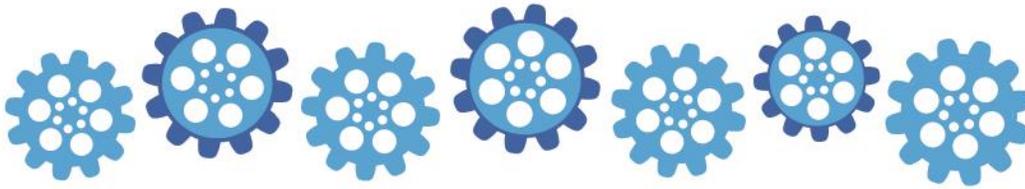
In order to simplify this, we can think of the soap as a chain, with one side hydrophilic and one side that is hydrophobic. Since the food coloring is mostly made from water, it is hydrophilic. When added to the shaving cream, it can only interact with the hydrophilic side of the soap, and therefore its spread is limited. It doesn't really soak into the shaving cream the same way that it will attach to your paper, because the hydrophobic part will repel it. Paper is made of cellulose, which is hydrophilic material. The cellulose will welcome all of the food coloring. This is why the design might look different on your paper than it does on the shaving cream. Let's try it out!

Materials:

- Paper
- 1 can shaving cream
- 2 or more colors of food coloring
- 2 popsicle sticks
- Baking sheet
- Spoon

Directions:

- Spray Shaving Cream onto baking sheet and spread around until you have an even layer with a flat top
- Add drops of two or more colors of food coloring on top of the shaving cream, making sure dots don't touch



- Using a popsicle stick, make a large “S” pattern vertically throughout the shaving cream layer
- Make several larger “S” patterns horizontally. Try not to overmix the colors so they stay distinct
- Place paper gently on top of shaving cream and press down gently. Note: Paper should not sink into the shaving cream, but stay on the surface
- Lift paper from shaving cream
- Scrape off excess shaving cream with leftover popsicle stick
- Let dry one hour

More Fun:

- Check out this video about a professional marbling workshop here <https://www.youtube.com/watch?v=qwkkIfldRjg>