

# Paper Marbling

## Summary

In this activity, we will be exploring hydrophobia with a cool and colorful art project. Hydrophobia means “fear of water” and comes from the Greek words “hydro” (water) and “phobos” (fear). With the help of some shaving cream and food coloring, can you make a colorful marble design?

## Materials

- Shaving cream
- Food coloring
  - *The color is up to you!*
- Paper towels for easier cleanup
  - *An additional tray can be used instead of paper towels*
- Popsicle stick for marbling
  - *Butter knives, icing stirrers, toothpicks, forks, or spoons can be used as well.*
- Paper
  - *Can be any cut to any shape or size as long as it fits in your tray.*
- Tray
  - *Plates and bowls are good alternatives, too.*

## Steps to Follow *(All activities must be done with adult supervision).*

1. Begin by spraying a thin layer of shaving cream into a tray to cover its bottom.
  - a. *It does not take a lot since the foam will expand and fill the space.*
2. Once the bottom of the tray is covered, add 3-4 drops of your chosen food coloring anywhere you want.
  - a. *Did the color and shaving fully mix?*
  - b. *What are two liquids that do not mix?*
    - i. *Molecules can be either polar or nonpolar based on their electrons and this affects how they can interact with each other.*
    - ii. *Oil (nonpolar) will not mix with water (polar) due to this difference and is thus hydrophobic just like our shaving cream reacting to the water based dye.*
3. Slowly drag a craft stick through the cream.
  - a. *You can go in any direction or follow any pattern you want, **but** we do not want to mix everything together.*
  - b. *Think of stirring chocolate syrup into vanilla ice cream with a spoon instead of adding both ingredients to a blender.*

4. Gently place your paper on top of the shaving cream and lightly tap it so that it is pressed against the surface of the cream.
5. Remove the paper and place it shaving cream side-up on a paper towel or drying tray.
6. Holding the paper down, use your craft stick to gently scrape the excess shaving cream off the paper. This should leave a marbling pattern on the paper.
  - a. *Why is the color attached to the paper?*
  - b. *Have you ever heard of cohesion or adhesion?*
    - i. *Cohesion is a property of matching molecules to stay together and adhesion is the property of one type of molecule to attach to a different kind.*
    - ii. *The dye is water based (polar) and is very good at “adhering” to other materials that have polar molecules like the cellulose (plant fibers) in our paper.*
7. The more shaving cream you scrape off, the quicker the paper will dry.