
About.com Chemistry**Magic Colored Milk Science Project**

Make a Color Wheel from Milk

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If you add food coloring to milk, not a whole lot happens, but it only takes one simple ingredient to turn the milk into a swirling color wheel. Here is what you do.

Magic Milk Materials

- 2% or whole milk
- food coloring
- dishwashing liquid
- cotton swab
- plate



Milk and Food Coloring Project
Anne Helmenstine

Magic Milk Instructions

1. Pour enough milk onto a plate to cover the bottom.
2. Drop food coloring onto the milk. I made a [video](#)¹ so you can see what to expect.
3. Dip a cotton swab in dishwashing detergent liquid.
4. Touch the coated swab to the milk in the center of the plate.
5. Don't stir the milk; it isn't necessary. The colors will swirl on their own as soon as the detergent contacts the liquid.

How It Works

Milk consists of a lot of different types of molecules, including fat, protein, sugars, vitamins, and minerals. If you had just touched a clean cotton swab to the milk (try it!), not much would have happened. The cotton is absorbent, so you would have created a current in the milk, but you wouldn't have seen anything especially dramatic happen.

When you introduce detergent to the milk, several things happen at once. The detergent lowers the surface tension of the liquid so that the food coloring is free to flow throughout the milk. The detergent reacts with the protein in the milk, altering the shape of those molecules and setting them in motion. The reaction between the detergent and the fat forms micelles, which is how detergent helps to lift grease off of dirty dishes. As the micelles form, the pigments in the food coloring get pushed around. Eventually equilibrium is reached, but the swirling of the colors continues for quite a while before stopping.

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1. <http://www.youtube.com/watch?v=lf4HHazghGs>