

# **Chromatography Color Detective**

#### **Best for Ages** 4+

Workspace

Flat indoor surface

#### Is electricity required?

No

#### **Description**

You've mixed colors with paints and play dough, but have you tried separating color mixtures? In this experiment you will be exploring chromatography which is a process of separating mixtures.

## **Materials**

- Scissors
- White paper coffee filter
- Black marker (non-permanent)
- Water
- Coffee mug

#### **Concepts Explored**

- Chromatography
- Mixtures

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## What to Do

- 1. Cut a circle out of the coffee filter. It doesn't have to be a perfect circle, just a round shape that's about as big as your spread-out hand.
- 2. With the black marker, draw a line across the circle, about 1 inch up from the bottom.
- 3. Put some water in the cup-enough to cover the bottom. Curl the paper circle so it fits inside the cup. Make sure the bottom of the circle is in the water
- 4. Watch as the water travels up the paper. When it touches the black line, you'll start to see some different colors.
- 5. Leave the paper in the water until the colors go all the way to the top edge. What do you notice?
- 6. Repeat steps 1-5 with a different brand or type of black marker. Also try using a colored, non-black marker. What do you notice about the colors or patterns for different markers?









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### **Troubleshooting Tips**

- If the coffee filter doesn't fit into your coffee mug easily, cut the filter into a smaller circle or into a strip.
- Having difficulty seeing the filter in the mug? Once the water reaches the edge, remove from the mug, lay flat on a tray and allow the filter to dry.



What do you think will happen when the filter is in the water? Does one color move more quickly than the other? Why? What colors do you notice?

## What is Happening?

- **Chromatography** is a process for separating components of a mixture. A **mixture** is simply a substance made by mixing two or more other substances together.
- Marker inks are made from a mixture of many different colored dyes. This is most obvious with dark colors such as black and purple. Each dye is made up of different chemicals, some heavier and some lighter, that travel at different speeds as the water moves them up the coffee filter.
- Coffee filters are thin paper that contains cellulose, the same compound that trees and plants are made of.

#### **Taking it Forward**

If you like this activity, you'll also like:

Dancing Marker Man

#### <u>Fizzy Fun</u>

# Learn more about colors by checking out these books at your local library:

Separating Colors in Ink by Brooke Rowe

*We're going on a Leaf Hunt by* Steve Metzger

The Secrets of the Cool Colors and Hot Hues by Bonnie Williams



