

## CHROMATOGRAPHY: CLUES HIDDEN IN COLORS

**Question for kids: Can you catch a culprit, just by knowing what's in their pocket?**

Forensic scientists can learn who's been involved with a crime by matching suspects' DNA, fingerprints, hair, or clothing fibers to those found at the crime scene. Another way to make a connection is to look closely at the ink used to write a note at the scene, and compare it to the ink used by suspects at their homes and jobs.

### MATERIALS FOR THIS ACTIVITY:

- [Chromatography Paper Strips](#)
- [Beaker, glass, 150 ml](#)
- [Pipet, disposable, 1 ml, 10/pk](#)
- [Wooden splints, 500/pk](#)
- [Isopropyl alcohol, 90%, 30 ml](#)
- Notebook
- Different pens
- Binder clip



WHAT IT TAKES

### FOLLOW THIS EASY, STEP-BY-STEP ACTIVITY

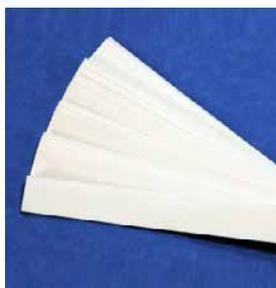
In this activity, kids will learn that the color they see is actually made up of a combination of colors. Chromatography is used in forensic science to separate and analyze the pigments — in this case, in ink.

- 1 Gather three different pens with black ink from around the house.
- 2 Cut three strips of chromatography paper in half. Make a large dot about ½-inch from the bottom of a strip of chromatography paper, cut in half. Repeat so you have three strips, each with a dot from a different pen. Have someone write a short note on a piece of the chromatography paper using one of the pens, without letting you know which pen they used.
- 3 Use the binder clip to attach the top of the paper strips with the dots to the splint. Place the splint across the top of the beaker so the paper hangs down inside.
- 4 Dilute the isopropyl alcohol and carefully pour just enough into the beaker to touch the bottom of the paper, but not the dot.
- 5 The alcohol will creep up the paper. When it reaches the top of the paper, remove from the beaker and let dry.
- 6 Do the same procedure with the note. Once it's dry, compare it to the dot samples to try to determine which pen was used to write the note, by comparing the Rf value of chromatography spreads.

HOW

## BUY EVERYTHING YOU NEED FOR THIS ACTIVITY IN ONE PLACE

See all of these products and more on [one handy shopping page](#).



### Chromatography Paper Strips

Fun to use



### 150 ml Glass Beaker

A science staple



### Pipets

Lots of uses

## WANT MORE?

Time to get serious!



### Chromatography Experiment Kit

5 fun projects  
[See all related products](#)

## A FEW TIPS TO HELP YOU OUT

- Dilute HST isopropyl alcohol by mixing half of the bottle with four pipets full of water (if not using HST isopropyl alcohol, mix 15 ml with 4 pipets full of water).
- Cover the beaker with plastic wrap to prevent excess evaporation of the alcohol solution. You can reuse the solution if it's covered between uses.
- "Rf value" is the distance a pigment traveled, divided by the distance the solution traveled.

## GO BEYOND THE ACTIVITY!

- Compare the colors in markers with the same colors of [food dye](#). Do they have the same chromatography spread?
- You can use chromatography to compare the "greens" in different tree leaves.
  - Gather green leaves from several different trees. (Trees with dramatic color changes, like Maple trees, work best). Tear one of them into pieces, place in your beaker, and cover them with the isopropyl alcohol.
  - Put the beaker in a dish of hot tap water for 30 minutes, until the alcohol turns green.
  - Use a strip of your chromatography paper suspended on your splint to just barely touch the alcohol. After 30–90 minutes, remove and let dry.
  - Do this for each of the leaves you gathered and compare the different colors that make up each green leaf.

SHOP

TIPS

MAKE IT YOUR OWN

HELP

NEED HELP WITH THIS ACTIVITY?

Call 1-800-860-6272 or email [service@homesciencetools.com](mailto:service@homesciencetools.com).