

# Why Leaves Change Color

Today's activity is a science experiment that explores why leaves change color in the Fall.

## MATERIALS:

Fresh green leaves  
(preferably from the  
same tree)

A small glass or  
glass jar

Rubbing Alcohol

A wooden spoon or  
butter knife (or pestle)

Coffee Filter

Safety Glasses  
(recommended)

Newspaper, paper  
towel, waste basket  
or sink

## DIRECTIONS:

Collect a few fresh, green leaves.

Lay some newspaper and paper towel on top of the work surface.

Tear up (and/or cut-up) the leaves into very tiny pieces, dropping them into the glass.

Use a wooden spoon or butter knife (or pestle if you have it) to mash up the tiny pieces of leaves. Mash up really well. This is an important step.

Put on safety goggles; or child stands back and lets adult pour rubbing alcohol into the glass, just covering the leaves. Continue mashing up the leaf pieces.

Form the coffee filter into the shape of a cone, and place the pointed tip into the leaf and rubbing alcohol mixture.

Let it sit for 24 hours.

After 24 hours, remove the coffee filter from the glass; be ready to drain the excess fluid quickly into the sink or into the waste basket. If the paper towel under the glass gets wet, replace it with a dry paper towel.

Open and lay the coffee filter on top of the dry paper towel.

Identify the colors that you see. You should be able to see the colors of the pigments that were in the leaf – green, yellow, and possibly orange and red.

## THE SCIENCE BEHIND THIS EXPERIMENT:

<https://www.youtube.com/watch?v=Xk4-6ll8l5Q> 3 min 21 sec

Leaves contain chlorophyll, which give them their green color. Chlorophyll is the chemical that leaves use to make their own food. As the days get shorter in Autumn, trees sense that winter is approaching. Because their leaves would not survive the cold, dark days of winter, trees let their leaves go; therefore the tree stops producing chlorophyll. The chlorophyll already in the leaves breaks down, revealing the other colors inside the leaves that were previously masked by the green chlorophyll, particularly yellow and orange.

Chromatography is a science technique that allows one to separate mixtures into individual components. In this case, the leaf/alcohol mixture travelled up the coffee filter as it was absorbed, separating the different colors contained in the leaves into bands.