At-Home Lightfastness Testing

— Sarah Becktel, Product Research Director

CPSA conducts lightfastness testing on many colored pencils and works hard to keep the results up-to-date. Unfortunately, since testing requires colored pencil samples to be exposed to natural daylight, we are at the mercy of the weather. It can be a slow process, particularly during the winter months.

For artists who are anxious to know the results for their favorite pencils, I highly recommend conducting your own simple, at-home lightfastness testing. It's a fun process that can give an artist more insight into exactly how daylight can affect colored pencils. It also gives you the opportunity to customize your tests—creating samples that more accurately represent your personal methods of using colored pencils. For example, if you always burnish your work with a colorless blender, you can make two test samples for each color: one with color applied alone and one with a layer of colorless blender on top. After both samples have been exposed, you can see whether a layer of colorless blender makes any difference. Or, if you frequently use certain color blends, you can make test samples for each color alone, as well as a mixture of those colors. This enables you to see how each individual color was affected, as well as whether the mixture faded the same or differently than each separate color.

Step by step guide for making and exposing your own samples:

1. Choose a natural white, cotton paper (or board) that does not contain optical brighteners. You need enough texture to hold a heavy layer of colored pencil, but not so much texture that an even application of color is difficult. You do not want white paper specks showing through the color.
2. Draw up a grid with two columns and as many rows as the number of pencils you wish to test. The left column is for identifying each sample and the right column is where you apply the colored pencil. I find that making the sample rectangles 2" by 3/8" works well. That is large enough so you can easily see the samples, yet still small enough so you can fill the colors in quickly *(figure 1)*.
3. Apply each color as evenly as possible. If the colored pencil is heavy in some areas and lighter in others, the sample will fade unevenly, and it will be hard to determine which area most accurately represents the color change.
4. Once the samples are filled in with color, cut the rectangles in half, creating a long strip of samples that measure 1" wide *(figure 2)*.
5. Tape the 1" strip to a window facing out. The window should expose the samples to the most direct, constant daylight. A south-facing window is best in the Northern Hemisphere, while a north-facing window is best in the Southern Hemisphere.
6. The strip containing the labels is your control—meaning that these strips will remain the same over the course of the testing. Place this set of samples in a drawer or dark place where they will not be exposed to daylight.
7. Check the samples every two weeks for the first two months, and once a month for up to six months (more often if you wish). Each time you check, line up your 1" sample strip from the window and your control samples along where they were cut in half. Compare the two halves and take notice of any changes. You may want to photograph the samples each time so you will have a record of the exposure process. The rate of fading depends on the weather in your area and how much daylight the samples receive each day, but you should have a good idea of how a colored pencil will react after six months. You may, however, continue exposing the samples for as long as you wish.

Figure 1

Figure 2

You will probably find that different colors fade at different rates.

A few things you may notice are that:

- Some colors will fade immediately, but then the fading will taper off.
- Some will fade at a slow, consistent rate over the full length of the exposure.
- If a pencil contains multiple pigments, one pigment may fade while the other(s) do not. This will create a sample where the exposed half may not change much in value, but the hue will change significantly.

That is why conducting your own tests can be so enlightening. When you see only the final ratings provided by CPSA or a manufacturer, it's impossible to know exactly why a colored pencil received that rating—other than "it faded" or "it did not fade." By witnessing the entire process, you'll be able to appreciate the nuances in each colored pencil and make better choices about which pencils you do and do not want to use.

For those of you interested in a more rigorous method of testing, I recommend visiting the ASTM website (www.astm.org) and purchasing a standard related to lightfastness testing. ASTM International is a nonprofit company that makes voluntary consensus standards for hundreds of different industries and products and offers standards specific to artist materials. These documents contain instructions on how to create samples (of colored pencil or other mediums), conduct the lightfastness testing, rate the results, and rate the tested material into lightfast categories. The standard D5398 is designed specifically for at-home testing by the consumer and is fairly easy to follow. However, please be aware that testing based on this ASTM standard requires the tester to purchase blue wool test strips and create color samples using the Munsell color system. These swatches are then used as a reference so that the tester will know when the blue wool strip has been exposed for the correct amount of time. For more about how blue wool samples are used for lightfastness testing, visit the CPSA website (www.cpsa.org) and click "Lightfastness Testing" on the CP Product Info drop-down menu.

Figure 3

Figure 4

Good luck with your testing! In the next issue of TTP, we'll have a few artists who have conducted their own lightfastness testing weigh in on the experience.

Protective Coatings

We receive many questions concerning fixatives and varnishes that offer protection from damaging UV light. Many artists are curious as to whether these products actually perform as well as they claim to. The steps outlined for at-home lightfastness testing can easily be used to conduct testing on fixatives and varnishes.

- Lay out your test board as described above, except with rectangles 3" x 3/8".
- You'll want to include pencils that have high, medium, and low ratings so that you can observe how the varnish or fixative responds to pencils with various degrees of lightfastness.
- Once your sample rectangles are filled in with color, cut the samples so that you have a strip of 2" wide rectangles and a strip of 1" wide rectangles *(figure 3)*. The strip of samples that measure 1" will be your control; place them in a dark place with no exposure to daylight.
- On the sheet containing your 2" strip of samples, completely cover the identifying column and half of the sample rectangles with a heavy paper or board.
- Coat the exposed 1" strip of samples with the varnish or fixative you wish to test *(figure 4)*. Once again, it is beneficial for you to conduct your own testing so that application of the material is consistent with the way you apply the material to your own art. This means that if you usually apply two thin coats of varnish to your finished art, do the same here.
- Once the applied coating is dry, remove the protective board and expose the samples as described before.
- Every time you check, compare all three columns—the unexposed samples, the uncoated exposed samples, and the coated exposed samples.