# Why is My Color on Fabric Different From My Wallpaper?

Digital Printing Color Variations Demystified by Spoonflower Ambassador Danika Herrick

Spoonflower 101, Spoonflower Ambassadors, Wallpaper | 2022 Ambassadors
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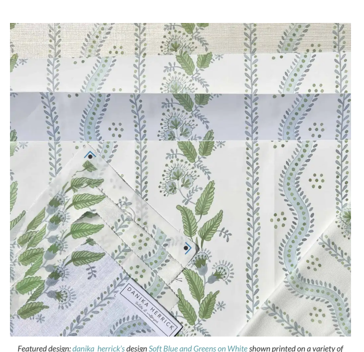
*Ever want to know more about how Spoonflower fabrics and wallpaper are printed? Whether you're a practicing artist (or an aspiring one), a maker or just really dig knowing how things work, this helpful post from Spoonflower Ambassador and artist Danika Herrick shares why Spoonflower designs may have slight color variations across substrates and how our printing processes work.*



*Featured design: danika_herrick's design Soft Blue and Greens on White shown printed on a variety of substrates.*

As a surface pattern designer on Spoonflower I receive lots of questions from customers regarding color. One of the most popular questions is "Why don't my colors match? I purchased the same pattern on two different substrates and they look completely different." This is actually a normal phenomenon and happens throughout the printing industry.

For some customers, a little color variation is completely fine and quite often unnoticeable in the grand scheme of things. However, it can be frustrating if you are wanting to use the same design for two different applications, i.e., wallpaper and drapes, where the tones are noticeably different and right next to each other.

In this post, we'll look at why the color shifts happen! There are several reasons for this, but the biggest reasons tend to stem from differences in substrate base color and composition as well as the actual print process. I'll dive into these two areas below and share some tips for color correcting in a companion post coming soon.

## Substrates and White Points

The **substrate** is the product base you choose to print on. Spoonflower currently offers 4 types of wallpaper and up to 26 types of fabrics you can close to have your design printed on. This is tremendous as it allows designs to translate across many products from clothing to interiors, but it also can mean learning more about how to keep colors constant across the substrate spectrum.

It is true that the white **base color** will vary slightly with each substrate due to its composition. The pure unprinted white base color is the "**white point.**" In general, synthetic blends tend to have cooler white points, while natural materials like grasscloth have warmer, creamier undertones. I say "in general" because I have found that technology has come a long way, and while synthetics used for clothing tend to keep a brighter white point, some home decor synthetics like Performance Linen have creamier bases, which tend to be more aesthetically pleasing for those settings. (Want to see the basic white point for all Spoonflower fabrics? Check out the Fabric Details sections over in Spoonflower's Fabric Shop.)

*Comparison of different Spoonflower substrates showing white ground and texture differences.*

The differences in white point can also alter the final tone of printed designs. For example, take the color pale blue. When printed on a cool base it can become brighter and more vibrant. If you print it on a creamy base with yellow undertones it can begin to read more blue-green. This can be seen in both synthetic fibers as well as natural fibers that are both printed the same (digitally). Here is an example of Belgian Linen™ and Cypress Cotton Canvas printed with the same design. The Belgian Linen has a cooler base tone and the blue is truer, while the Cypress is a bit creamier and the blue shows more green in it.

*Swatches of Belgian Linen (left) and Cypress Cotton Canvas (right) printed with the same design (Custom Egyptian Paisley Anne by danika_herrick) shown in daylight.*

To add an extra layer to this, the light you view your pattern in will also affect how it reads. Just look at how much different the same design above reads under incandescent light.

*Belgian Linen (left) and Cypress Cotton Canvas (right) printed with the same design (Custom Egyptian Paisley Anne by danika_herrick) shown under incandescent lighting.*

Just as you would check paint swatches in daylight and in the evening light of your home, this is also necessary to do with your fabric and wallpaper swatches.

Lastly, you also need to understand that Spoonflower does not use white ink when printing. Instead they use the white base of the substrate as pure white. Any time the hex code for white is used (#ffffff) the white base of the substrate is what you will see. However, change the hex code slightly and pigment becomes involved, creating subtle variations of off-white and pastels during printing.

## Print Process

Spoonflower is always working on their print technology and optimizing their process to accommodate each substrate. They currently print using two techniques: **Sublimation** and **Digital**.

**Sublimation printing** is used for synthetics and polyester blends. It requires printing the design on special transfer paper, and then using heat and pressure to set the design into the fabric. Many people might think of a traditional "iron on" technique, but unlike that it doesn't require a gummy layer to transfer the image. The ink actually transitions from a solid to a gas and it dissolves into and bonds within the fabric. This keeps the fabric feeling soft and natural.

**Digital printing** is pigment based and used on natural fiber fabrics and papers. The ink is printed onto the surface and soaks into the fabric or wallpaper surface, very much like an inkjet printer would.

Both of these printing techniques require the mixing of pigments to create specific colors, and since the processes and printers are different, slight variations of color can occur.

*Digital printers in action in our Durham factory.*

## Other Factors

Besides the primary factors discussed above, there are other variables that may alter your printed colors like:

## Substrate texture

Color and light will reflect, absorb and read differently on a smooth substrate vs. a textured substrate. Smooth substrates will print with crisper edges and more vibrancy than a fabric with a chunky open weave. These looser weaves have negative spaces that cannot be printed on, therefore those missing bits translate to rougher edges.

Some substrates are more absorbent of ink, making the color soak in where it might sit and dry brighter on a smoother surface. Light also reflects more off smoother surfaces, altering the color vibrancy while more textured and absorbent bases will read more matte.

*Swatches of Cottonwood Americana by danika_herrick on Belgian Linen vs. Prepasted Removable Wallpaper.*

## Print Lot

Every Spoonflower printer is calibrated for optimal performance. Even so, there can be very subtle variations from printer to printer. The difference among each printed job is referred to as the **Print Lot** or **Dye Lot**. Even if you receive a sample from one printer, that same printer can have slight shifts in color that occur from recalibrating or basic wear and tear. (For more information, check out this Help Center article on print lots and dye lots.)

## Complex Colors

Some colors can shift more dramatically than others, especially complex tones like neutrals that are made up of several pigments, or lighter pastels that allow more of the ground base white to show through. (For more information about this see this Help Center article titled "How Can I Make Sure My Design is the Color I Want?")

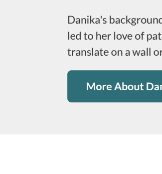
*Note the color differences of off-white hex code #eebcb printed across a variety of substrates. From left to right: Swatches of Spoonflower wallpaper (Grasscloth Wallpaper, Prepasted Removable Wallpaper, Non-pasted Traditional Wallpaper and Peel and Stick Wallpaper) and fabrics (Celosia Velvet™, Performance Velvet, Recycled Canvas and Belgian Linen).*

## Environmental Changes

Did you know temperature and humidity can affect your color? These environmental factors can alter the print chemistry creating variations in tone. Even the environment that a natural fiber was originally grown in can contribute to these occurrences.

## DPI

**DPI** stands for dots per inch, the **resolution** of your image. The minimum resolution for printing a design at Spoonflower is 150DPI. In fact, all files are initially converted to 150DPI when they are uploaded, but you may increase the resolution if you wish, but more or less can affect the print quality and color. If an image's resolution is too low it can appear spotty and faded. (For more information, see this Help Center article about image resolution and DPI.)



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Danika Herrick
4 Posts
Danika's background is in art, interior design and decorative painting. This combination led to her love of pattern design. When designing, she thinks about how the pattern will translate on a wall or soft furnishings and usually has a client or room in mind.
More About Danika Herrick

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