

# Toning Cyanotype Prints

*Peter Henry Emerson, an early proponent of photography as art form, once wrote that “no one but a vandal would print a landscape in red, or in cyanotype.” In Emerson’s time (Circa 1890), the Prussian blue hue of cyanotype just wasn’t considered very tasteful. Thus there developed a culture of altering (or “toning”) blue cyanotype prints to more subdued and “acceptable” hues.*

*There are a number of methods and agents used to tone cyanotype prints. Here we offer the simplest (and least toxic) methods for toning cyanotype prints on paper or fabric to a variety of browns, blacks, purples and yellows.*

## THE BASICS:

Toning a cyanotype print generally involves two basic steps: a bleach step, and a toning step.

1. The bleach step requires a chemical with a high pH and involves “reducing” the blue iron color, generally to a golden yellow.
2. The toning step requires the presence of tannins, which chemically bond to the reduced iron and change the color of the print.

All the toning methods below are variations on these two steps.

## EXPERIMENT!

There is no “right” way to tone a print. Have fun with it! Toning is not an exact science, and results can be unpredictable. Experiment with mixing and matching toners, skipping or changing the order of the steps given below, etc. Often, for instance, you can achieve three distinct results by either skipping the bleach step, bleaching after toning, or repeating the sequences given. You may also get different results by allowing different amounts of drying and/or washing times between steps.

## KEEP IN MIND:

It is generally a good idea to start with an overexposed print if you plan to reduce/bleach. Underexposed prints can often be toned nicely by skipping the bleach step altogether. Allow the print to dry at least 24 hours before toning. Otherwise, you may experience erratic results. Pre-wet the dried prints just prior to toning to allow for even penetration of the reducer and toner. Plan on leaving the print face down in the toner for long periods of time, or plan on agitating the print as it tones. Avoid air bubbles, as they will result in untoned blue spots.

## NON-TONING POST-TREATMENTS:

There are several methods for altering a cyanotype that do not involve toning. For instance:

- **Hydrogen Peroxide:** Submerging your washed print in a dilute bath of hydrogen peroxide after the initial wash will cause the blue to instantly reach its maximum intensity. In theory, the print would reach this intensity over about 24 hours as it dries and oxidizes, but using peroxide instantly oxidizes the print to its final color. Great for instant gratification!
- **Vinegar Wash:** Using white wine vinegar in the initial wash can increase the tonal range and decrease the overall contrast of a print. In other words, the highlights will become bluer and you will see more subtlety in the midtones. Variations in concentration of the vinegar bath will affect contrast to varying degrees.

- **Post-development Vinegar Bath:** Using a vinegar bath after washing in water can have a different effect: generally you will see an increase in contrast, with the deep tones becoming deeper and the highlights becoming whiter (see example 1.2).

## TONING:

### I. THE BLEACH STEP:

- The most common bleaching solution is made from soda ash (sodium carbonate). Generally, 1-2 teaspoons are used in about 1 liter of water. Make sure the soda ash is fully dissolved before submerging the print (otherwise you may see speckles, like in example 5.1).
- Other bleaching solutions can be made using soap, detergent, ammonia or chlorine bleach. Ammonia tends to produce a browner image. Chlorinated bleach will damage fibers and is not recommended.
- The purpose of bleaching is to break down (or “reduce”) the iron so that the tannins in the toner can bond more easily. The bleach step is generally quite short (under 5 minutes). The time needed will depend on the density of the print, the concentration of the bleach bath and the toner you intend to use. (If your water is heavily chlorinated, you may not even need to bleach your prints. Also as stated above, sometimes the bleach step may not be desirable.)
- If you bleach too far, you may lose overall density in the print—the shadows may become pale and the mid-tones may vanish completely. If you bleach too little, your shadows will remain blue while your midtones cooperate. (This “split-tone” effect can actually be pretty interesting! In example 3.4, for example, notice the difference between steps 5 and 6.)
- Leave the print in the bleaching solution until it reaches a uniform, golden yellow color and then quickly submerge it in water to stop the bleaching action. With experience, you’ll learn that it is usually a good idea to pull the print out of the bleaching solution a few seconds before you think it’s ready, as the print will continue to bleach for a bit, even once it is placed in the wash bath. If you’re trying to make a golden yellow and white print, then you’re done! (See example 2.1). If the print turns a bright purple as soon as you place it in the solution, the bleaching solution is too strong. Play with the solution until you’re comfortable with the rate of bleaching.

### 2. THE TONING STEP

The range of colors you can achieve by toning is relatively limited (brown, black, purple, yellow, navy), but within these parameters, you can achieve a diverse range of qualities and effects. (For printing in virtually any color you like, use SolarFast.) Certain toners are more efficient and stain less, while other toners produce a wider range of possibilities. Keep in mind that, in all likelihood, the base color of the paper/fabric will become stained, at least a little bit. The degree of this base staining can be minimized by using more dilute solutions of toner, but this will generally require longer soaking time.

**Tea Toner:** Every type / brand of tea will produce a different color. Tea toners work well with minimal bleaching, but require long times in the toner—generally 2 or more hours (up to 24). Use fresh brewed, hot tea to keep the time down, but keep in mind that hotter solutions will stain more. Make sure to use teas with tannins in them, like black tea or green tea. White tea, red tea and most herbal teas don’t contain enough tannins to effectively tone a print. To reduce staining, soak toned prints in clean water for at least 10 minutes after toning.

- Green tea tends to produce a warm, eggplant black, and it is mild enough that it doesn’t stain the paper base too badly. If you skip the bleaching, you can also achieve a greenish black (see example 3.2). Sometimes green tea toners will leave a pinkish highlight which can be an interesting split-tone effect (see example 3.1).
- Black tea stains the most, but it produces a unique rich warm black/brown shade. Used after extensive bleaching, it will produce a beautifully neutral brown (see example 3.3). With minimal bleaching, you may see a split-tone, with warm highlights and cool shadows (see example 3.4).

**Coffee Toner:** For the truest black, coffee toners are generally the best. Coffee toners produce a cool black (in contrast to the warm black of tea toners) and they stain less (see example 4.1). Coffee toners tend to require less

time than tea toners, and work remarkably well without bleaching. Instant coffee seems to work just as well as brewed coffee.

**Tannic Acid:** The original cyanotype toner, tannic acid tends to produce an even brown print with a lot of staining.

**Wine Tannin:** Used in microbrewing and vinology, wine tannin is a lot like tannic acid, but it dissolves more easily in water and is more readily available. Wine tannin produces a beautifully even warm black (split-tones are rare) and keeps staining to a minimum.

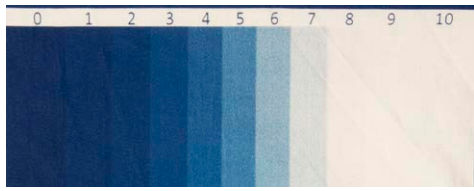
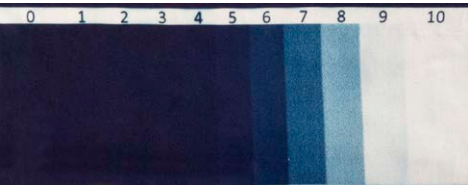
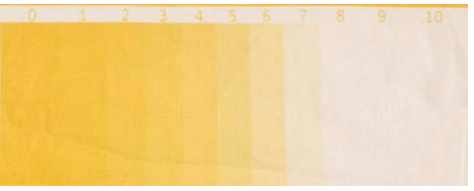

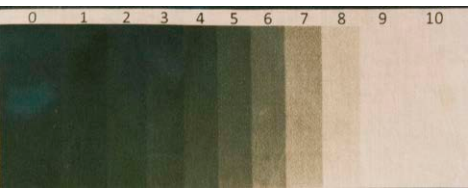
**Wine Toner:** Red wine in particular is known to contain tannins and can be used to tone cyanotype prints to a purplish black. Because of its red color, staining is almost unavoidable, but again, it can be an interesting effect.

**Borax Toner:** Probably the most unpredictable toner, borax can be used to achieve a violet print. Bleaching is generally not necessary, but results may vary.

**Soda Ash Toner:** As stated in the bleaching step section, soda ash may be used to achieve a yellow tone. An extremely dilute bath may also produce a blue/yellow split-tone (see example 5.1) or, even more diluted, a navy print. This toner is extremely sensitive and requires practice.


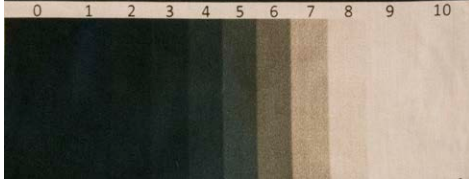
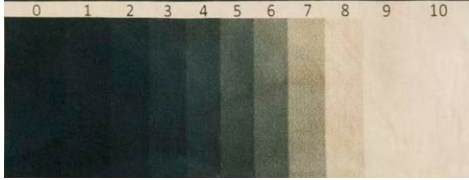
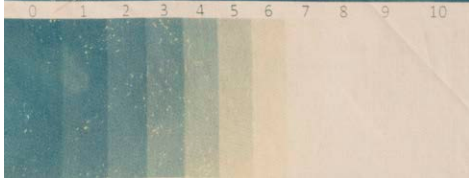
**Combination Toners:**

Again, combining toners, playing with the order of operations and repeating steps can produce a wide variety of results. Experiment and you will make your own discoveries!

Examples of toned prints	
	1.1 Untoned cyanotype print
	1.2 Print washed in 10% vinegar solution. Notice the increased tonal range and decrease in overall contrast.
	2.1 Soda ash bleach only
	3.1 Soda ash bleach then green tea toner
	3.2 Green tea toner, no bleaching

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	<p>3.3 Black tea toned after bleaching</p>
	<p>3.4 Black tea, no bleaching. Notice the split-tone, evident in steps 5, 6 and 7.</p>
	<p>4.1 Instant coffee, no bleaching</p>
	<p>5.1 Yellow/blue split-tone from minimal bleaching. Speckled from undissolved soda ash.</p>