

Natural Dye Basics

with John Marshall

From my perspective, there are basically two types of natural dyes: pigment dyes and juice dyes. I define juice dye as any dye cooked up from a source in nature – normally from plants and animals. Of course all colors are made up of *pigments*, however I am using the word to mean colors that are not normally soluble in water—such as minerals or colors flocculated from plant or animal sources. Juice dyes and pigment dyes require different treatment to create permanent color on your fabric. Let's take a look at how to prepare each.

Juice Dyes

Most juice dyes will follow some simple rules:

- 1) fresh gives richer color than dried
- 2) the smaller the chopped particle, the easier the source releases color
- 3) heat is required to coax the source into releasing the color, but boiling will kill the color

In traditional dye processes throughout the world, a fairly large amount of *mordant* is used to help fix the juice dye. [A *mordant* is most often a salt such as copper or iron.] However in Japanese dyeing, as I practice it, very little mordant is needed. It is used primarily to point the color of a juice dye in a certain direction. For example, juice dyes made from yellow onions will color your fiber a rather dull beige-brown if used as is. Adding a little *alum* (aluminum salt) will brighten it into a sunny yellow. Adding *chrome* will encourage it to turn a rich nutty brown. *Iron* will *sadden* (dull) it into a brackish black. Notice that the full range achieved is yellow/brown in base.

The *mordant* in this process is used to enhance personality traits that already exist in the juice dye. Yellow onions are basically, well, *yellow* and do not contain any blue or red in their personality profile.

Pigment Dyes

Pigment dyes are often *minerals* but may also be produced from *plant* and *animal* sources, in which case they are often called *lakes*.

Most mineral pigments are *iron oxides* of one sort or another, such as *ocher* (yellow) or *rust* (red). Quite often the pigments may be used, after a little cleaning, exactly as they come from the ground.

Lakes are produced by taking a juice dye, such as *cochineal* (an insect), and adding a *hydroxide* of one sort or another. This causes the pigment to *flocculate* (settle out) as it is rendered insoluble. The commonly used watercolor called *carmine lake* is simply cochineal pigment.

If you are not sure whether you have a juice dye or a pigment dye just mix up a batch and watch – pigments will eventually settle to the bottom.

Pigments will not adhere well to the fiber without some help. Protein is the traditional binder and I prefer soymilk as my protein source.

Soymilk

I use soymilk extensively in my work. If applied to freshly washed fabric it acts as a *sizing*, giving my fabric a little more body making it easier to handle while at the same time helping to prevent *wicking*. If added to a dye it will act as a *binder*. If applied to my finished fabric it functions much as does *ScotchGuard®* while helping to *perma-press* the weave. In all cases it helps the color to adhere to the fiber and to lock in color. Soymilk, once *cured* (oxidized) is non-water soluble.

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Working with Pigments

As mentioned above, most pigments need a binder to glue them to the fiber. I use soymilk.

Dry pigments come from a variety of sources with a wide range of particle sizes. Some particles are so very fine that they are not heavy enough to break the surface tension of the water in soymilk. You'll find that these pigments are very difficult to mix with the soymilk unless you help them in some way.

If you aren't sure which pigments these may be, and you find yourself with a batch of stubbornly floating pigments, simply add a drop or two of rubbing alcohol to the side of the dish allowing it to spread out over the surface of your suspended mixture. You'll find that the pigments will settle into the soymilk in the wake of the alcohol.

Most of the fine particle pigments are in the red family, including oranges and purples. To simplify mixing, you may want to add a few drops of rubbing alcohol to the dry pigment while blending them thoroughly to make a thick paste and to this add your soymilk.

Prepare your yardage with a sizing of soymilk. This will act as a gesso to help receive your pigments and give good even coverage.

Pigments tend to be mat, masking whatever is underneath. This can also lead to a caked look if you apply them with a heavy hand. There is a simple way to achieve rich colors that do not cake but it requires a little effort – rather than one thick coat of dye, you are going to apply three layers.

Mix up a batch of color. Test it on the selvage of your yardage and allow it to dry. Is this the color you are seeking? If not, adjust as needed. Once you have the color you want, mix up enough for your project. Eyeball the volume of dye you have prepared. Add twice this volume in soymilk to the mixture. You will now have three times the volume of dye at one-third the intensity.

The first coat will sink down into the fiber. Allow to dry.

Apply the second coat, which will build up the color but still leave you with a faded look. Allow to dry.

Brush on the third coat, which will cover the top of the fiber and leave you with the color you originally tested for. Allow to dry.

The three-coat method will give better adhesion and colors with greater depth and character.

Be sure to allow the soymilk/pigment mixture to thoroughly cure for full adhesion.