



# Stony Creek Colors

## IRON VAT

### RECIPE INSTRUCTIONS

An iron vat is the ideal recipe to achieve beautiful saturated blues on cotton, linen, and other plant-based fibers. It is not recommended for protein-based fibers, like wool and silk, as the iron may cause discoloration or brittleness of the fabric.

Once set up, the vat does not require heating and may last for weeks or months when covered, only needing to be replenished occasionally.

To make a vat, you must make a concentrated solution containing dissolved (reduced) indigo and then add it to the large vat container. A 5-gallon bucket works well depending on the size of your project.

#### **Ingredients: All ingredients are based on using a 5-gallon bucket**

- 50g of Stony Creek Colors Natural Indigo
- 35g Iron (Ferrous Sulfate)
- 44g Pickled Lime (Calcium Hydroxide)
- A 5-gallon tall and narrow bucket with a lid to serve as a vat container
- A lidded pot or large jar for the stock solution. Tip: It should be about a quarter (25%) the size of your vat. A 2 quarts pot to 1-gallon pot will serve well.

All dyestuff must first be processed to extract the pigment. In beginning any new project, the proper amount of Indigo needs to be calculated. We first determine the total volume, amount of water in gallons, of your vat. The stock solution, indigo, should be a quarter (25%) of the volume of your final vat.

#### **Indigo Stock Solution:**

Use 17g to every gallon of Stony Creek Colors Natural Indigo for a very strong vat when dyeing plant-based fibers. For a slower-building vat, use 9g SSC Natural indigo per gallon.

#### **The recipe below uses about 13g natural indigo/gallon.**

In 100% active indigo this ranges from 3-6 g/gal equivalent. For example, if you are making a strong 5-gallon vat with 40% High-Purity Natural Indigo, use about 85 grams.

To make a 4-gallon vat from 50g of SCC natural indigo, you will need about 17.5g of active dye. Per 50g natural indigo powder, use 35g Iron and 44g Pickling Lime.

#### **Preparing your Indigo:**

- Dissolve Indigo paste thoroughly in hot water
- Dissolve Pickling Lime in 0.5 L of warm water
- Dissolve Iron Sulfate in 0.5 - 1 L of warm water (add more water if necessary)
- Fill a large container, such as a pot or 2-quart mason jar with a lid with warm water (50C or 120F), leaving room for the above ingredients.

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- Add indigo, then the dissolved iron, then the pickling lime. Stir well before adding the next ingredient.
- Let it sit with the lid on for 2-3 hours. The stock will change color from blue to brownish-yellow.

## Preparing the Vat:

Use a container, preferably plastic, that is as tall and narrow as possible. A good container to use is a 5-gallon bucket with a lid.

- Fill the vat, leaving enough room for the stock solution, with 90-120 degree F water.

For the 4-gallon vat recipe above, you will need 92g of pickling lime and 30g of iron. If you are making a larger or smaller vat, use 23g of pickling lime and 7-8g iron per gallon.

- Paste the lime with water and dissolve the iron in warm tap water, then add the lime followed by the iron to the vat.
- Stir well, then wait 30 minutes to 1 hour before adding the indigo stock solution. Avoid stirring roughly and pour the stock carefully to minimize the amount of air that is introduced to the vat. The final color of the vat should be brownish-yellow.

Allow the sediment to settle completely before using the vat, and take care to avoid letting the fabric touch the sediment at the bottom of your bucket. We like to put a raised stainless metal grating at the bottom of the vat. If the sediment does discolor the fabric, a good soak in vinegar will sometimes remove the stains.

## Dyeing with Indigo:

- Scour fabric: Scouring is a hot water wash that removes industrial sizing, dirt, waxes, oils, lanolin (wool), sericin (silk), and pectic substances (plant-based fibers) from your fabrics.

For plant-based fibers use 2 tsp synthrapol or pH-neutral detergent and 8 tsp soda ash (alkaline surfactant) per pound of fiber. Add scouring agents to your very hot water wash in a machine, or to a clean pot of very hot water (above 160 degrees F) and let scour for an hour while stirring. Scouring ensures even color. Fabrics sold as "Ready for Dyeing" sometimes do not need to be scoured.

Protein-based fibers, like silk and wool, are usually best scoured by hand using Orvus Paste (1 tsp per 1 lb fiber being dyed) or gentle soap with hot water that doesn't exceed 160 degrees F, so as not to damage or "felt" the fibers.

You can scour a bunch of materials at once and do not need to dye them all right away. Just make sure they are dry before you store them.

- Wearing gloves, pre-wet scoured material with water then submerge the materials into the vat carefully.
- You want to minimize the amount of oxygen you are adding to the vat by adding slowly and not lifting up and down a lot.



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**Tip: To get your materials more evenly dyed, we suggest gently rub the material with your hands staying submerged below the surface for a few minutes. If you are dyeing shibori or tied garments and not worried about even tones throughout, you can place them in there and fish them out when ready.**

- For all indigo dyeing, regardless of vat type, you want to build up color through successive dips. Start with longer dips (5-10 minutes) and then follow up with shorter dips (30 seconds - 1 minute) to deepen the shade.
- Taking care not to agitate, stir or drip back into the vat, then remove the materials.
- As the materials are being removed, let them drip into a nearby bucket. The indigo rich contents of the bucket can be recycled back into the vat when you recalibrate it for later use.
- Allow a minimum of 10 minutes and a max of 30 minutes between dips so the fiber can fully oxidize with the material hanging in a shady spot. When you're happy with the depth of color, rinse it off and let it dry.

Remember some of the indigo will run off, and plant-based fibers tend to dry a few shades lighter than their color when wet. So, if you love a color you have reached in the vat, at least dip it one more time!

**Tip: If you want a very light color for your final garment, make the vat less strong by adding less indigo stock, and do shorter dips. You want at least three dips even if they are short. Rinse in cool water until most of the unfixed indigo is rinsed out.**

- For the integrity of the fiber, add a bit of vinegar or citric acid to the final soak (especially for protein-based fibers like wool and silk). Then rinse again! Indigo may still rub off so we would suggest being careful with your first few times wearing the garment (DON'T sit on any white couches!).

## **Maintaining Your Vat:**

To keep the vat working as long as possible, stir it thoroughly once per day.

If the vat turns greenish, add a maximum of 15g/gal iron sulfate, stir thoroughly, and allow to settle before checking the color again.

If the vat turns blueish, add a small amount of lime (1-2g/gallon). Again, stir thoroughly and allow to resettle before checking the color.

