Dyeing Fiber For Maximum Results

Get the Fiber YOU Want Using These Techniques

This document is intended to help you develop your OWN techniques and processes, and give you tips on areas to tweak that will help insure great results! As always, please feel free to contact me at my email address: yarnhollow@comcast.net if you have questions. I am happy to help!

Goals

- Develop confidence in your process and skills through practice and precision
- Hone your color choices for the results you want
- Dye fiber that will result in super-soft, spinnable fibers
- Experiment with different ways to lay out fiber for particular results, from gradation techniques, short repeats of fiber for fractal spinning and plying, and others
- How to lay out colors in such a way to blend color, separate color into distinct areas, and how to prevent unwanted colors

Measuring/Precision in Weighing Dye Powder and Chemicals

It is very important to know how much fiber you have before you dye it. All measurements and the intensity of the color is determined by the amount of fiber you have. If you don't know the quantity of fiber or yarn, you may use either too much dye or not enough to get the results you want. If you use too much dye, your fiber may be toughened in the process of dyeing, as the dye bath will not exhaust and you may inadvertently simmer the fiber or yarn too long looking for a clearer dye bath – all the dye that isn’t attached to the fiber is going to be rinsed down the drain! You also run the risk of using an insufficient amount of fixatives to get a dye-fast result if you are not measuring your fiber, yarn, and chemicals.

Weighing each dye powder and fixative in dry form with a scale measuring in grams will give you quite precise results. Measuring to a tenth of a gram is also a good idea if you are looking for precise results – if you miss on the last tenth of a gram, your results could be off. Small, portable scales are available through many resources, such as amazon.com, prochemicalanddye.com, dharmatradings.com, etc. See the resources area for ideas.

Measuring Dye Liquid:

Depth of Shade:
The concept of Depth of Shade is the relation of the weight of the fiber or yarn to the weight of the dye needed to produce the color effects that you would like. It is added here because it is one of the most critical elements to both understand and use to get reproducible and specific results.

In dyeing, the ratio that controls the saturation of the color is the ratio of the fiber or yarn to the amount of dye used. The less dye in the mixture, the less color on the yarn or fiber. The more dye used in the mixture, the more intensely colored the yarn or fiber.
Depth of Shade is usually measured up to 3% of the Weight of the Goods (WOG - the dry weight of the fiber or yarn.) Some dyes, specifically those that are lighter such as some yellows or more pastel colors, can be dyed at concentrations greater than 3%. Pastel shades, especially those used on superwash yarns and fibers, may be as small as .25 of a gram in relation to a four-ounce skein of yarn. This translates to one-one hundredth of an ounce – a very small amount.

**Metric:**

I find that using the metric system is more precise than using English measurements such as 1 teaspoon, 1 cup, etc., because the weight of different dye powders can vary by density. One teaspoon of yellow dye powder may weigh far less than one teaspoon of turquoise dye powder.

For example, a recipe that uses a 3:1 ratio of yellow to turquoise will be fine if that measurement is three grams of yellow to one gram of turquoise. But if you are using teaspoons and not weighing the dyes, ¾ of a teaspoon of yellow may weight 1 gram, and ¼ teaspoon of turquoise might weigh two grams. If the dyes aren’t weighed in this case, the results will be off, with the dense turquoise overpowering the light-in-density yellow. Weighing the dyes will help control your results.

I also recommend using the metric system because it makes the conversions from dry dye powder to Dye Stock Solution easy to calculate.

**Preparing Your Yarn or Fiber**

Along with measuring, preparing your yarn or fiber appropriately and in a consistent manner will help you have spinnable, fluffy fiber or soft, smooth yarns that aren’t toughened or compacted by the dyeing process.

Pre-measuring your fiber in standard bumps is a great place to start in preparing fiber. When you buy a certain number of pounds of fiber, decide which standard weight of fiber you’d like to dye – 4 ounces, 8 ounces, 12 ounces, or a pound? You can choose which ever standard you’d like and which works for you, but if you know that you have all your fiber put up into those quantities you can just pick out what you need and start dyeing!

Another helpful hint is to create spreadsheets of your standard colors that you develop, with the calculations done for several different quantities of fiber, so you don’t have to refigure the quantities of dyes, chemicals, and fiber – you can just pick out your fiber, add the quantities and weights to the spreadsheet, and start!

**Soaking the Fiber:**

One critical element to having spinnable, fluffy fiber is to touch the fiber as little as possible when preparing it. Using shallow bowls to soak fiber keeps the fiber intact, and prevents it from stretching out and creating fly-away bits that aren’t as spinnable. I also recommend soaking the fiber in a ball. Using a colander or other device to support the fiber as it’s lifted from the basin for soaking also keeps the fiber together nicely and keeps the fiber from stretching out and becoming fragile.
**Color Choices:**
This is where your experience, record keeping, and a color wheel come in handy! Working on creating harmonious color choices is probably the most fun part of dyeing your own fibers!

The other sections of this document talk about tips and hints to help your process – in this section, you will learn about how to hone your color choices and juxtapose them on fiber to insure harmonious combinations and avoid muddy, overly-dark colors.

**A set of Primaries**
Using a standard set of primary colors has many advantages. For one thing, it reduces the number of dyes you have to keep on hand. Another advantage is that you can explore color mixing with a standard set of primaries and observe (and record) the results of mixing similar combinations that are made just by small changes in the amount of dye you use!

Some dyers will keep on hand a warm and a cool version of a red, blue, and a yellow, as well as a black. From these seven jars, you will be able to create an enormous range of hues, saturations, tints, tones, shades, and complements.

**Making a multi-colored combination with a set of primaries – how to insure colors will coordinate.**
In the samples that are shown later, the color combination Frankly Scarlet is used on all the fiber examples. This combination was made with these following colors, mixed in different intensities. The abbreviations at the end of the name relate to the formulas listed below:

Sabraset Scarlet (SAB SC)
Sabraset Sun Yellow (SAB SY)
Sabraset Denim (SAB DE)
Sabraset Black (SAB BL AND also SAB GR)

These four colors were mixed together in different quantities and depths of shade to get the following four colors:

Paprika – 3% Depth of Shade (intense Color)
Grayed Paprika - .5% Depth of Shade (grayed and pastel color)
An Orange-ish Color – 2% Depth of Shade
Blackened Paprika – 1% Depth of Shade – Paprika and Black

This photo shows all the colors, and illustrates the concepts:
All of these colors are created with three to four of the following colors, just in different ratios and intensities. Here is the specific breakdown:

<table>
<thead>
<tr>
<th>Color Name</th>
<th>DOS</th>
<th>Dye 1</th>
<th>%</th>
<th>Dye 2</th>
<th>%</th>
<th>Dye 3</th>
<th>%</th>
<th>Dye 4</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paprika</td>
<td>0.03</td>
<td>SAB SC</td>
<td>0.850</td>
<td>SAB SY</td>
<td>0.100</td>
<td>SAB DE</td>
<td>0.050</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grayed Paprika</td>
<td>0.005</td>
<td>SAB GR</td>
<td>0.500</td>
<td>SAB SC</td>
<td>0.400</td>
<td>SAB SY</td>
<td>0.070</td>
<td>SAB DE</td>
<td>0.030</td>
</tr>
<tr>
<td>Orangeish</td>
<td>0.02</td>
<td>SAB SY</td>
<td>0.800</td>
<td>SAB SC</td>
<td>0.150</td>
<td>SAB DE</td>
<td>0.050</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paprika/Black</td>
<td>0.01</td>
<td>SAB BL</td>
<td>0.300</td>
<td>SAB SC</td>
<td>0.600</td>
<td>SAB SY</td>
<td>0.060</td>
<td>SAB DE</td>
<td>0.040</td>
</tr>
</tbody>
</table>

(Gray is created by mixing a pastel of Black. This is simply my convention. You may want to use a stock gray, or create grayed tones through your own mixing and experimenting.)

For more information about Measuring Dye and Mixing Dye, please refer to the booklet “Why Dye” which was sent with this document.

**Ideas for Laying Out Fibers**

The following layout ideas are presented as a launching place for your own fun – try new things, experiment with laying out fiber and applying dyed in ways that work for you. With a few of the layouts below you can get a variety of effects with just a few tweaks that make it personal to you!
Making Striped or Gradation Roving—For Long Repeats of Color

Step 1: Layout the fiber on plastic wrap thusly, with equal-sized loops. If you are using four color, try to make the number of "lines" divisible by four so each section of fiber is covered equally.

Step 2: Move the sections for each closer together so when you pour the dye on, it doesn't migrate to the adjacent
**Painting on Roving for an Overall Blended Effect of Color**

Step 1: Layout the fiber on plastic wrap in an organized configuration so that you can see all the fiber area and so that no areas are overlapped by other fiber.

Step 2: Apply the dye all over the fiber in small sections—overlapping if desired for a color blending effect, or keeping the colors discreet by pouring the dye into small circles. To achieve and even distribution of color, measure out each dye mixed into equal parts. For example, if you have 200 ml of red, and you want to distribute it over 10 sections of fiber, each section would have 20 ml of dye.

Example Blue Face Leicester Superwash, dyed and dried, soaked in acid before applying the dye—notice how the superwash and the acid keep the dye from distributing in the fiber.

Example Blue Face Leicester NON-Superwash, dyed and dried, not soaked in acid prior to dyeing—notice that there is more blending of color in the final dried fiber.

Example of small sections of color on fiber.
Hot Dye and Hot Fiber on Non Superwash

Do you want your finished fiber to have a lot of white space in it and you don’t have a superwash fiber to start with? Hot dye and warm-to-hot fiber will make your dyed fiber results do this. To heat your fiber, you can either lay it out into a shallow microwave-safe vessel and zap it until it gets steamy—and microwave your dye, too, separately. Or you can soak it in hot water with acid added and then lay it out and pour on your pre-heated dye. Wrap, and then microwave for about 1 minute per ounce.

Your fiber can be laid out as if you were dyeing for long repeats, medium repeats, short repeats, gradation effects, or super small sections of fiber. Experiment with two different layouts to then ply together and see what the results are like!

The examples below are shown on Polworth fiber. The upper example was soaked in hot water with acid added to it, and hot dye poured on it. The lower example is Polworth fiber that was not soaked in hot water and the dye was room temperature. Note that there is a lot more white space on the upper example.
More Notes on Laying Out Fiber

How to prevent unwanted colors
Depending on your personal taste and choices, you may or may not like certain colors near each other on fiber. When you are dyeing your own fibers, you can control how these colors interact with each other in a few different ways.

For example, if you are not a fan of brown, you would want to avoid putting two complementary colors (directly across from each other on the color wheel) next to each other on a piece of fiber you are dyeing, unless you manipulate the fiber to keep the colors from blending. Typically when complementary colors are mixed together, they create various shades of muted neutrals. Some people like the mixes of complementary colors, and other’s don’t.

Maximize your fiber’s effect by preventing these mixes if you don’t like the browns. You can either carefully place the dye on the fiber and use your hands to push the dye through the fiber and create a block to keep the colors from mixing. Another method would be to put the complementary colors on sections of fiber that aren’t adjacent.

If you are trying for a blended effect with a group of fibers and don’t want certain colors to mix, you can help prevent the mixing by using the techniques of hot fiber and hot dye to help the dye fix where it is poured.

Blending Colors on the Fiber
Conversely, you can create terrific colors and effects by blending dye directly on your fibers. If you love purple, for example, and your component colors of your dye job are red and blue, you can use these to create a variety of purples by pouring the two colors near each other and carefully pushing the dye closer together with your hands or a roller over the wrapped fiber. (Use plastic wrap as a barrier to prevent dye from getting everywhere and to protect the fiber structure.)

Dyeing a piece of fiber using small sections of color will create a lot of blending, too. It would be a fun way to incorporate two or more colors in the creation of a mix that will be sure to work together because it is made up of the same component colors.

Recap
Dyeing is a fun and creative pursuit that can help you express your own personal aesthetic and get the results you want. Using some or all of these hints will help you create high-quality fibers that express your creative ideas about color, and will help you be able to reproduce the results consistently over the course of your dyeing experiences.

Resources – In Alphabetical Order
Suggestions about good places to purchase yarn, fiber, dye, and chemicals.
**Dharma Trading Company** – Yarn, fiber, silks, clothing, fabric, and loads of different types of dyes.

**Pro Chemical And Dye** – product use instructions, dyes, fixatives, sample packs, dye studio equipment.

**Wool2Dye4** – vast selection of yarns

**Catnip Yarns** – Another Great selection of ecru, undyed yarns

**Bibliography**


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