

Basic Dyeing

Or Information That Beginning Dyers Need

by Carole Parker (mscip@sonic.net)

Dyeing can be fun as well as messy.

Why dye fabric when you can get most anything in the fabric or department stores? Because most is not all. Sometimes, you can't find what you need in the stores when you need it. Sometimes, the quality is not what you're looking for, and sometimes, you want to have more creative control over the fabric that you use to achieve an effect.

Background

When I started dyeing, you had two choices: expensive liquid French dyes or dye pigments - the dry powder form. Since then, a new kind of product has come out: liquid color concentrates that you put a few drops in water to get your desired color. These products are great for the first timer who wants to see whether or not they are interested in exploring dyeing further, and those in living situations where they cannot work with pigments. My personal experience is that color concentrates are good for small projects, such as a scarf or something similar in size.

Two known products are called *Colorhue* for instant-set silk dyeing and *Tumble Dye* for cotton, rayon, hemp, silk, nylon, polyester, synthetics, and blends, which can be put in the dryer to set the dye. The drawback? The colors are not as intense as with pigment dyes.

How is dyeing different from fabric painting?

This question can get you into a debate. The *usual* difference is that fabric paint sits on the surface of your fabric, whereas dyeing penetrates your fabric and creates a molecular bond. Both can change the weight and float of a fabric. Paints because they add weight. Dyes because the process used can change the texture or hand of the fabric. However, dyeing is less likely to change the float of your fabric than painting will. Except wool. That's another story.

When should I dye fabric?

When you want a permanent color change to fabric. Do not dye something thinking that it will cover up a stain. If you don't remove the stain first, you'll just have a different colored fabric with a stain on it. You can, sometimes, do a technique that can *distract* from a stain. Dyeing is great for getting either yardage or multiple items made the same color at the same time.

What are some important ideas to keep in mind about dyeing?

1. It is a lot of fun. You get to create something that is different from what anyone else has.
2. It is messy, so either wear clothes that you don't care about getting dye on, an apron, or a disposable raincoat. Even when you're really, really careful, you'll probably still spill or spatter some dye.
3. Dyeing is usually water intensive, so you probably do not want to do it during a drought. Low water techniques are available. You can usually find low water dyeing books at quilt stores, good bookstores, or dye suppliers. Some books on low-water dyeing are in the *Recommended Books* list at the end of this article.

Pigment Safety First

While dyeing is lots of fun, when you are using pigments, you need to be serious about safety to maintain your excellent health. Yes, dyeing is safe, but you need to be smart about it.

1. When you use a utensil to measure dye or dye products, **DO NOT** use it for food cooking ever again. It is not safe, no matter how much you wash it. *Don't do it.*
2. If **any** container or utensil comes in contact with dye - powder or liquid form - do not use it for food ever again.
3. Keep all tools and containers used for dyeing in a separate area from the kitchen, so they do not get accidentally used for cooking.
4. When measuring pigments or other dye chemicals, wear a snug dust mask or respirator. Dust masks can be brought inexpensively at your local hardware store. A properly snug respirator will give you much better protection for your lungs.
5. Wear latex or chemist (elbow length) gloves when measuring pigments, so you don't absorb dye via skin. For those with latex allergies, or who develop latex allergies, medical grade purple or blue nitrile gloves are available at drug or warehouse stores.
6. Wear eye protection, such as safety glasses, goggles, or a full face shield when working with dry pigments.
7. When mixing dye pigments, *do not* do it indoors. Either do it outside in a sheltered area, in the garage, or in a workshop where food is not prepared. Dry pigments can go through the air and land on areas that you can't readily see. ***Do not mix dyes in the kitchen or where food is prepared!*** Once dye pigments are mixed with liquid, you can work with the dye where you like.

Have I scared you? In a way, that's good because you understand. Why the fuss? The pot, container, measuring tools *look* clean. That may be, but you don't see the micro scratches and pits that can contain small amounts of dye that can cause severe illness or even death in extreme cases. It is better to be safe than sorry.

You can buy stuff for dyeing cheaply enough: inexpensive measuring spoons and cups can be bought at a dollar or thrift store. I use disposable containers that can be bought cheaply in packs for different sized items, plastic give away cups from fast food restaurants that always seem to accumulate in people's cupboards to mix dyes in, leftover chopsticks from Asian restaurants to stir with, and I get excellent results.

Dye Types

Acid Based

Requires an acidic dye bath in order to bond with the fabric. While an acid dye bath sounds dangerous, acids used include white vinegar and citric acid - the stuff that comes from fruit. Use on silk, wool, feathers, and nylon.

Aniline

First synthetic dyes used, they were derived from coal tar and are *very toxic*. No longer used for fabric but still used for leatherwork. A respirator is a *must* when working with aniline dyes.

Disperse

Really, really *nasty* chemical process used to dye polyester and synthetic fabrics. Requires high heat, toxic chemicals, and strong fan ventilation that most home dyers do not have available. A new product, iDye, has come out, but it is not worth the effort for 100% polyester. You can order iDye from Dharma Trading or expansive art supply stores.

Fiber Reactive

From Fabric Painting and Dyeing for the Theater by Deborah M. Dryden.

This type of dye is called fiber-reactive because the dye molecule actually forms a chemical bond with the fiber during the dye process, thus creating extremely permanent color. These dyes are rated very high in color fastness to washing, dry cleaning, and perspiration. Some brand names include Procion MX and Dylon. Works on cotton, linen, and viscose rayon. Fiber-reactive dyes will also dye silks and wool with slightly altered recipes. **Note:** *Can be natural or synthetic dyes.*

Natural

Made with plants, bugs, roots, bark, teas, and coffee. You have to extract the color from these items to get the needed dye. Considered more sustainable than synthetic dyes, they can have variations because nature is not always consistent. Items that don't dye, even though they can stain your clothes: beets, berries, and saffron.

Substantive

Color fibers without a mordant.

Synthetic

Standard dye combinations that will give you relatively consistent colors if you follow the recipe correctly. **Note:** *Procion is a synthetic dye.*

Union

From Fabric Painting and Dyeing for the Theater by Deborah M. Dryden.

So-called all-purpose or universal dyes. They are a composite of several other types of dyes (dye classes) that allow union dyes to dye a wide variety of fabrics. **Note:** *Rit is a union dye.*

Techniques

Discharge

Using a chemical agent to remove color. **Note:** *Not all colors will discharge to white. Discharge depends on the type of dye originally used to dye the fabric or garment. Goes to the dye base color. Black may not discharge.*

Ice/Snow

Using ice - cubes or crushed, or snow creates interesting patterns on fabric because of the dye distribution. Works best on fiber reactive fabrics - cotton, rayon, hemp, and linen. I have not gotten it to work on silk. Cubes of ice keep the color but adds texture, so you don't have a flat color distribution. Crushed ice can break down blended colors into their component colors, so you can wind up with the original color plus its component colors at the same time. Primary colors can get some lighter color areas. For instance, red pigment on crushed ice gets you red and pink on the same fabric. Snow or finely crushed ice, gets a softer and lighter distribution of color than coarse crushed ice.

Marbling

Surface suspension of colorant that gives a stone-like or fantasy look.

Ombre

Gradient dyeing from light to dark, dark to light, or one color to another with no discernible breaks.

Resists

Agents that prevent dye from contacting the fabric. These can include chemicals, mechanical devices, rice paste, thread, or wax. The dye will not penetrate where the resist is.

- Chemicals - Typically labelled "resist," these agents are applied to the fabric to provide a chemical barrier. *Note: Gutta is a chemical resist.*
- Mechanical Devices - Rubber bands, binder clips, wood blocks or stamps with clamps, folding and clamping, string, pole, or most anything else that is not porous can provide a mechanical resist.
- Rice Paste - Frequently uses stencils for where to apply the paste-resist to get a particular design. Japanese *Katazome* is one technique that uses rice paste as resist.
- Thread - More precisely called *shaped stitch resist*, has been done all around the world. The most well known is *shibori*, which is to Japan what the bagpipes are to Scotland. While Japan and Scotland are most well-known for their art forms, other places have or had the same art forms. When pulling thread for resist, you should not see any of the thread because the folds cover the thread. If you see thread, you will not get resist.
- Wax- Melted wax is applied to fabric using any number of tools. Depending on the technique used, can provide a "cracked" effect where the wax breaks. **Batik** is a wax resist method, but it is not the only one. Soy and paraffin are the two most common wax forms. **Food grade** soy wax will not plug up your sink when you wash it off with *Dawn* detergent.

Shibori

A class of techniques that use binding, stitching, folding, clamping (Itajime) and pole wrapping (Arashi) as resist to get different dye patterns.

Silk Screening

Using fabric with blocked areas to control where color goes.

Spray Painting

Using an airbrush with compressor, or a PreVal sprayer that allows you to spray dye on fabric that gets airbrush dispersion, but does not require a compressor. PreVal sprayers can be bought at *Dharma Trading* or hardware stores.

Stamping

Using a stamp or carved wood block to apply dye.

Stenciling

Using a stencil (plastic or hard sheet with appropriate cutouts to get the desired shape) to limit where you apply color or resist. *Note: When applying dye using a stencil, use paste or sodium alginate to prevent spreading of dye. Otherwise, your design will not show properly.*

Tie Dye

Technique that became popular during the late 1960s that uses folding, bending, and twisting fabric, then applying the dye directly to the fabric to get desired effects. Research shows that it was started by a dye company employee to help revive an industry that was in decline and economic trouble.

Vat

Dyeing done in a large enough container for the material / garments to be immersed and able to move freely around in the dye bath to get even dye distribution. Vats can be garage sinks, plastic tubs, large plastic buckets, bathtubs, or non chemical reactive pots. *Aluminum pots and containers can react with dye and change your color!*

Common Dyeing Terms

Basic/Flat/Single Color

When just one color is used to dye, and you don't use any special techniques on the fabric.

Colorfast

From <http://en.wikipedia.org/wiki/Glossary_of_dyeing_terms>

Resistant to fading, rubbing off, bleeding in wash water, or otherwise changing color.

Dye Extracts

Typically, natural dyes that have already been processed, so you don't have to.

Dyed in the Wool

From <http://en.wikipedia.org/wiki/Glossary_of_dyeing_terms>

Fibers dyed before spinning.

Exhausted

When the dye bath dye has attached to the fiber and no more color potential is left.

Fixer/Fixative

That which makes it so that the dye and fabric react together and bond, so the dye will not run. For cotton and rayon, it is Soda Ash. For protein fibers, such as silk and wool, it is acid - either vinegar or citric.

Fugitive

A color that fades when exposed to sunlight or through washing.

Garment Dyed

From <http://en.wikipedia.org/wiki/Glossary_of_dyeing_terms>

Fabric dyed after it has been woven, cut, sewn into a garment or yarn knitted into a piece before dyeing.

Griege

Fabric that is undyed, unbleached, sized, and possibly dirty. *Note: Fabric that needs scouring (cleaning) before using.*

Light Fastness

How well an item holds the color when exposed to light. One test is to cover something dyed with cardboard on half of it, and leave the other half exposed to sunlight.

Mordant

A chemical that helps natural dyes “bite” into the fabric and bond with it. **WARNING:** *Stay away from chrome! It is highly toxic.*

MSDS

Material Safety Data Sheet. OSHA requirement that product companies must provide that detail the chemicals used in the product and safety measures that should be taken to ensure that no harm comes to the user of the product.

Overdyeing

Dyeing something that has been previously dyed. You can dye something multiple times, but different fibers will only have space for so much dye, and can give you a muddy color when done too many times.

Prepared for Dyeing (PFD)

Fabric that has no sizing, optical whiteners, lubricating oil, or softeners to interfere with the dyeing process.

Scouring

Removing sizing or finishes on your fabric by washing it in a mild detergent like Synthrapol and soda ash for fiber reactive fabrics. For silk, do not add soda ash as it can weaken silk. If you do not have Synthrapol available, using a straight detergent *without additives* will work in a pinch. **Do not add** fabric softener to a scouring cycle, since fabric softener makes it so that dye does not take properly. Also, **do not add** a dryer sheet in the dryer. One dyer’s experience when a dryer sheet was added was mottled results that she did not want.

Set

Making the color permanent by using a chemical agent or heat.

Sizing

Chemical used to treat yarns and fabrics to smooth and bind them together. Used to make weaving easier and less destructive to the yarns of the fabric. Can interfere with the dyeing process.

Soda Ash

Used to scour as well as bond dye to cellulose fabrics, such as cotton, linen, and rayon. Frequently found in bulk at swimming pool supply and hardware stores as well as dye

suppliers. At swimming pool supply and hardware stores, frequently sold as sodium carbonate if it is not listed as soda ash.

Sodium Alginate

Thickening agent from kelp that makes it so that dye does not spread as readily. Can make dye more paint-like for better color control.

Swatches

Pieces of different materials that you put in the same dye bath to see how they react differently with the dye and dye process used, or the same fabric done in different dye mixtures to see how the color changes.

Synthrapol

A *mild* detergent used to prepare fabric for dyeing as well as finishing. An important feature of Synthrapol is that it suspends excess dye in water, so it doesn't get on anything that it's not supposed to get on.

WOF/WOG

Weight of Fabric/Weight of Goods. Very important for getting the best color for your fabric. Weigh all the fabric (garments) that you intend to dye in one color batch when the fabric is dry. Pigment used is a percentage of fabric weight. Each pigment has a different percentage for best color results.

Yarn Dyed

Yarn dyed after the fibers are spun but before woven into a fabric.

Other Definitions can be found at:

<http://en.wikipedia.org/wiki/Glossary_of_dyeing_terms>

<<http://www.dharmatrading.com/html/eng/470621-AA.shtml>>

Recommended Books

Basic Books

Color and Design on Fabric by Singer Design

Color by Accident: Low-Water Immersion Dyeing by Ann Johnston

Color by Design by Ann Johnston

Complex Cloth by Jane Dunnewold

Costumes & Chemistry: A Comprehensive Guide to Materials and Applications by Sylvia Moss.

Dyeing in Plastic Bags by Helen Deighan

Dye Painting by Ann Johnston

Dyer's Companion by Dagmar Klos

Fabric Dyer's Dictionary by Linda Johansen

Hands on Dyeing by Betsy Blumenthal, Kathryn Kreider

Magic Dyeing Made Easy by Helen Deighan

Surface Design for Fabric by Richard M. Proctor and Jennifer F. Lew

The Surface Designer's Handbook: Dyeing, Printing, Painting, and Creating Resists on Fabric by Holly Brackmann

Japanese

A Handbook of Indigo Dyeing by Vivien Prideaux

Katazome - Japanese Paste-Resist Dyeing for Contemporary Use by Kumiko Murashima

Shibori: A Beginner's Guide to Creating Color & Texture on Fabric by Lynne Caldwell - The one knock on this book is that she does not use the traditional/correct terms for techniques. Good instructions with photographs. I like to use this book in conjunction with the Wada, et. al. book.

Shibori - The Inventive Art of Japanese Shaped Resist Dyeing - Tradition, Techniques, Innovation by Yoshiko Wada, Marry Kellogg Rice, Jane Barton - **the** classic book. A paperback reprint is now available. The hardbound is out of print, but if you can find it, you should buy it because it has more pictures.

Natural Dyes

The Art and Craft of Natural Dyeing - Traditional Recipes for Modern Use by J. N. Liles

Eco Colour: botanical dyes for beautiful textiles by India Flint

Natural Dyes and Home Dyeing by Rita J. Adrosko

Natural Dyeing by Jackie Crook

Natural Plant Dyes by Judith V. Hallett

Wild Color - The Complete Guide to Making and Using Natural Dyes by Jenny Dean

Specific

Batik by Sarah Tucker

Fabric Painting and Dyeing for the Theater by Deborah M. Dryden

The Fabric & Yarn Dyer's Handbook by Tracy Kendall

Marbeling Fabrics for Quilts by Kathy Fawcett and Carol Shoaf

Medieval Dyes by Jodi Smith

Tie Dye

Rainbow Tie Dye by Sulfiati Harris

Tie Dye, Back by Popular Demand by Virginia Gleser

Tie Dye To Die For & Batik You Can't Resist by Doug Otten, Doug Feltus and Alice Niemiec

Other Resources

Dharma Trading <<http://www.dharmatrading.com>>

Excellent source for synthetic dyes, and they have also branched into natural dyes. They have pre-made garments, scarves, trim, and linens that you can dye. Their 800 number gets you people who can answer most dyeing questions. Their website has more stuff you can order along with tutorials and explanations. Based in the San Francisco Bay Area.

Earthues.com <<http://www.earthues.com/>>

Specializes in natural dyes, but they're more expensive than Griffin Dyeworks. They do have a good reputation. Based in the Seattle area.

G&S Dye <<http://www.gsdye.com>>

Another all purpose dye supplier for the hobbyist based in Toronto, Ontario, Canada. Looks like the Canadian equivalent of Dharma Trading minus the hippy history.

Griffin Dyeworks <<http://www.griffindyeworks.com/>>

Run by long-time costumer, S.C.A. Laurel and fan, Bjo Trimble, so she understands unusual needs and requests. Sells natural and commercial dyes, weaving supplies, dye pots, and "...many other useful items." They also have a FAQ with some very useful information. Based in Southern California.

Pro Chemical <<http://www.prochemicalanddye.com/>>

While Dharma Trading and Griffin Dyeworks may be cheaper for those on the west coast, one dye artist loves Pro Chemical's tutorials, and feels that Pro Chemical's instructions are clearer than Dharma Trading's instructions. They specialize in chemical supplies, so they may have items that Dharma Trading or other suppliers may not have. Based in Massachusetts. **Note:** Several people have reported that when they call and ask Pro Chemical employees dyeing questions, they can get snarky or insulting responses. If their tutorials are not clear, most people call Dharma Trading because they find them helpful.

Thai Silks <<http://www.thaisilks.com>>

Supplier of silk, silk scarves, and silk garments which can be dyed. For those in the U.S., tends to have the best variety of silks at a comparatively inexpensive price. They do mail order as well as having a warehouse sample room, in Mountain View, in the San Francisco Bay Area.