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## Appropriate Pairing of Dyes and Fabrics for The Studio Artist

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As artists around the world strive to create unique colors and effects, interest in dyeing has surged tremendously. Dyed fabrics and yarns brighten and enliven art cloth, quilting, knitting, weaving, clothing and fashion accessories everywhere. Following the wide-ranging popularity of coloring fibers, knowledge of the proper use of dyes on appropriate fibers is now crucial.

Dyes are colorants that are dissolved in water and through a chemical reaction impart a particular hue to the fabric, but do not change the hand (feel) of the textile. The best are light- and wash fast (i.e., remain in the fabric while resisting fading). Certain dyes will only color specific fabrics, while others adapt to multiple textiles. Knowing which dyes to use with which fibers is vital. The dyes most accessible to the studio artist are fiber reactive, acid, vat and disperse. I will discuss different types of dyes, auxiliary chemicals and fabrics.

Fiber reactive dyes work best on cellulose. They result in highly fast colors by forming a relatively permanent chemical bond with the fiber. Several types of chemical structures exist among the various types of fiber reactive dyes, including dichlorotriazine (Procion MX), monofluorotriazine (Cibacron F) and monochlorotriazine (Procion H). These also work on silk and, if you adapt the recipe, they can be used on wool. This dye class is most suitable for a wide range of surface design techniques, including immersion, shibori, soda soak, and thickened techniques.

Acid dyes are used on protein or animal fibers and also can be applied on silk, nylon, and some acrylics. These dyes contain acidic groups in

their molecular structure and some require acid in the dyebath to chemically bond with fiber. Common studio dyes are Kiton, 1:2 Metal Complex, and WashFast. They are stable and do not react with water, so stock solutions can be used. Acid dyes exhaust well, that is, most of the dye goes into the fabric during immersion.

Vat dyes are some of the oldest colorants. Indigo is the most familiar in this class, found in the worldwide fashion icon, blue jeans. "Vat" refers to the container used to ferment indigo leaves. These dyes are insoluble in water, but can be trapped in fiber to produce color. Except for indigo, vat dyes are light- and washfast and not affected by bleach. Vat dyes are excellent for resist techniques because they color the fiber and strike very quickly. Most fiber reactive and many acid dyes are discharged by vat dyes; the original color is replaced with that of the vat dye in a one-step process. The color range is not as extensive as some other dyes, but the hues are intense.

Disperse dyes are used to dye hydrophobic (water repelling) polyester, nylon, acrylic, and acetate rayon. They do not actually dissolve in water, but remain suspended as a dispersion of extremely fine particles. The dye moves out of the water, attaches to the fiber surface, and then dissolves into the fiber at elevated temperatures. A process unique to disperse dyes is called "dye transfer printing" or "dye sublimation." Dye is applied to paper, allowed to dry, and then the image transferred to the fabric through heat and pressure. Disperse dyes are very lightfast, have good washfastness, and produce strong hues.

This paper is based on Holly Brackmann's thirty years of teaching experience and research for her upcoming book, The Surface Designer's Handbook: Dyeing, Printing, Painting and Creating Resists on Fabric, (Interweave Press, 2006).