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Dyeing and Colorfastness in Fabrics
L.D. Simpson and A.W. Koester

This publication is one of a set written to help consumers select and care for today's clothing.

Those of the publications—fibers and fabrics; information found on garment labels; and dyeing and colorfastness—aid consumers in evaluating clothing and household textiles. Those on laundry aids and laundry detergent and soaps help consumers choose effective cleaning products. The publication on professional clothing care services discusses washing with a dry cleaner.


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TODAY'S CLOTHING CARE

Seeing color

The visual sensation of color requires three things: the eye containing the retina where nerve cells are stimulated; an object that excites those nerve cells; and light rays reflected from the object.

Light rays reflected from an object excite the eye’s retina in a particular area called the cones. The retina contains three types of cones sensitive to different wavelengths of light: the red cone is sensitive to about 650 nanometers, the green cone to about 550 nanometers, and the blue cone to about 440 nanometers.

The cones send impulses to the brain, which then creates the sensation of color.

The color that is visible depends on the wavelength of the light that is reflected from the object.

Other factors that affect color include the composition of the material, the surface finish, and the lighting conditions.

Colorfastness

Colorfastness refers to the ability of a textile to retain its color when exposed to various conditions, such as washing, dry cleaning, and光照. It is an important factor to consider when selecting fabrics for clothing, as it affects the longevity and durability of the garment.

Colorfastness can be tested using a variety of methods, including washing, dry cleaning, and光照 tests. The results of these tests can help consumers choose fabrics that will retain their color for longer periods of time.

Colorfastness Testing

There are several methods for testing colorfastness, including a wash test, a dry clean test, and a光照 test.

The wash test involves washing the fabric according to a standard protocol and then measuring the amount of color that has been transferred to a white test fabric. The result is expressed as a percentage, with higher values indicating better colorfastness.

The dry clean test involves simulating a dry cleaning process and measuring the amount of color that is transferred to a white test fabric. The result is expressed as a percentage, with higher values indicating better colorfastness.

The光照 test involves exposing the fabric to a standard光照 source and measuring the amount of color that is transferred to a white test fabric. The result is expressed as a percentage, with higher values indicating better colorfastness.

For a more detailed explanation of colorfastness testing, please see the Oregon State University Extension Service publication on colorfastness testing, PNW 257.

For more information, please contact your local Oregon State University Extension Service office.

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Today's Clothing Care

Consumer education and research at Oregon State University.

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Colorfastness

Colorfastness refers to the ability of a fabric to remain unchanged in appearance after repeated wearing and washing. Often, each home furnishing is exposed to a wide variety of conditions which may affect the fastness of a color, such as laundering, dry cleaning, bleaching, perspiration, and crocking.

Colorfastness within each dye classification can vary due to differences in colorfastness factors, such as the class of dye used on the fabric may not be the same. Newer dyes may have better fastness properties than older dyes. For this reason, care labeling must be supported by prior product testing. Today, problems in colorfastness and improper dyeing have been reduced and in most cases the consumer can rely on the cooperation of the major manufacturers. In the future, the problem of poor colorfastness will happen, but there is much less likelihood that the consumer has no real guarantee of the product quality.
Dyeing and Colorfastness in Fabrics

L.P. Simpson and A.W. Koester

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A color is an important characteristic of a textile product and is often one of the first factors considered by a consumer. Color has always been vital to textiles. Making and dying fabrics is an ancient process, predating written history. Natural dyes and pigments obtained from plants, animals, insects, and minerals were used as coloring agents for cloth and brightly colored clothing. The consumer today is familiar with the colorfastness of the traditional dyed cotton fabric. Today, many modern dyes are used to impart color to fabrics, with one of the most famous dyeing processes being the Aniline dyestuff. Aniline was discovered by William Henry Perkin in 1856, who accidentally made mauve (a reddish-purple color) while trying to make headache remedies.

Colorfastness in Fabrics

Colorfastness refers to the ability of a fabric to hold its color when exposed to various conditions. It is an important property of fabric that affects its appearance and durability. Colorfastness can be assessed using various tests, such as lightfastness, washfastness, sweatfastness, and rubbing fastness. These tests measure how well the color of the fabric resists changes caused by exposure to light, washing, sweating, and rubbing.

Selecting and Using Laundry Aids

Laundry aids are used to enhance the effectiveness of detergents and improve the cleaning process. They include fabric softeners, bleach, and stain removers. The use of these aids can help maintain the colorfastness and performance of the fabric.

Seeing color

The visual sensation of color requires three things: the eye, the stimulus to the eye (light), and the brain to interpret the light stimulus. The eye contains photoreceptor cells in the retina, which detect light and convert it into electrical signals. These signals are then transmitted to the brain, where color perception occurs.

References:

EC 1280
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The visual sensation of color requires three processes: the eye containing the retina where the color is detected; the brain, which interprets the color; and the color pigments, which provide the color sensation. The color pigments are chemical compounds that can be attached to a fabric in a variety of different ways. The color pigments are usually attached to the fabric by a resin binder. The resin binder is a chemical and a physical reaction. The resin binder is a chemical and a physical reaction. Dyes and pigments are divided into chemical compounds, from which to choose. With the exception of logwood for black, natural dyes are no longer used by large-scale, commercial producers but are instead used among fiber artists. High quality, synthetic dyes are used to achieve a wide range of colors. Synthetic dyes are often used in small quantities to achieve the desired color. For example, a small amount of dye can be used to achieve a subtle color variation within a single color.

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