

UNDERSTANDING OF COLORFASTNESS TO WASHING – PART I

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Introduction

The resistance to the loss of color of a dyed or printed fabric, when subjected to washing is called washing fastness or color fastness to washing. If dye molecules are not penetrated inside the fiber or are not attached to the fiber with strong bonds; the dyed fiber results into poor washing fastness. Color fastness to washing is one of the most important quality parameter of a garment.

The washing fastness test determines the color loss and subsequent staining on other portion of the same garment or other garments washed together. It also determines the change of shade of the garment during the washing process by the end user.

Factors influencing wash fastness property

- **Nature of dye-fiber bond** - The washing fastness property of a dye is related to the nature of bond between dye and fiber. E.g. – Direct dyes form weak hydrogen bonds with cellulosic fibers. Which breaks during repeated washing leading to poor wash fastness properties. Whereas reactive dyes form strong covalent bonds with the fiber imparting better wash fastness properties. Vat dyes get penetrated and trapped inside the cellulosic fibers imparting very good wash fastness properties.



- **Molecular structure of a dye molecule** – If the dye molecule is larger in size, it will be tightly entrapped inside the inter-polymer chain of a fiber. Thus the fastness will be better. E.g. - acid mordant dyes which have larger molecular structure, hence better wash fastness.
- **Types of fiber** - The same dye in different fibers shows different washing fastness result. E.g. disperse dyes in the polyester has a higher soap-washing fastness than that in nylon.

Factors that helps to improve wash fastness property

- Reactive dyed fabrics are thoroughly washed after dyeing to remove unfixed dyes and subsequently improving their color fastness to washing.
- The polyester fabrics which are dyed using disperse dyes, can achieve removal of surface dyes and improve color fastness through the reduction clearing process.
- After dyeing the fabrics with direct dyes, after treatment with dye-fixing agents help to improve its wash fastness property.

Washing Fastness testing methods

There are different test methods adopted by different countries to test the colorfastness to washing properties. The test methods are designed as per the washing conditions, detergent used by the end consumer etc.

To be continued....

Wishing you a great week ahead!

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arc@resil.com | www.resil.com.