

COTTON

WHAT IS COTTON?

Cotton is a seed hair fiber derived from a bushy annual plant. It is made primarily of cellulose, the polymer that is the building block for the cell walls in all plants. Cotton is classified as a *natural cellulosic* fiber (as opposed to the man-made cellulosic such as rayon and acetate).

Cotton cultivation is thought to have occurred as early as 12,000 B.C. in the area that is now Egypt. Until recently, it was believed that cotton was transported to the Americas by early explorers. Today, reliable data indicates that cotton was indigenous to North and South America, as well as to Asia and Africa.

Cotton is still the fiber most used in the world, accounting for over 40 percent of total fiber production. In the U.S., however, the use of cotton has continued to decrease, with cotton now ranking second to polyester fiber in consumption.



FIBER PROPERTIES

As a cellulosic fiber, cotton shares several common characteristics with the other

plant-derived fibers such as linen, jute and ramie. For example, all of the natural cellulosic fibers are stronger when wet (just the opposite of rayon). Several other important properties are discussed below.

ACIDS: Cotton is susceptible to damage by acids. Strong acids destroy cotton very quickly, while even diluted acids tend to cause gradual disintegration. (Flame retardants used on cotton fabrics are very often acidic in nature. See TT-25, Flame Retardants.)

ALKALIES: High pH chemicals do not damage cotton fibers. As a matter of fact, concentrated alkalis are frequently used on cotton in a process called *mercerization*. This procedure swells the fibers, ultimately increasing strength, durability and affinity for dyes and resulting in a fabric with a silk-like hand and luster.

Important Note: While alkaline chemicals do not damage cotton fibers, the use of alkaline detergents may contribute to other problems. See “Cleanability” on the next page.

SOLVENTS: Cotton is not damaged by common organic solvents such as acetone and mineral spirits.

SUNLIGHT: Prolonged exposure causes yellowing and gradual degradation of cotton fibers.

MICROORGANISMS: Cotton, like other cellulosic materials, is damaged by fungi such as mildew.

INSECTS: Moths and beetles will not attack cotton. Silverfish, however, will eat cotton.

RESILIENCY PROBLEMS

Cotton is among the least resilient of textile fibers. When the fiber is deformed, it does not readily regain its original shape. This is not a serious disadvantage in woven fabrics, but it can be a real problem when cotton is used in pile floor coverings. It is our recommendation that cut-pile cotton carpets be used only in the lightest traffic situations.

FABRIC CHARACTERISTICS

Chenille, jacquard, velvet, tapestry... cotton fabrics can be created with a multitude of different looks. Plain-woven cotton fabrics are commonly used to create printed fabrics, such as the one shown on the opposite page. Cotton is also blended with other fibers, especially rayon, producing very elegant fabrics.

Polished finishes are used to produce fabrics such as *chintz*, while dramatic moiré effects are also popular. It should be remembered that these finishes are considered temporary – they will fade with routine use and cleaning.

CLEANABILITY

Though many cotton fabrics are labeled with an “S” colorfastness code, the vast majority of cotton fabrics are wet-cleanable. Pre-testing must always be performed to check for potential problems. Alkaline cleaners, especially, can cause dye bleeding. *Cellulosic browning* is another relatively common problem, particularly with raw cottons such as “Haitian.” Where these problems are likely, it is most important to

use lower pH cleaners and to dry the fabrics as quickly as possible through the use of air movement.

There are a handful of cotton fabrics, which cannot be successfully wet cleaned. For example, embossed or moiré finishes on cotton are usually removed by water. For these fabrics, dry cleaning is the recommended method.

SPOT CLEANING

Spot cleaning can be accomplished (after careful pre-testing) using both water-based cleaners such as pHnominal and dry cleaning solvents such as Kleen-Tec.

Strongly acidic chemicals such as rust removers should be thoroughly neutralized and rinsed in order to avoid long-term damage.

ON THE BRIGHT SIDE

With proper care, cotton fabrics can last for years. Vacuuming, rotating and flipping cushions and damp dusting are all tools that can effectively add life to these fabrics.

The Fiber-Seal Fabric Care System can benefit these fabrics by reducing absorbency, helping to resist permanent staining, and ultimately increasing the useful life of the fabric.

AS WITH ALL FABRICS AND FINISHES, ALWAYS TEST CHEMICALS AND/OR PROCEDURES FIRST IN AN INCONSPICUOUS AREA OF THE FABRIC.