

# TECHNICAL BULLETIN



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**FQR 1004**

## **MAINTAINING THE QUALITY OF COTTON SWEATERS**

## **INTRODUCTION**

For several years, consumer purchases have demonstrated the significant popularity of cotton sweaters. Performance complaints have been few. A recent study of commercial cotton sweaters was conducted by Cotton Incorporated to determine the best methods of preserving this growth market. Included in this summary are items for consideration by sweater manufacturers to maintain and improve quality.

## **FABRIC CONSTRUCTION**

There is a wide range of constructions used in the cotton sweater market. Therefore, it is difficult to generalize. With very loose knit constructions, one should watch out for excessive bagginess--and even physical damage after several launderings if the yarns themselves are loosely formed. At the other extreme, very tight constructions must be compensated for by adequately sizing garments, and by preshrinking, in order to prevent the wearer perceiving a deterioration of fit after laundering.

Particular mention should be made of the edging for the bottom of the garment, the sleeve cuffs and neck bands. To counteract the tendency for distortion (growth) during wear, the bands are often knitted very tightly and, if too tight, detract from the garment's desirable easy-stretch characteristics and comfort. This can be particularly noticeable when neckbands are so tight that it is difficult to put on the garment. We strongly recommend the practice of including stretchable yarns in the ribbing as an alternative.

## **DYEING**

A particular advantage of cotton sweaters is that most of them are completely machine washable with tumble drying. However, in practice, the colorfastness of some cotton sweaters to laundering may be poor, especially with dark shades. We suggest that manufacturers consider the possibility of adopting a specification for control. AATCC Test Method 61, Colorfastness to Washing, Test No. IIA, Shade Change 4, Staining 3 would be reasonable.

If direct dyes are used for cotton sweaters, some of them can present a problem and have inadequate washfastness. This can be countered by adopting aftertreatments for improving dye fixation, or by substituting reactive dyes for direct.

## **PRESHRINKING**

Our study indicated wash-shrinkage, *not* to be a major problem with cotton sweaters. This is partly because the fabric constructions generally allow the wearer to stretch out easily any wash-shrinkage while putting on the garment. If the fabric is preshrunk, we urge strong attention be given to subsequent handling operations of cutting, sewing and shaping to minimize the amount of stretching that occurs.

## **GARMENT CONSTRUCTION**

Though wash-shrinkage itself was discovered not to be a major problem in our study, we determined that variations in garment sizing could be improved. Studies have shown that sweaters of the same nominal size in the same construction from the same manufacturer often varied widely in actual size. It is our opinion that this relates to a lack of control of stretching in handling, in steaming, or on the cutting table. We therefore recommend these operations be scrutinized carefully and controlled.

In multiple laundering studies, several instances of physical damage to sweaters at seams was apparent. Therefore, we also recommend that manufacturers spot check their production through multiple launderings and, if necessary, sew wider seams or adopt double stitch line seam methods such as Federal Standard 507 or 512\*.

## **CARE LABELING**

An advantage of cotton sweaters is their ability to be cared for in the most convenient manner -- machine washing with tumble drying -- without the unsightly pilling associated with some synthetic sweaters, or the felting

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## RESEARCH AND TECHNICAL SERVICES

Cotton Incorporated is a research and promotion company representing cotton worldwide. Through research and technical services, our company has the capability to develop, evaluate, and then commercialize the latest technology to benefit cotton.

- Agricultural research leads to improved agronomic practices, pest control, and fiber variants with properties required by the most modern textile processes and consumer preferences. Ginning development provides efficient and effective machines for preservation of fiber characteristics. Cottonseed value is enhanced with biotechnology research to improve nutritional qualities and expand the animal food market.
- Research in fiber quality leads to improved fiber testing methodology and seasonal fiber analyses to bring better value both to growers and then mill customers.
- Computerized fiber management techniques result from in-depth fiber processing research.
- Product Development and Implementation operates programs leading to the commercialization of new finishes and improved energy and water conserving dyeing and finishing systems. New cotton fabrics are engineered -- wovens, circular knits, warp knits, and nonwovens -- that meet today's standards for performance.
- Technology Implementation provides comprehensive and customized professional assistance to the cotton industry and its customers -- textile mills and manufacturers.
- A fiber-to-yarn pilot spinning center allows full exploration of alternative methods of producing yarn for various products from cotton with specific fiber profiles.
- The Company operates its own dyeing and finishing laboratory, knitting laboratory, and a laboratory for physical testing of yarn, fabric, and fiber properties including High Volume Instrument testing capable of measuring micronaire, staple length, strength, uniformity, color, and trash content.

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