

Shaping intimate apparel with LYCRA® COOLING technology

Quality standards for the LYCRA® BEAUTY brand

Introduction

Fabrics with LYCRA® COOLING technology for intimate apparel meet scientifically determined metrics for shaping performance and comfort.

These fabrics are made with LYCRA® fiber and moisture-wicking nylon from The LYCRA Company. They combine comfortable shaping with moisture management to help keep the wearer feeling cool and dry, and are eligible for the **LYCRA® BEAUTY brand**.

Figure 1 shows the moisture-wicking, four-channel cross-section of X6300 nylon from The LYCRA Company.

Standards and Testing

Fabrics with LYCRA® COOLING technology for intimate apparel:

- Meet the requirements for intimate apparel with LYCRA® fiber, which are given in *Quality Standards for Fabrics with LYCRA® Fiber* (Doc. Ref. #P001).
- Meet additional standards for recovery force and normalized hysteresis.
- Meet standards for shrinkage, vertical wicking, and overall moisture management.

Normalized hysteresis is a measure of a fabric’s stretch efficiency. It is derived by calculating the difference

between load force (stretch) and unload force (recovery) in a specified range. Lower values indicate better performance in terms of freer, less restrictive movement.

Quality standards for LYCRA® COOLING technology are given in Table 1. In addition to meeting the standards, fabric aesthetics must be consistent with the LYCRA® BEAUTY brand concept.

Table 1. Quality standards.

Basic Applicable LYCRA® Fiber Quality Standard	Fabrics meet requirements for intimate apparel with LYCRA® fiber. See: <i>Quality Standards for Fabrics with LYCRA® Fiber</i> (Doc. Ref. P001)
Fiber Content	<ul style="list-style-type: none"> • Fabrics must contain LYCRA® fiber. LYCRA® fiber is the only elastane permitted. • The primary fiber must be nylon having a maximum of 2.3 dtex per filament. • The recommended nylon fibers from The LYCRA Company have four-channel cross-sections for wicking moisture. They are: X6300 (44f34 FDY), X6521 (78f68 DTY), and X6620 (103f68 AJT). • Fabrics must be made with a four-channel cross-section nylon fiber sourced by The LYCRA Company.
Fabric Recovery Force ITM 399	FABRIC WEIGHT < 150 g/m ² Min: 200 g in either length or width FABRIC WEIGHT 150 to 239 g/m ² Min: 250 g in either length or width
Normalized Hysteresis ITM 399	Max: 14 in either length or width
Shrinkage ITM 326	Max: 5% in both length and width
Vertical Wicking ITM 348	Min: 7.6 cm (3 in.)
Moisture Management ITM 725	<i>Fabrics can meet the standard either for planar wicking or halo effect; it's not necessary to meet both.</i> <ol style="list-style-type: none"> 1. Absorbency (time) 1. Max: 30 seconds 2. Planar Wicking (wetted area) 2. Min: 12.9 cm² (2 in.²) 3. Halo Effect 3. Area of surface wetness greater on fabric front than back
Fabrics are tested as-received. If they fail to meet standards, they are laundered once and retested. Laundering: <ul style="list-style-type: none"> • Machine wash warm/40°C using locally available detergent. • Tumble dry low/60°C for 30 minutes. If fabrics then meet standards, they may qualify for the brand.	



Figure 1. Cross-sectional view of X6300 nylon. Advanced spinning technology produces a four-channel cross-section for permanent moisture management performance.

Summary of Internal Test Methods (ITM)

Shrinkage (ITM 326)

Benchmarks are drawn on fabric specimens which are then subjected to machine laundering. The distance between benchmarks is then measured to calculate the amount of shrinkage.

Recovery Force and Normalized Hysteresis Test (ITM 399)

A tensile testing machine is used to extend fabric specimens to 50% elongation for three cycles. The third-cycle unload power of a fabric specimen at 30% elongation is reported as the recovery force. Normalized hysteresis is calculated from the difference between load and unload force at various predetermined extensions.

Vertical Wicking (ITM 348)

A fabric strip is hung vertically with a clamp and the free end is dipped into distilled water to a specified depth for a specified time. The height of the water that wicks upward through the fabric strip is measured and recorded.

Moisture Management (ITM 725)

Fabrics can achieve the moisture management effect either by spreading moisture for more efficient drying, or by transporting moisture from the inside of

the fabric to the outside. For this reason, the industry standard absorbency test (AATCC 79) has been modified to yield three critical measures of moisture management performance:

- Absorbency
- Planar wicking
- Halo effect

All fabrics must meet the standards for absorbency. All fabrics must meet the standard either for planar wicking or for halo effect.

To test moisture management, a fabric is mounted in an embroidery hoop with the fabric back facing outward. A prescribed amount of water is allowed to fall upon the fabric from a fixed height. The time required for the puddle to become absorbed enough to lose its shine is measured and recorded as the absorbency.

After the water has been absorbed by the fabric, the wet area (length x width) is measured and recorded as planar wicking.

The hoop is then turned over to expose the fabric front. If the wet area of the fabric front is greater than that of the fabric back, then a halo has been achieved, indicating good moisture transport.



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The LYCRA Company innovates and produces fiber and technology solutions for the apparel and hygiene industries, as well as specialty chemicals used in the spandex and polyurethane value chains. Headquartered in Wilmington, Delaware, The LYCRA Company is recognized worldwide for its innovative products, technical expertise, and unmatched marketing support. The LYCRA Company owns leading consumer and trade brands: LYCRA®, LYCRA HyFit®, LYCRA® T400®, L by LYCRA®, COOLMAX®, THERMOLITE®, ELASPAN®, SUPPLEX®, TACTEL®, and TERATHANE®. While The LYCRA Company's name is new, its legacy stretches back to 1958 with the invention of the original spandex yarn, LYCRA® fiber. Today, The LYCRA Company is focused on adding value to its customers' products by developing unique innovations designed to meet the consumer's need for comfort and lasting performance. For more information, visit connect.lycra.com and lycra.com.

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