Cotton Incorporated: New Innovations for Cotton Products

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Cotton Incorporated, funded by U.S. growers of upland cotton and importers of cotton and cotton textile products, is the research and marketing company representing upland cotton. The Program is designed and operated to improve the demand for and profitability of cotton through research and promotion.

Cotton Incorporated has developed many innovative technologies for cotton and continues to bring these technologies to the global product supply chain.

The STAY TRUE COTTON technology helps indigo-dyed and tinted denim retain their original color, longer. Denim garments finished with the STAY TRUE COTTON technology retained 93% of their original depth of color after 25 home launderings, compared with about 80% in untreated garments. And since the finish helps retain dyes and tints, less of these are released through home laundering, giving STAY TRUE COTTON garments an environmentally friendly appeal.

The STORM DENIM™ finish from Cotton Incorporated is a super repellent treatment that protects The wearer from moderate rain, snow, and wet conditions while maintaining the natural comfort and breathability of cotton.

STORM DENIM technology offers multiple benefits. Consumers can stay comfortable because jeans treated with this technology are as soft and easy to wear as regular denim. All of the great styling effects that make denim unique are preserved because this finish can be applied in garment form. The STORM DENIM finish will boldly take denim into a new category and introduce consumers to "performance jeans". Finally, this innovation helps to repel everyday stains and provides an extra level of durability, making them ready for whatever the day may bring.

The WICKING WINDOWS™ is a moisture management technology for cotton that transfers moisture away from the body, reduces absorbent capacity for faster drying and reduces fabric cling.

Cotton fabrics generally wick well and typically absorb much more moisture than synthetic fibers. It is this characteristic that has limited cotton's ability to perform well in activewear and performance apparel end uses. Through new advances in technology, cotton can be engineered to transfer moisture away from the skin to the outside of the fabric, keeping the wearer dryer and more comfortable. Fabrics treated with the WICKING WINDOWS technology are less absorbent so they not only cling to the body less, they also dry much faster during and after exercise.

Many synthetic fabrics claim to move moisture from the inside of the garment to the fabric's outer layer, however most do nothing more than effectively absorb perspiration and trap as much moisture next to the skin as is moved through the fabric to the outside of the garment, leaving the wearer damp and uncomfortable. Directional movement of moisture can now be quantified through measurement of a fabric's Accumulative One-

Way Transport Index. This index value is measured by the MMT Apparatus from SDL Atlas. The performance of a fabric when subjected to this test is directly related to one-way movement of moisture through a fabric structure and away from the skin. Cotton

Fabrics treated with the WICKING WINDOWS technology show a 1400% improvement in one-way transfer of moisture to the outside of the fabric over their untreated cotton equivalent. Most synthetic fabrics also achieve a rating similar to untreated cotton, showing very little or no one-way movement of moisture. During exercise, many fabrics can become overly-saturated with perspiration. As the body moves, friction is created between the skin and fabric. Because most wet fabrics tend to cling to the skin, irritation or chafing can occur. Cotton fabrics treated with WICKING WINDOWS technology have demonstrated significant reductions in the amount of cling force next to the skin when wet, meaning no irritation or discomfort during exercise. Cotton fabrics treated with WICKING WINDOWS technology also exhibit the ability to dry much faster than untreated cotton. This is not only a benefit to the wearer, as fabrics dry faster through evaporation during exercise, but also dry faster afterwards. This ability to dry faster provides an additional benefit to consumers as it translates to much less energy consumption during home laundering and drying.

Cotton Incorporated has recently unveiled its advanced TransDRY™ moisture management technology, an innovative new system that enables the production of quick-drying, engineered fabrics for performance apparel.

Cotton fabrics made with TransDRY technology offer cotton's familiar comfort and softness while staying dry, keeping the wearer cooler and more comfortable. That's because they're engineered to transfer moisture in one direction, away from the skin to the outside of the fabric, where moisture can evaporate.

The TransDRY™ brand, named for its unique ability to quickly transfer moisture away from the skin and dry faster, raises the bar for cotton performance and will set a new standard of high-performance moisture management.

In an effort to make the textile supply chain more environmentally friendly, Clariant International, Ltd. and Huntsman have recently developed and optimized new exhaust bleaching procedures for cotton. Tests and evaluations at Cotton Incorporated indicate that the new procedures conserve water and reduce processing time, lower energy consumption and lessen the chemical impact of conventional bleaching, while yielding comparable results for fabric whiteness, absorbency and fabric physical properties. These improvements can be achieved using existing batch machinery and require no additional capital expense for implementation.

Traditional 3-stage bleaching involves desizing, scouring and bleaching, but a new technology developed by Innova International combines the desizing and scouring stages in one step. That's not all: It significantly reduces the number of wash boxes following both the desize and the bleach. Water and energy use are reduced by more than 60%, since there's less hot rinsing and less time in the steamer, which translates into higher productivity. And there's comparable whiteness and fabric strength to conventional preparation of the fabric. Cotton Incorporated worked with Innova International and its president, Angelo Rizzardi, inventor of the process, in the very early development stages, using its expertise, labs and equipment to optimize the process. Rizzardi comments, "Of the water used in textiles, 80% to 85% is consumed in wet processing, so it needs to be addressed if we want sustainability in the textile industry. We may end up saving probably 70% or more of water that currently is wasted or used in the rinsing operation. A similar amount of energy will no longer be necessary to heat water to the necessary temperature."