

TECHNICAL BULLETIN



COTTON INCORPORATED

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TRI 1003

COTTON INCORPORATED

FIBER PROCESSING LABORATORY

WHAT IS IT?

The Fiber Processing Laboratory is a fully equipped yarn manufacturing pilot facility capable of producing both carded and combed 100% cotton and cotton - rich blended yarns. For blended products, intimate and/or draw frame blend practices are utilized. Yarns can be spun by conventional ring, compact ring, vortex, and rotor spinning systems. Novelty slub yarns can be produced by ring or rotor methods.

WHERE IS IT?

The Fiber Processing Laboratory is located at the Cotton Incorporated World Headquarters in Cary, North Carolina.

HOW IS IT STAFFED?

The FPL staff consists of formally trained and mill experienced personnel. The laboratory is operated in accordance with standard mill practices and procedures.

WHO CAN OBTAIN SERVICES?

Textile yarn manufacturers, weavers, knitters, converters, and retailers with specific interests in producing or marketing 100% cotton or NATURAL BLEND[®] textile products of upland cotton are eligible for services provided by the Fiber Processing laboratory. Importers of cotton textile products into the U.S. are also eligible for these services. Requests for service should be directed to the Fiber Processing Team at Cotton Incorporated in Cary. In addition, our internet site, www.cottoninc.com, provides important information and access to the Fiber Processing Department.

NOTE: NATURAL BLEND[®] is a registered trademark of Cotton Incorporated for blended products containing a minimum of 60% upland cotton which meet approved performance characteristics.

WHAT ARE SOME OF THE SERVICES OFFERED?

1. Development of improved yarns utilizing state-of-the-art fiber testing methods, machinery settings, drafting techniques, and overall engineering of processing specific yarns and end products.
2. Analysis of new and/or improved varieties and qualities of cotton to determine spinning performance, nep potential at carding, fabric appearance, etc.
3. Technical service and implementation are offered through mill visits, telephone conversations, or meetings at our facility.
4. Precise computer simulation of yarn and fabric images for appearance evaluation before the yarn is woven or knitted into the actual fabric; this can be produced by the Amsler E. Profi System.

5. Evaluation of new cotton processing machinery and technology.
6. Yarn manufacturing trials can be run on production machinery to simulate mill conditions. Resultant yarn qualities can be fully tested and evaluated. In addition, fabric can be produced, dyed, finished, and tested for a complete evaluation.

WHAT TESTING IS AVAILABLE?

Full laboratory analysis of cotton fiber, sliver, roving, yarn, and fabric is available. Of particular benefit to the industry is the option of analytical fiber selection based on the ultimate end product. This is achieved by establishing a fiber profile from mechanical and physical test results and relating it to responses throughout the process of yarn and fabric manufacture.

FIBER PROCESSING LABORATORY EQUIPMENT

Opening, Cleaning, and Blending: The opening and cleaning line consists of a Rieter B3/B4 opening hopper with a one-roll cleaning segment feeding a Rieter B10 UNIClean. Once through the Rieter inline dust extractor, the fiber is opened and cleaned by a Rieter B60 UNIflex fine opener/cleaner. The cleaned stock can then be sent directly to cards, collected in fiber form, baled, or diverted into one of two Fiber Controls weigh-pan hoppers with load cell weighing mechanisms for intimate blending.

Cards: Four cards are available for use:

1. Hollingsworth Card – Equipped with Fiber Controls Snowflaker chute, conventional revolving flats, CRUSHMASTER® take-off unit, and Booth Evencard III auto-leveler.
2. Hollingsworth 2000® - Employs a Hergeth/Hollingsworth variable speed chute and short-term auto-leveling system.
3. Rieter C60 – 60 inches wide, high production card with short and long term auto-leveling. Production capability exceeds 300 lbs./hr.
4. Trutzschler DK803 High production card that is fed by a Trutzschler DirectFeed™ chute.

Draw Frames: Two draw frames are available:

1. Reiter DO/5 – Single delivery machine with automatic doffing.
2. Rieter RSB-D30 – Single delivery machine with automatic doffing and digital auto-leveling system.

Lap Winder: Rieter E – 32 – Two sets of drafting rolls, auto doffing, and up to 28 can creels.

Comber: Rieter E72 – Eight positions with auto-doffing one can delivery.

Roving: Rieter F-11 – Twenty-four positions with three roll SKF drafting system.

Spinning Laboratory

Ring Spinning:

1. Rieter K44 Compact Ring Spinning Frame - 144 position machine with fully integrated controls and variable speed motors.
2. Zinser 351 - 96 spindles with integrated touch screen computer that controls all major functions and variable speed suction system. Amsler slub, multi-count, multi-twist, and core spinning capability
3. Suessen EliTe™ Compact Spinner - 96 spindle machine capable of running conventional or compact ring spun yarns.

Rotor Spinning:

1. Rieter R40 - 20 rotor positions equipped with integrated controls to change twist and draft.
2. Schlafhorst Autocoro® 240 - 24 position machine with Suessen's SC 1-M Spin Box conversion and an Amsler STG-4000 slubbing device.

Air Jet Spinning: Murata Vortex Spinner (MVS) Model 861 - 16 positions equipped with yarn clearing, core spinning, and production speed up to 450 meters per minute.

Winding: The lab utilizes three winders:

1. Murata No. 21C Process Coner - 12 position machine with automatic bobbin Friendly Feeder, Uster's® Quantum Clearers, and individual drives/air splicers. Also equipped with Perla A hairiness reduction system and Bal-Con balloon controller.
2. Murata Machconer™ - 10 position machine with carousel bobbin feeding, Uster's® Quantum Clearers, and individual drives/air splicers.
3. SSM Precision Winder (DP1-W) – 10 positions equipped to run dye tubes, cones, or doubled yarn packages ready for the twisting.

Twisting: Saurer Alma TM 160 A/B two-for-one twister with 48 positions.

The statements, recommendations and suggestions contained herein are based on experiments and information believed to be reliable only with regard to the products and/or processes involved at the time. No guarantee is made of their accuracy, however, and the information is given without warranty as to its accuracy or reproducibility either express or implied, and does not authorize use of the information for purposes of advertisement or product endorsement or certification. Likewise, no statement contained herein shall be construed as a permission or recommendation for the use of any information, product or process that may infringe any existing patents. The use of trade names does not constitute endorsement of any product mentioned, nor is permission granted to use the name Cotton Incorporated or any of its trademarks in conjunction with the products involved.

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.

For further information contact:

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