

# TECHNICAL BULLETIN



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## **PROCESSING WOVEN COTTON SEERSUCKER FABRICS**

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### INTRODUCTION

Cotton Incorporated presents in this bulletin recommendations for producing woven cotton seersucker by proper fabric engineering and tension control from weaving through the finishing process.

## FABRIC CONSTRUCTION

A good rule of thumb for seersucker construction is that the seersucker stripe should be 1 ½ to 2 times the density of the ground when the weave of the seersucker and the ground are the same. The ratio of 1 ½ to 2 times can be achieved either by using different yarn counts or by increasing the density in the reed.

1 ½ x Example:       Ground – plain weave, 84 sley, 37/1 Ne  
                              Seersucker – plain weave, 84 sley, 24/1 Ne  
                              Filling – 37/1 @ 68 ppi  
                              Reed – 2 ends/dent

2 x Example:         Ground – plain weave, 84 sley, 37/1 Ne  
                              Seersucker – plain weave, 84 sley, 37/2 Ne  
                              Filling – 37/1 @ 68 ppi  
                              Reed – 2 ends/dent

When the weave in the seersucker is looser than the ground, the density ratio of interlaces must be kept to 1 ½ to 2 times by either increasing the ends/dent in the seersucker or using a heavier yarn.

Picks per inch are very important in weaving seersucker. The filling is the controlling factor in “locking” in the seersucker during weaving. When developing a new construction, it is sometimes necessary to experiment with picks per inch to reach the proper number of interlaces to lock in the seersucker.

## WARPING

Since the formation of the seersucker effect is a result of differences in contraction of the ground yarn and the seersucker yarn, the percent contraction for each must be calculated. This can be done by using ground area as the basis with the contraction determined by past experience or on related fabrics. The seersucker yarn should have a contraction of 2 ½ times the ground yarn.

Example:       100 yards of cloth @ 10% ground contraction, 25% seersucker contraction.  
                      Warp 110 yards for ground beam  
                      Warp 125 yards for seersucker beam

## SLASHING

Normal slashing add-on may be used for the ground beam while add-on of 40% - 50% of normal should be used on the seersucker beam.

It is recommended that a size be used on the seersucker beam that is soft and pliable and can be easily removed in preparation for dyeing and/or finishing. Polyvinyl alcohol is one size widely used.

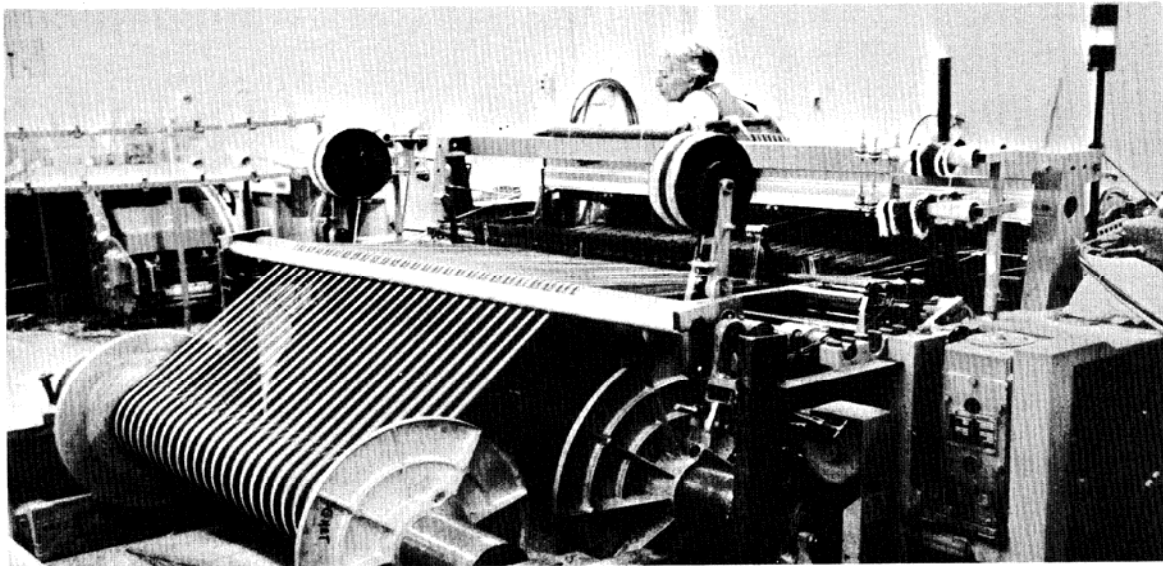
## WEAVING

Seersuckers are woven from two beams. The ground yarn is normally run from the bottom beam and the seersucker from the top beam. This arrangement is used because positive letoff control on the bottom beam is very important to achieve the proper “pucker” in the fabric.

It is possible to reverse the beams and run the seersucker from the bottom. This should occur only when the number of seersucker ends far exceed the number of ground ends and it is desirable because of the yards that can be mounted per beam.

Top beam stands are available for most looms. When stands are not available, a simple device as illustrated may be used. This device is merely a frame for holding a second beam. The beam has a drum attached with a band braking device for tension control.

Any number of tension devices may be used on the top beam or second beam as long as let off of the beam is *constant*.



**Example of seersucker weaving**

## LOOM SETTINGS

Bottom beam tension is kept on the “tight” side, while top beam (seersucker) tension is kept on the “loose” side.

Frequent checks of bottom and top beam tension should be made to insure the proper differential contraction between the two weaves. A good pucker will be produced when the contraction of the seersucker is 2 ½ times the ground contraction. A ground contraction of 10% should have a seersucker contraction of 25%.

To set up a loom with proper tension, first determine the desired contraction of the seersucker. Adjust the top beam to the loose side and at the same time tighten the bottom beam. Do no attempt to make drastic changes but make slight adjustments and weave down a few inches and check before proceeding.

Set the cloth roll tension with just enough pull to roll up the cloth. Too much tension at this point can pull out the seersucker.

Minimum tension should be used on the fabric at any other stage of put-up

## **FINISHING**

Seersucker fabrics should not be singed due to the raised effect of the seersucker. Burnout could occur. Scouring should be done under as little tension as possible. It is recommended that either a horizontal washer or atmospheric beck be used to apply the least possible tension on the fabric.

Pin tenting is recommended with a zero pull to a 1% overfeed. A loop dryer can also be used followed by steam framing on a short open frame for width control.

Shrinkage control is normally obtained by utilizing very little tension in the finishing plant. Resin application is sometimes used rather than mechanical shrinkage, as this could result in a flattened appearance.

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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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