

Design Resource

Terry Towel Weaving - Madurai, Tamil Nadu

Loops That Can Absorb Large Amounts of Water
by

Prof. Bibhudutta Baral and Rakshitha
NID Campus, Bengaluru

Source:

<http://dsource.in/resource/terry-towel-weaving-madurai-tamil-nadu>



1. Introduction
2. Tools and Raw Materials
3. Making Process
4. Products
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Introduction

A textile product made with loop pile on one or both sides that covers the entire surface forming some patterns with the side hems and fringes at the end is known as terry towel. The word “terry” is derived from the French word “tirer” means “to pull out” that refers to the pile of loops which are pulled out by hand to manufacture the traditional Turkish towel. The research conducted by Manchester Textile Institute on terry towel weaving concludes that original terry weaving was the result of defective weaving. This development of terry was stricken in Bursa city of Turkey. Bursa is one of the major traditional textile centers of nation. The later development on the construction of terry weaving is considered as the evolution of woven fabrics. Thus the terry toweling is still known as “Turk Fabric”, “Turkish Terry” or “Turkish Toweling”.

Classification of Terry Towels:

The classification of towels is made according to the weight, production, pile structure, pile formation, pile presence on fabric surfaces and finishing.

In velour towel on one side the pile loops of the fabric are sheared to give a smooth cut velvet appearance. The fabric of uncut loops is sheared to give best absorbency and it also gives luxurious velvety hand. These days the towel with appliques embellished as a motif that is stitched on the Two-pick terry towels that were woven for bathrobe has lost its importance due to the instability of the loops. Whereas the four or more pick terry towels are produced rarely as they need to be beaten twice for each pile. One sided pile toweling has the capacity of low water absorbing and it is used only for some special purposes. It is very difficult to weave one sided pile terry without any defects. In two sided pile terry, both sides are covered with pile whereas all the irregularities are seen on one side terry fabric, as on the other side it is bare without the pile. These terry towels are thus divided into groups according to the size and end use of the bath towels, face towels, hand towels, fingertip towels, wash-cloths and kitchen towels.

Structure of the Fibers used in Towels:

The yarns that are used to make terry towels are highly absorbent, ability to dye well, high wet strength, good color fastness wash ability, soft hand and hypo allergenic, easy availability and low cost. Yarns of cotton fibers have these properties with most effectiveness. These cotton fibers consist of unicellular seed hairs of the cotton plant. The gossypium plant chemical composition of typical cotton fiber is as follows:

- 94% of dry weight (cellulose),
- 1.3% is protein,
- 1.2% is pectic substance,
- 1.2% is ash,
- 0.6% is wax and
- 4% is other substances.

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The ability of cotton fabric is to absorb the water from the skin as in a towel. The characteristic of cotton fabric is much better compared to synthetic fibers, as cotton is hydrophilic, resistant to hold more water and wets easily. Cotton releases a considerable amount of heat while absorbing the moisture but dries slowly. These fibers have the proper distribution and size of the pores and capillaries that uniquely suits the purpose. Towels are most likely to remain wet compared to other home textiles, thus the wet strength is one of the crucial property required in towels. Cotton is stable in water and has the higher wet tenacity compared to its dry tenacity. It has the higher elastic recovery and flexibility whereas the toughness and initial modulus of cotton are lower compared to hemp fibers.

Cotton is a natural fiber and considered hypoallergenic as it has low tendency to cause allergic reactions. It can be sterilized and does not cause skin irritation. The microbial resistance of cotton is low but the fibers are resistant to moth and beetle damage. The microbial resistance can be improved by antimicrobial finishing. Thus the cotton is used in medical institutional area due to its hypoallergenic characteristic and sterilize-ability. Patients with skin allergies are thus recommended to use cotton fabrics.

More than seventy countries in the world grow cotton hence the availability is easy. The other reason cotton is used for toweling is, it is the most economical fiber among the natural fibers. Generally in towels shorter staple cotton fibers are used, as there is no requirement of the fine yarn counts. The cotton fibers that are used in towels are low fiber length so they are relatively low fiber strength and has low maturity ratio. Thus the micronaire ration is considered to be in the middle range of the cotton towels.

Yarns Used in Towels:

There are four set of yarns used in making terry towel. Those four sets are:

- Pile warp,
- Ground warp,
- Weft and
- Border weft.

Pile Warp:

Generally one hundred percent cotton yarns combed in sizes of 16/1, 20/1 Ne counts, 240-255 meter twist are most used. The use of cotton-rayon blends has reduced as cotton provides 100% more pleasing hands and texture. When the required quality is high, two or more ply yarns are used. In such cases absorbency increases and the fabric gains resistance to pile lay. The use of two-ply also improves the visual appearance. Piled yarns are used to form upright loops in classic terry towels whereas single yarns are used to form spiral loops in fashion terry which is known as milled/fulled goods.

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Ground Warp:

Carded yarns of 20/2 or 24/2 Ne count with 550-meter twist and of 100% cotton are commonly used for ground warp ends. Yarns of two-ply are preferred as the ground warps ends have the highest tension during weaving. Blend of cotton and polyester yarns are used for greater strength. Rotor spun yarns are also used in ground warps.

Weft:

In weft/filling picks generally carded yarns of 16/1 or 20/1 Ne counts with 240 – 255 meter twist with 100% cotton are used. Rotor spun yarns are also used in wefts.

Border Weft:

High end towels constitute of very wide range of filling yarns and have fancy weaves with complex borders. Bulky yarns of rayon, viscose, mercerized cotton, polyester that is shiny and decorative are used at different sizes of yarns. Sometimes for the purpose of design yarns of novelty types are also used.

MPR Exports is a company in Madurai that manufactures terry towels. Mr. Rajan Pitchairaman is the marketing manager of it. This company was started by his grandfather Mr. Muthu Pilai during 1958. Later it was looked after by his father Mr. M. Pitchairaman. Due to his rigorous effort now the company consists of 400 handlooms. Now the company has implemented the latest technologies. Thus the company consists of automatic power looms as well. Nearly 100 laborers work in this company.



Owner of the turkey towel weaving centre.

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In charge of the towel weaving unit.



Experienced turkey towel weaver.



Staffs at the manufacturing unit of turkey towel weaving.

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Finished turkey towel in various colours.

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Tools and Raw Materials

Tools and raw materials that are used for making terry towel is:

- **Loom:** Loom is used for weaving purpose.
- **Yarns:** Yarns are the main material that is used for weaving the terry towel.
- **Spindles:** Spindles are used while weaving.
- **Fly Shuttle:** Spindles are inserted in the fly shuttle and are used while weaving.
- **Spinning Machine:** This machine helps in winding the spindles with cotton yarns.



Cone winding machine.

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Warping Beam.



White spindles ready for use.



Black spindles ready for use.



Cotton yarn before dyeing.

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Weaving loom.



Color bobbin.



Handloom machine.

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Different colored cotton yarns.

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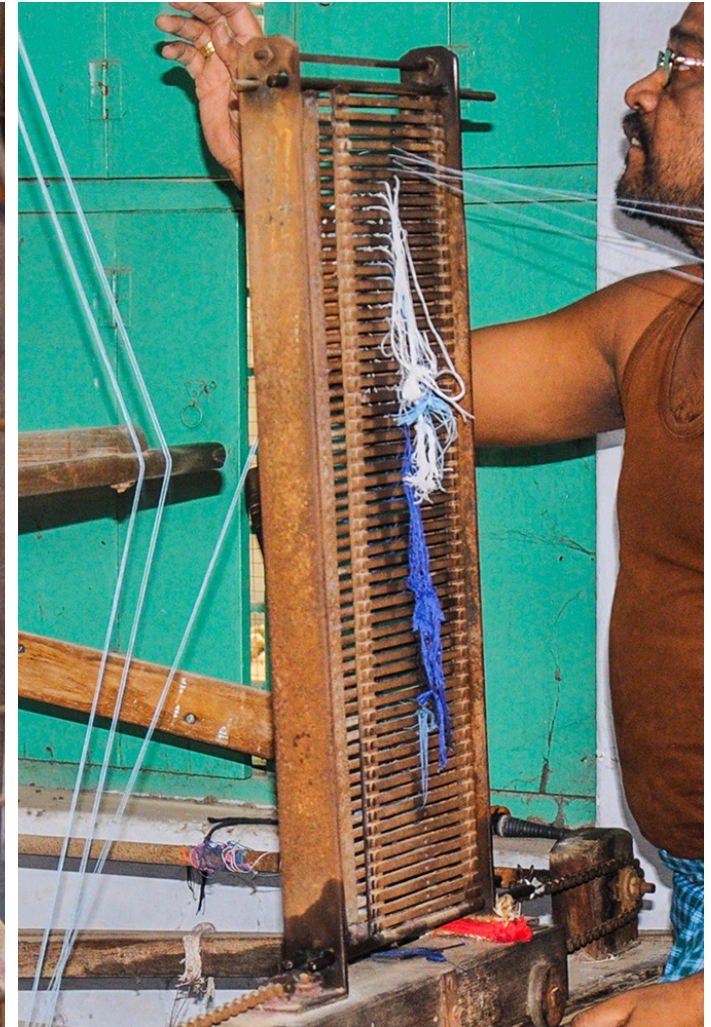
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Cone winding stand.



Slide part of sizing wheel.

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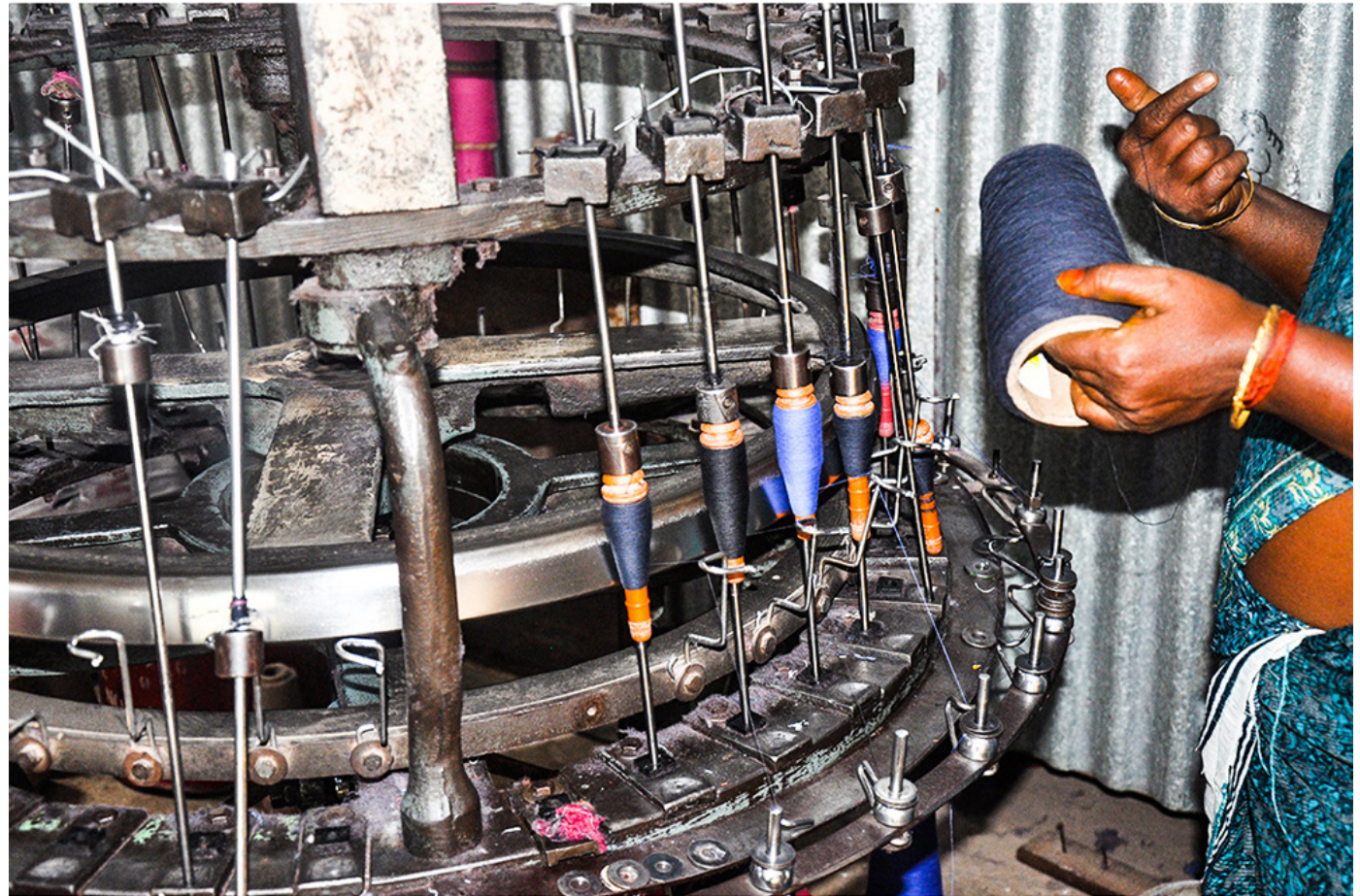
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Weft sizing machine.

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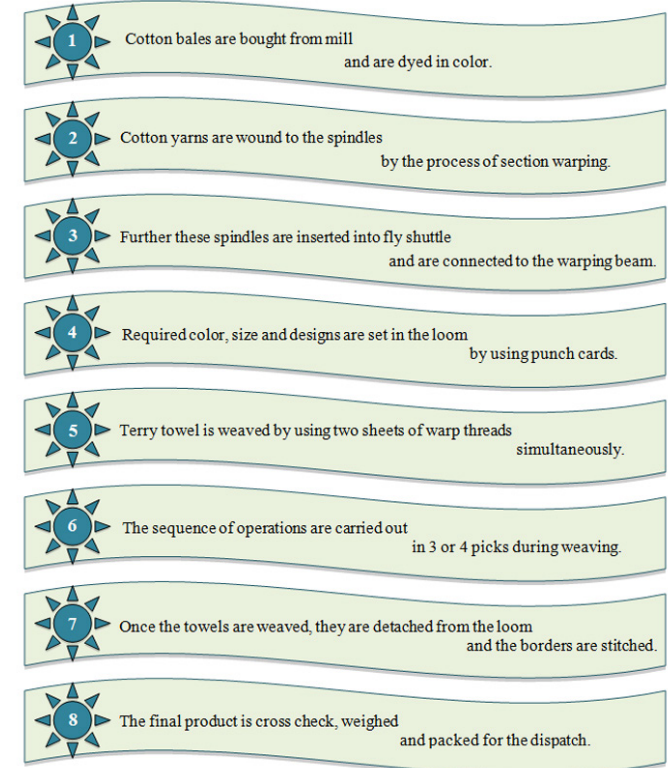
Cotton bales are bought from the mill. These bales are dyed in color. Cotton yarns are wound to the spindles by the process of section warping. Further these spindles are inserted into fly shuttle and are connected to the warping beam. Required color, size and designs are set in the loom by using punch cards. According to these parameters the terry towels are weaved in the looms.

Terry towel is weaved by using two sheets of warp threads simultaneously. In which one is kept under normal tension and other is kept under loose tension. The threads of normal tension warp sheet are for ground warp and the threads of loose tension warp sheet are for pile warp. The sequence of operations during weaving for pile formation in 3 picks is explained below:

- Insertion of first pick as per the design with loose beating.
- Allow a predetermined gap near the feel/surface of cloth.
- Insertion of second pick following the first pick with loose beating.
- Insertion of third pick with heavy beating and bring all the three picks to feel/surface of the cloth.

Four pick terry towels are heavier in structure and provide better quality in comparison to three pick terry towels. Once the terry towels are weaved they are detached from the loom and are checked thoroughly. The border stitches are made and cross checked again. The waste yarns are removed. Thus the final product is weighed and packed to be dispatched.

Flow Chart:



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Artisan segregating the yarns for taking thread.

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Multi spindle rolling process from yarns.



Connecting threads to weaving loom to continue the process.



Combining the different colored threads to handloom beam.

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Arranging the threads to handloom.



Segregating the different colored threads for continue the weaving process.



Final connect thread for weaving.



Artisan inserting the spindle to fly-shuttle.

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Experience artisan checks the smooth flow of fly-shuttle.



Senior artisan cutting the woven towel.



Weaver stitching the borders of the towel to give fine finishing.

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Weavers working on finishing, cleaning the extra threads (Quality Checking) from the towel.

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Products

All types of home textiles are manufactured at MPR Exports in Madurai.

- All types of towels. Example: Terry towels, face towels, bath towels, beach towels, kitchen towels, hand towels, tea towels, bath mat etc.
- Table cloth,
- Gloves,
- Aprons etc.

Nearly 15-20 types of products (home textiles) are manufactured in this unit. These products are exported all over the world. The company's main market is in United Kingdom. Sizes of these products vary from 10x10 inches to 36x72 inches. The cost of these products varies from INR.4 to INR.360. These products are made of various designs using numerous punching cards. These punching cards are designed in their relative's factory and are used here for the purpose of home textiles designing.



Vibrant colors and different pattern of turkey towels.

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Simple, plane and small-bordered turkey towel.



Square patterns of turkey towel.



Unique pattern and secondary color of turkey towel.

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Attractive vibrant color of turkey towel.

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Video



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