TERRY TOWEL IN BANGLADESH

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Abstract

Terry towel is one of the fast growing and challenging sub sector of the textile sector of Bangladesh. Bath robes, hand towel, kitchen towel etc. are the products from terry in one word. Demand of these products is increasing very fast globally and also significantly day by day in the local market. Consumers pay on an average $7 for bath towel and their households in America. In last decades, the importance of this sector has been increased enormously with the incremental global demand. As Bangladesh is one of the major terry products exporting country among the terry manufacturing countries of the world. This report covers a details study about terry towel including manufacturing process, classsification and physical properties export import volume of terry towel.

Keyword: Terry, towel, export, woven

Introduction

Terry or Turkish towels were originated in Constantinople, Turkey, wherein these fabrics were woven in handlooms. In the middle of 19th century this technique of weaving towels was further refined in the European countries and took a shape of power driven looms (Hobson 1990).

Terry fabrics basically belong to the group of pile fabrics, wherein an additional yarn is introduced/ inserted in such a manner that forms loop,

called as pile, to give a distinct appearance. These fabrics can be produced either by weaving or by knitting, out of these two methods of terry fabric production, woven terry fabric, which is the first method invented, still has major share (Kienbaum 1978). This is because the quality of knitted terry fabric is not comparable to that of woven terry fabric. Besides the methods employed to manufacture the terry towels, other factors such as use of fibres, parameters of yarn, parameters of weaving, and methods of chemical processing are also play a significant role in determining the quality of terry towels (Swani et al 1984, Teli et al 2000).

Historical developments of terry towel weaving

Victor Hobson (1990) described various mechanisms of terry loom being developed at initial stage. He described that at primitive stage, like other fabrics, handlooms were used to manufacture terry towels, but to produce loops, it was necessary to insert long rods in the same direction that weft were inserted. Length/size of loops was dependent on the thickness of rods. Following the invention of power operated looms, mechanical means were used to insert and withdraw the wires but these were no longer used in production of terry towels due to the complexity of operation. According to Hobson (1990), all the basic mechanisms for pile formation such as loose reed, shifting of cloth fell, variable fall back controlled by a pattern chain for sculptured effects, etc., had been developed by the end of 19th century.

Manufacturing process of terry towel

The following flow chart is used in this mill for terry towel manufacturing:

warping (direct)
↓
sizing
↓
weaving
↓
greige fabric inspection
↓
wet processing
↓
inspection
↓
stitching
↓
final inspection
↓

packing & cartooning

↓

shipment

Mechanism of terry weave

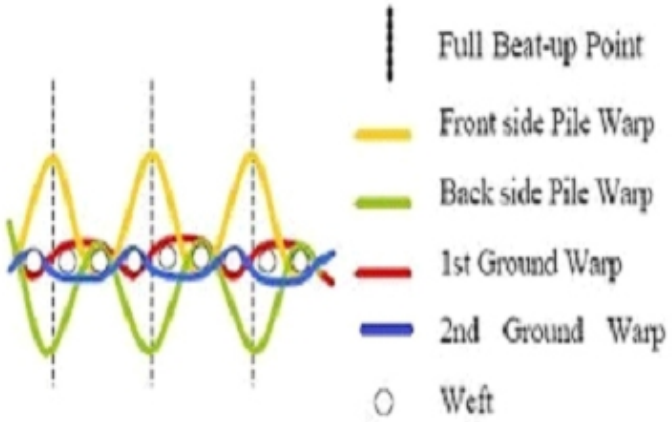
In terry fabric manufacturing, two sheets of warp threads run simultaneously, of which, one is kept under normal tension and other is kept under loose tension (Kienbaum 1978, Ramaswamy 1992). The threads of normal tension warp sheet are for ground and threads of loose tension warp sheet are for pile. The sequence of operations during weaving for pile formation in 3-pick terry is given below:

- Insertion of first pick as per the design with loose beating
- Allow a predetermined gap near the feel 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 the fell of cloth

Ramaswamy (1992) compared the 3 pick terry and 4 pick terry, and observed that 4-pick terry fabrics are heavy in structure and provide better quality in comparison to 3 pick fabrics.

Front view of Terry Loom

Back view of Terry Loom



Pile formation

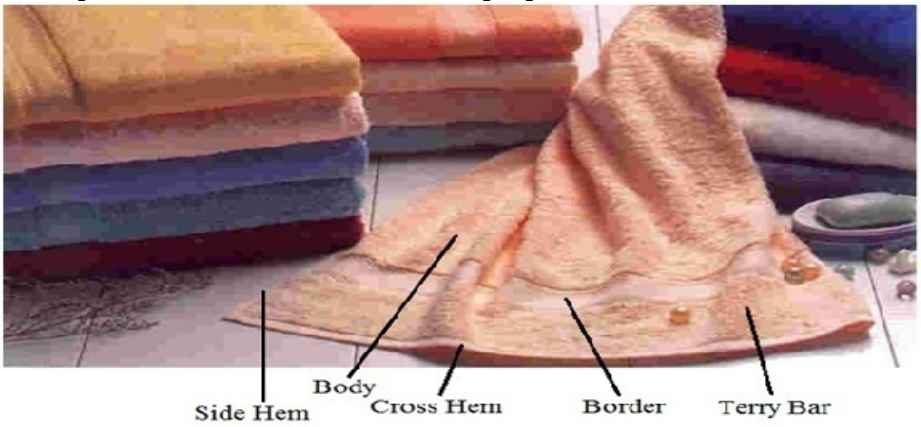
Pile of the towel plays major role for a towel for its water absorbency and other properties. Loop length is decided by the quality, weight etc. as per requirements. Pile manufacturers use better quality yarn like combed, compact, hydro, zero twisted yarns.

Piles are made by different high value fibers like superior qualities of cotton suvin, giza, pima, bamboo, modal etc. to get better absorbency and lint properties. For ground yarn, comparatively coarser counts are used in OE and 2-ply option to give better strength and compactness in ground fabric. Both piles and ground yarns are prepared in the same manner of warping, sizing, and drawing-in.

Like other textile products shirting, suiting, sheeting fabrics, towel making has the same process sequences – desizing, bleaching, mercerizing, dyeing and finishing.

Parts of a conventional terry

A woven towel consists of five parts. These are the pile area, fringes, beginning and end part, selvedge, border. Every towel does not have to contain all of these parts. The pile area is considered the toweling part of the towel. Pile warps which are left unwoven at the beginning and the end edges of the towel.Fringes are tied or an untied tasseled part of ground warps and. The beginning and end sections are the tightly woven areas of a towel which come before or after the pile fabric part and prevent this pile area from unraveling. They are woven without pile loops, in a flat weave construction. The selvedge contains fewer number of warp ends than the pile area, for example 90 comparing to 4000 total warp ends, woven without pile as a flat weave and has the purpose to reinforce the towel sides



The parts mentioned on the above image are known in different names like Side Hem is named as Selvedge, Cross Hem is named as top and bottom hem, Borders are called as Dobby and Terry Bar is known as

Cuff. A wide variety of towel styles are available in the market. All the above towel parts may not be present in a particular towel.

Classification of terry towel

- The classification of towels can be made according to weight, production, pile presence on fabric surfaces, weft pick per pile loop etc.
- According to weight: very heavy, heavy, medium, light
- According to production: woven, warp knitted, weft knitted
- According to pile presence on fabric surfaces: one side or both side pile
- According to weft pick per pile loop: 2 pick, 3 pick, 4 pick, 5 pick etc.

Fibres used in terry towel

- According to Acar, the required properties of yarns which are used in terry towels are high absorbency, high wet strength, and ability to dye well, good colorfastness wash-ability, soft hand, and hypoallergenic, low cost, and easy availability.
- Yarns made of cotton fibres can provide these properties most effectively
- More and more towels are being produced from fibres other than cotton such as Modal®, bamboo, seaweed, Lyocel® and now soybean, corn and other Tri-blend bamboo, silk and cotton blend is also beginning to be used in towels.
- Such as Egyptian, Pima and Supima qualities, bamboo can be used in towels because of its softness, luster, antibacterial properties and greater absorbency.
- Flax is also among the natural hydrophilic fibres of cellulose like cotton. Flax has better dry strength than cotton, and like cotton it gets 25% stronger when wet. It absorbs more moisture, and it wicks. It is longer, smoother, and more lustrous than cotton.
- However it is not used commonly in towels as it has been limited in supply and it is expensive because of the long processing and intense labor it needs to be turned into a yarn.

Yarns which are used in terry towel

- In a terry towel there are four groups of yarn. These four groups are the pile warp, ground warp, weft (filling), and border weft.

Pile warp

- One hundred percent cotton yarns, carded or combed, in sizes of 16/1, 20/1 Ne counts, 240-255 turns/meter twist, are most commonly used.
- The use of cotton- rayon blends has diminished, because 100% cotton provides a more pleasing hand and texture then the blends.
- When high quality is required, two or more ply yarns are used. In this case absorbency increases, and the fabric gains resistance to pile lay.
- The use of two-ply yarns is also on the increase as it improves visual appearance. Plied yarns are used to form upright loops in classic terry, whereas single yarns are used to form spiral loops in fashion terry known as milled or fulled goods.

Ground warp

- Carded yarns of 20/2, or 24/2 Ne count with 550 turns/meter twist, and of 100% cotton are commonly used for ground warp ends.
- Two ply yarns are preferred because the ground warps ends have the highest tension during weaving.
- It is common to use a yarn of cotton/polyester blend for greater strength. Rotor spun yarns are also used in ground warps.

Weft

- Carded yarns of 16/1, or 20/1 Ne counts with 240 – 255 turns/meter twist, 100% cotton are used usually for weft or filling picks.
- Rotor spun yarns are also used in wefts.

Border weft

- Premium or high end hand towels have complex borders with fancy weaves and use a very wide range of filling yarns.

Decorative, shiny and bulky yarns of rayon, viscose, polyester, chenille, or mercerized cotton are used at different yarn sizes.

Physical properties of a towel

- **Absorbency:** High absorbency can be achieved in a towel by increasing the surface area with pile yarns and using cotton yarns with twists lower than the ground warps.
- **Heat Insulation**: Pile yarns make the fabric thicker and give the fabric a high level of heat insulation. Moreover cotton fibres which are used in towels are naturally convoluted and bulked. This serves to trap air within the fabric structure. The air contained between fibres and within them provides thermal insulation. These

convolutions plus the tapered fiber ends also hold the fabric away from the skin, adding to the amount of air trapped and contribution to heat insulation.

- **Crease Resistance:** Pile yarns give the fabric a third dimension which makes the fabric nearly uncreasable.
- **Dullness:** The pile loops form a very rough textured surface, thus giving the fabric a dull appearance. This situation is true for only un-sheared toweling. Velour toweling has an appearance even brighter than that of a traditional fabric. The cut pile forms a very smooth surface and reflects light evenly.

Bangladesh terry towel sector overview:

a. Export volume:

Bangladesh is one of the world's leading terry towel producers by volume and value. The table is shown below total export in last decade.

Total export in different fiscal year

year	Total export (million us$)	%share of total export	% annual change
2000-01	48.05	0.74	+4.95
2001-02	50.43	0.84	+12.18
2002-03	56.98	0.86	+20.74
2003-04	68.31	0.90	-5.15
2004-05	64.79	0.75	+23.70
2005-06	80.15	0.76	+35.16
2006-07	103.77	0.85	+37.53
2007-08	112.88	0.90	+21.11
2008-09	132.57	0.96	+27.54
2009-10	159.08 (target)	_	_

Source: Export Promotion Bureau

The table below is shown the total export comparison between 2008-09 over 2007-08:

Total Export comparison 2009-10 over 2008-09

Valued in million us $

export performance 2008-09	Export target 2009-10	Strategic export target july-mar 09-10	Export performance for july-mar 09-10	%change export over target	Export performance july-mar 08-09	%change july-mar 09-10 over 08-09
132.57	159.08	115.49	119.78	+3.71	98.04	+22.17

Source: Export Promotion Bureau

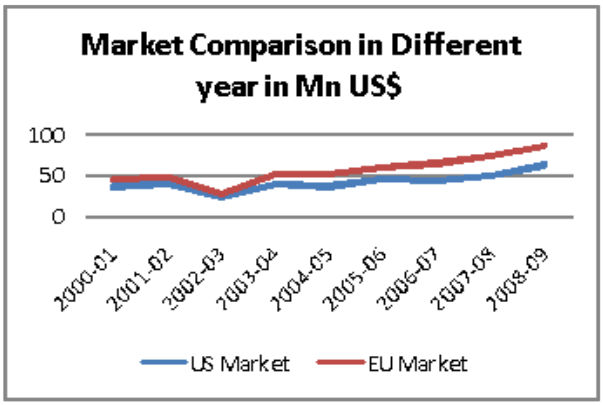
The diagrams above show that the terry towel sector is growing in a good pace and consistently. Though the export value could have been higher it is maintaining a sustainable growing trend throughout the decade. No major deflection indicates a descent future as well.

Product range

Bangladesh produces different types of terry towel for export among those face towel, hand towel, plain/terry kitchen towel, stripped bath towel, terry towel, assorted color bath towel, dyed terry bath towel, golf towel, Bath robe towel etc are remarkable.

Main export destinations

Major export destinations of Bangladeshi terry towel are USA and European Union countries. Bangladesh is also exporting to some Asian countries. Bangladesh positioned 6th among top towel exporter to the USA in the year 2009 and 5th in the year 2008. Among the EU countries- UK, France, Germany, Italy, Greece Spain, Sweden, Poland, Finland, Netherlands are importing significant amount of terry towel. Total Export Volume to EU market in 2008-09 fiscal year was US$ **24186** thousands**.** Then other markets for terry towel like North-South American countries (Canada, Mexico, Colombia, Brazil, Chile etc.) imported US$ **18792** thousand in 2008-09; Asia (India, Russia, Malaysia, Japan, Korea etc.) imported 9 US$ **5211** thousand in 2008-09; Middle East (UAE, Turkey, Iran, Egypt, Lebanon etc.) imported US$ **1865** thousand in 2008-09.



Market Wise Terry Towel Exports in Different Year
Valued in Thousand US$

year	Usa	Eu	Asia	North & south america	Middle east	Others
2000-01	**37242**	**8991**	**610**	**523**	**188**	**44**
2001-02	**38654**	**9805**	**1646**	**282**	**35**	**18**
2002-03	**23409**	**5546**	**461**	**173**	**3**	**52**
2003-04	**38664**	**13453**	**399**	**7624**	**92**	**561**
2004-05	**36093**	**15634**	**1188**	**4311**	**183**	**6779**
2005-06	**46462**	**15459**	**4485**	**9583**	**72**	**1474**
2006-07	**43960**	**22296**	**15613**	**16326**	**300**	**5281**
2007-08	**50683**	**23689**	**4518**	**19226**	**632**	**11160**
2008-09	**63250**	**24186**	**5211**	**18792**	**1865**	**12100**

Source: export promotion bureau

Global market overview

Global manufacturer:

Major terry towel exporting countries to US market are India, China, Pakistan, Brazil, Turkey, Thailand, Israel, Egypt and Vietnam.

Table Shows The Top Ten Terry Towel Exporters to the United States for the 2008 and 2009 on valued by million US$.

Country	2008	2009	%Change	1st 3 Months of 2009	1st 3 Months of 2010	%Change
World	1328.747	1205.062	-10.264	316.059	340.987	7.89
India	372.519	362.958	-2.634	94.966	101.639	7.03
China	288.488	282.744	-2.031	93.196	100.947	8.32
Pakistan	284.861	265.359	-7.349	52.844	71.194	34.72
Brazil	94.368	81.265	-16.124	17.768	16.764	-5.65
Turkey	67.760	40.998	-65.276	8.210	10.182	24.02
Bangladesh	**33.244**	**35.916**	**7.439**	**9.430**	**8.114**	**-13.96**
Thailand	57.153	34.893	-58.833	9.630	5.138	-46.65
Israel	28.009	26.989	-3.779	4.759	7.856	65.07
Egypt	22.217	17.960	-23.702	8.657	6.679	-22.84
Colombia	10.867	12.520	13.202	2.026	2.649	30.76

Source: Major Shippers Report Category 363 Cotton Terry/Other Pile Towels

Countries like Canada, Vietnam, Portugal, Mexico etc and some other Asian and Middle Assian countries are important terry towel importer..

Cost per **Square Meter Equivalent** of the top ten terry towel exporters in the year 2008 and 2009. This unit price has been increased significantly within last one year due to huge rise in cotton/yarn price.

	2008	2009
Country	SME ($/Unit)	SME ($/Unit)
World	4.597	4.489
India	5.353	5.238
China	6.612	6.108
Pakistan	3.006	2.907
Brazil	5.352	6.161
Turkey	8.472	8.623
Bangladesh	**1.648**	**1.862**
Thailand	5.963	5.739
Israel	4.048	4.255
Egypt	11.913	13.995
Colombia	4.971	4.628

Note: Table figures calculated using data from Major Shippers Report category 363 Cotton terry/Other Pile Towels (2008/2009)

Top 5 Bath Towel Exporters to the United States ($millions).
Source: WWW. Hometextilestoday.com

Company Name	Country
Abhishek Industries	Mumbai, India
Welspun	Mumbai, India
Karsten Blumeneau	Brazil
Loftex	Binzhou, China
Sunvim	Qingdao, China

Conclusion

Above discussed research related to a details study of terry towel. The demand of terry towel is increasing day by day. To fulfil the increasing demand modification on terry towel manufacturing and special finishing process i.e. chemical and mechanical process is developing day by day. These process influence the functional properties of towels. Softer and high water absorbent towels can be manufactured by employing variety of methods. All the methods and techniques being invented have their own contribution in enhancing the functional or aesthetic properties of towels. However it is observed that characteristics of pile warp yarn play a greater role than the rest in determining the softness and water absorbency of terry towels. Softness of terry towels goes hand in hand to the softness of pile warp yarn. Softness of yarn basically depends on two factors, of which, first is type of fibre, and its properties. The other is twist inserted in yarn to bind the fibres together. Many researchers studied the effect of these factors on functional properties of towels. Low twist yarn when used in pile warp, produces softer and better water absorbent towels.

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