

Denim: Consumers prefer branded wear

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Denim is the most preferred clothing of today's youth. Various items of denim like pants, shirts, skirts, jackets, and belts, etc, are available in the global market. To give distressed denim look, many types of washing effects are given to denim fabric.

Denim jeans have consistently been fashionable in American culture and also have changed in style significantly throughout the years. Denim was traditionally coloured blue with "Indigo dye" to make blue "Jeans", though jeans denoted a different, lighter cotton textile.

Blue jeans started becoming popular among young people in the 1950s. In the year 1957, around 150 million pairs were sold worldwide. This growing trend continued until 1981 and jeans manufacturers were virtually guaranteed annual sales increases year after year. In the United States, 200 million pairs of jeans were sold in 1967, 500 million in 1977, with a peak of 520 million in 1981. When jeans first caught on, some reasoned that their low price determined their huge success. During the 1970s, however, the price of blue jeans doubled, yet demand always exceeded supply.

Recent survey on children's denim products showed that comfort, softness and easy care, lightweight and fabric quality of the attributes are considered to be important by both parents and children. Another survey conducted among the denim consumers shows preference towards the branded wear due to the superior quality.

The top global denim fabric exporting countries are China, followed by Hong Kong, Turkey, Italy, Pakistan, the USA, India, Japan, Spain and Brazil. Together, these countries accounted for as much as 83% of world denim fabric exports. Almost all of these countries witnessed a decline in their denim fabric exports in 2009-10. The only exception was Pakistan, whose exports rose by a remarkable 75% during the year 2009-10. On the other hand export of cotton denim fabrics from Pakistan increased from 45 million sq meters in 2005-06 to 229 million sq meters in 2009-10, thus showing an average increase of 50% per annum in terms of quantity.



Turkey is one of the major markets for denim fabric exports from Pakistan. With about 39 million meters of denim fabric being exported to Turkey in 2009-10, it is a major market for Pakistan. However, this export is going to be severely affected with Turkey increasing duties on imports and now 24.5% from 24th July 2011. The duties on garments also would be 52%. This step taken by Turkey is going to further affect the denim mills in Pakistan which are already facing the brunt of worldwide fall in demand of denim fabric during the current year.

The other markets for Pakistan like Bangladesh (the most important one) and others are expected to keep on performing unlike Turkey. India is becoming an important market for Pakistani denim fabrics. Though the quantities of about 2.5 million meters in 2009-10 is still small, it is indicative of the potential of the Indian denim market and it seems that it will become more important in the coming years. Both the garment exporters from India as well as the local brands are becoming important in India as they are getting more aggressive and to differentiate themselves, they buy fabrics from around the world – Italy, Turkey, Spain etc and with Pakistan becoming an important supplier to service their export market. Country-wise export of cotton denim fabrics from Pakistan is given in Table.

Denim manufacturing process

Denim accounts about 3% of total world fabric production. Traditional blue denim is a "warp faced" cotton fabric in a 3x1 twill construction, and as a result denim fabric is bluer on the face and almost white on the back. The range of fabric construction is 60-72 ends per inch and 32-44 picks per inch. In 1990s, two-thirds of all denim cloth produced in the world was woven on Sulzer Ruti Projectile weaving machines. Air-jet looms consume less raw material and less maintenance compared to the projectiles.

About 56% denim fabrics are produced using projectile looms and 29% in air-jet and 15% in rapier weaving. The classic 14 oz denim covers 70% of the total market. The other market is for lighter weight fabrics, such as shirts and sheetings. Combination of rotor yarn and shuttle less weaving has



eliminated weft bands in the denim. The yarn count range Ne 6 to Ne 10 is the most commonly used in the traditional denim manufacturing. Today, major denim producers around the globe are operating air-jets.

Other machines join several slivers together, and these slivers are then pulled and twisted, which serves to make the threads stronger. Next, these ropes are put on spinning machines, that further twist and stretch the fibers to form yarn.

Comparison between woven and knitted denims

Historically, denims have been produced from yarn-dyed spun yarns of cotton or combinations of cotton and synthetic and synthetic blend spun yarns, which have been woven together to provide a fabric having a generally uniform appearance usually provided by a darker basic colour throughout in which small flecks of a lighter colour are substantially uniformly dispersed, thereby providing a substantially uniformly appearing fabric of colours somewhere between the darker and lighter colour.

These woven fabrics are typically quite stable, exhibiting little extensibility or stretch to accommodate body movement in garments made from such fabrics. When such woven fabrics include a substantial amount of cotton or other similar yarns, they are quite susceptible to wrinkling, and therefore do not provide preferred characteristics such as ease of care and a long lasting neat appearance.

The present invention provides a denim fabric having good wrinkle resistance and improved extensibility or stretch to better accommodate body movement and provide comfort in garments made thereof, both of which contribute to the ease of care and long lasting neat appearance of such fabrics.

Furthermore, the fabrics of the present invention may be piece dyed, as distinguished from the prior art wherein denim fabrics were typically made from dyed yarns.

After denim fabric knitting, the differentially colourable yarns may be dyed to selectively colour one or more of the yarn groups as desired. The denim effect may be enhanced by sanding or napping the denim surface of the fabric to raise the dominant coloured yarns and blend the lighter coloured yarn therewith.

Raw Materials: True blue jeans are made out of 100% cotton, including the threads. Polyester blends are available; however, the over-whelming majority of jeans sold are 100% cotton. The most common dye used is synthetic indigo. The belt loops, waistband, back panel, pockets, and leggings of a pair of blue jeans are all made of indigo-dyed denim. Other features of blue jeans include the zipper, buttons, rivets, and label.

Chemical processing

In denim knit processing, the three main processes are Enzyme wash, Bleaching and Dyeing.

Enzyme wash: The cellulose enzymes are used in washing to act on the cotton yarn and thereby facilitate the abrasion of the indigo yellow from the yarn surface. The cellulose hydrolysis cellulose, yielding soluble products such as short chain polysaccharides and glucose. This action loosens the indigo layer, which is then more easily removed by mechanical abrasion. Use of cellulose overcomes most of the disadvantages of stones while yielding the desired softening and worn look.

Bleaching: In this process, a strong oxidative agent such as sodium hypochlorite or $KMnO_4$ is added during the washing with or without stone addition. Discolouration is usually more apparent than depending on the strength of the bleach liquor, quantity, temperature and treatment. This new bleaching technique only affects the indigo and natural raw white of weft yarn is retained, giving the woven fabric a darker shade, which is not implicitly achieved with hypochlorite bleaching.

Dyeing: Despite the fashion changes and the economic prices, denim production has constantly increased in recent years. With ever-new fashion variants and ever better quality, the denim industry tries to offer new fashions to its customers. The classic cotton denim fabric consists of a blue warp yarn dyed with indigo and a white weft. But with the advent of garment processing, denim is dyed in full spectrum of colours with reactive, vat, sulphur, pigment and azoic colours.

Quality Control: Cotton is a desirable natural fiber for several reasons. Cloth made from cotton is wear resistant, strong,

Export of Cotton Denim Fabrics from Pakistan						
Quantity: (000 Sq. Meters)						
Value (Rs Million)						
Country	2009-2010		2008-2009		2007 - 2008	
	Quantity	Value	Quantity	Value	Quantity	Value
Bangladesh	71,474	6,402	31,395	3,137	20,578	1,874
Egypt	7,222	1,587	11,043	1,163	8,124	758
Turkey	61,361	5,385	25,168	2,399	23,354	2,425
Hong Kong	4,306	381	2,396	228	1418	150
India	4,084	338	1,980	195	1,203	117
Italy	9,098	812	7,754	848	2,557	233
Jordan	551	51	1,858	187	805	64
Cambodia	2,575	236	2,292	276	1,210	119
Lesotho	2,457	244	2,292	215	1,308	118
Madagascar	557	50	2,019	134	636	51
Nicaragua	1,199	116	1,301	207	39	4
Peru	2,523	240	2,116	88	7,714	163
Spain	2,556	236	1,183	125	1,006	99
Sri Lanka	1,094	934	4,207	409	3,293	304
U.S.A	1,469	148	1,318	126	3,44	30
All others	149,647	9,732	20,881	1,970	10,821	1,531
Total	22,879	20,490	117,960	11,707	84,066	8,040

Source: Federal Bureau of Statistics, Government of Pakistan.

flexible, and impermeable. Blue jeans are only as good as the cotton that goes into them, however, and several tests exist for cotton fiber.

All bales of cotton are inspected by the denim manufacturer for the desired color, fiber length, and strength. Strength is the most important factor in blue jeans.

Denim is also tested for durability and its tendency to shrink. Samples of cloth are washed and dried several times to see how they wear. Blue jeans are also inspected after they are completed. If a problem can be corrected, the jeans are sent back for re-sewing. The pair is then inspected again and passed. The buttons are inspected to ensure that they and the buttonholes are of the proper size; the snaps, metal buttons, and rivets are checked for durability and their ability to withstand rust. The zippers must be strong enough to withstand the greater pressures of heavy cloth and their teeth durability must be checked as well. This is done by subjecting a sample zipper to a lifetime of openings and closings.

Future prospects

The denim component has been developing the fastest in the last decade – with Pakistan touching almost 600 million square meters of denim fabric production per annum. There are about 40 major players in the denim industry of Pakistan, some of them like Artistic Fabric Mills, Pak Denim Limited, Al-Ameen Denim Mills Limited, S.M Denim Mills Ltd, Denim International, Classic Denim, Rajby Industries, etc producing about 50 million square meters of finished denim fabrics monthly.

The challenge for mills from Pakistan would be to find destinations for denim fabrics as shipments to Turkey decline. Also, the continuously depreciating currency of Pakistan has helped in maintaining the competitiveness of the industry but it is not a factor which can sustain the industry in the long run. Some mills in Pakistan have definitely tried to invest heavily in product development and innovation and this is probably the best way which will keep the industry going strong in the coming years. ♦