Bombay to Goa: Journey of the Denim

Source: Textile Review

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Over the years the textile industry probably has produced more denim than any other woven fabric. Denim is worn both by students and professors, production workers and CEOs. It appears that the marketing gimmicks have continued to be successful, for denim is worn by everyone, everywhere. It is truly a fabric that appears to all classes of people of all ages. Denim is so durable because only the warp yarns go through the dyeing process, the weft yarn is left natural without having to undergo any chemical process. This is the advantage of yarn dyed fabric over piece dyed. The other attraction of denim is that it is easy to take care of. It does not need starching or ironing after each wash unlike other fabric materials.

Jeans decorated with embroidery, glitter or studs are especially popular with the young. They are worn out T-shirts with bright, colorful prints and a washed out look. Jeans skirts are also a favorite, pepped up with trimming, fringes and pockets or printed lettering. A variety of accessories can give jeans basics an individual stamp.

Elastic weft denim fabric is one of the denim industry's growth products. With constantly increasing production figures, elastic weft denim fabric is not a niche product nor a trend product, but a significant component of current fashion.

History of Denim

Denim takes its name from Nimes, a Renaissance textile town in the Rhone valley of France.

Table 1: History of Denim	
1873	Levi Strauss made up the first jeans in San Fransciso for Californian miners, from a heavy brown canvas.
1890	Levi Strauss produced the first jeans under the designation "Sol indigo".
1904	Establishment of the Blue-Bell co.in Grensboro, North Carolina.
1950	Firstlipper jeans appeared in the market. 1954 Marlon Brando and James Dean appeared in jeans, creating a new image for Denim.
1960	Denim began its triumphal progress.
1962	Burlington, USA, took up the production of heavy denim (14.75 ozs/sq.yd.) on Sulzer Ruti Projectile weaving Machines.
1974	The first prewashed jeans made their appearance.
1978	Industry developed a new washing process for denim: stonewash.
1986	Another washing process won favour-chemical wash.
1987	The first denim fabrics dyed "superblue indigo".
1990	Denim was evolved into the classless leisure fashion.

Trousers made from "Serge denimes" were worn by 16th century sailors trading to and from the Italian Port of Genoa, whose name in french was Genes-from which we derive the term "jeans". Table 1 Shows the history and development of denim fabric.

Characteristics of Denim

- Hand weaving
- Indigo dyeing
- Coarse cotton yarn Ne 5 / Ne 1 6
- Heavy & dense fabric in twill weave 3/1

Denim Styles

- 5 Pocket Denim
- Chambray
- O.E. or Ringyarn
- Soft Denim
- Lyocell (Tencel) Fibre
- Elastic fabric
- Denim with metal yarn
- Structural denim
- Fancy multi-colour denim
- Printed denim
- Stone & double stone wash
- Jacquard woven denim
- Black denim
- Bull denim

Denim styles

Heavy Denim 14.5 oz/sq.yd.	TWILL
Warp Ne 6 O.E. indigo x weft Ne 6.5 O.E. grey, EPI 22, PP116,	3/2
Light denim. Ne 6 O.E. indigo x weft Ne 12 OE grey, EP123, PPI16	2/1
Elastic denim warp 7 Ne x weft 74 tex core, EPI 27, PPI1 7	3/1
Warp Ne 7.4 (core), weft5.5 Ne, EPI 20, PPI16	3/1

Twills - The L.H. twill line is more marked due to 'z' twisting yarn. R.H. twill line is less marked.

Experience values of carded yarn for denim (Ne 6- Ne 12)

	Ring frame yarn	O.E. Yarn
Staple Length.	1-1/16" min.	1-1/16" min.
Micronaire	> 4.0	> 4.0
Yarn Count CV%	1.7 - 2.3%	1.2 - 1.6 %
Tenacity cN / tex	>13	>11
Elongation	7%	8%
U%	13-15 %	14-15%
Imperfections / Km.	200	150

4 Point System for fabric inspection

All the details which are noticeable from distance of 1 metre are graded as follows.

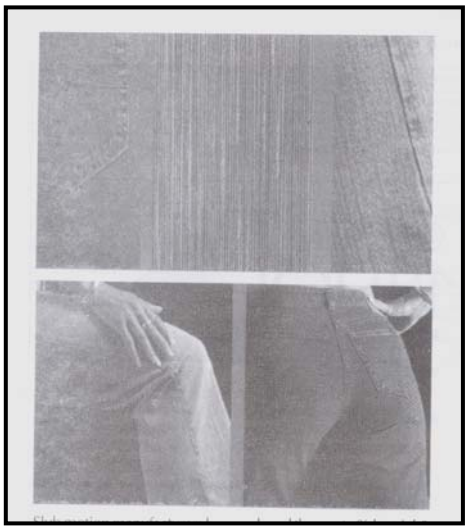
- Defect up to 4 cm. - 1 pts.
- Between 4 cm. & 8 cm. - 2 pts.
- Between 8 cm & 16 cm. - 3 pts.
- Between 16 cm & 100 cm. - 4 pts.

(Levis standards) - number of points should not exceed max. 4 points per 1 00 linear meters.

New Concepts Denims

i) Concept of Denim from jute fibre

Normally jute fabric is considered as suitable fabric for packaging industry. But nowadays attempts have been made to produce jute denims. Also special finishing is given to reduce the harsh feel of jute & make it soft & wearable. Majority jute denim products, found their places in decorative items like purse, fashion bags, handbags.



ii) Use of fancy yarns into the Denims

In latest trend of fancy yarns, "a deliberately produced defect is used as effect". This concept is very fastly spreading in industry. Fancy effect like slub, multi twist, multi count & multi twist multi count are very popular in denims. Slub motion attachments manufacturers like Amsler, Oerlicon Zinser, Pinter SA, Lakshmi Capco are the well-known in the industry.

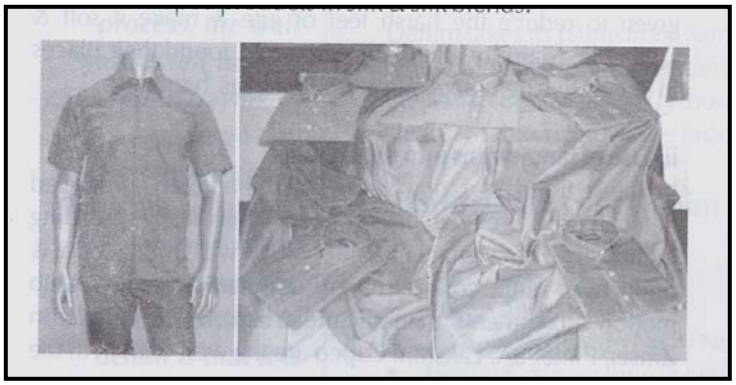
Fancy effects give different designs & textures to the denims. Due to variation in diameters & twist level in yarn done through computer programming gives nice effect through variation in dye absorption %.

Slub motion manufacturers have reduced the waste % by trial & error by providing a simulation software. A software is capable of predicting the look & appearance of future fabric, only by writing the suitable programme for the slubs. It's suitability can be judged by such simulating software & accordingly implementation of the programme in industrial large scale can be decided, reducing the waste % by trial & errors.

iii) Stretchable Denims

Colour, Drape & Fitting of fabric attract the buyer & decides acceptability of product in market. Polyurethane is unique stretchable fibre having elongation % in the range of 300 % to 800 % with full recovery after unloading. A modification in driving mechanism on Ring frame introduced a concept of core spun Lycra with cotton to have elastomeric yarn. Lycra or spandex can be dyed into attractive colours. Therefore such stretchable core spun lycra yarns are used in stretchable denim, especially for ladies denims.

iv) Silk Denim



Central Silk Technological Research Institute, Bangalore has developed products in silk & silk blends. Natural silk is most popular fabrics due to its softness, luster, light weight & delicacy. Denim is coarse twill cotton fabric, known as blue jeans. Silk denim fabrics in 14 combinations in weight ranging from 100 to 300 GSM were developed with 100% mulberry silk. 100% ERI silk & their combinations.

	100% ERI	100% Mulberry
Warp Count	2/60s Nm warp	20/22 den. 12 ply degummed
Weft Count	2/60s Nm weft	20/22 den. 12 ply
EPI	60	80
PPI	64	80
GSM	188	146

v) Organic Cotton & Natural coloured cotton denims

In Europe, there is lot of craze for organic certified cotton due to hygiene aspect & skin friendly nature. Therefore organic cotton Denim was introduced into the market. Also scientists have developed new breeds of Natural coloured cottons in the colour shades of brown, green, blue etc. Instead of using chemically manufactured dyestuffs, the natural coloured cotton fabrics & garments are always preferred. Therefore, Denim is produced out of natural coloured cotton.

vi) New washing & Fading techniques

Vat dye Indigo fading is done mostly by pebbles. Vat dye Indigo fading by pebbles. Recently a new technique of denim washing in introduced i.e. Laser washing.

It carries out removal of indigo colour by laser beam by using beams from NdC YAG laser (1004 nm & its second harmonic 532 nm.) & C02 (10.6 µm) lasers. Different laser pulse parameters were used in order to obtain laser power density & fluency to start ablation process.

vii) Hard working comfort denims

CORDURA® denim fabric helps your hard working jeans last longer than the traditional 100% cotton denim. Based on an intimate blend of cotton with INVISTA 1420 Nylon 6,6 fibre, CORDURA® denims retain the authentic look and feel of cotton denims with added abrasion resistance, toughness with proper comfort and style.

viii) Denims as smart textiles

Teflon like compounds can be applied on to the denims to make it waterproof & stain proof. Also antimicrobial finishes are given to denims from hygiene point of view.

While summing up...

It has been seen from the history till today the craze for the denim jeans is going up and up. This is because of nice colour shades, comfort, durability properties of the fabric. Hence forth sky is the limit for the invention and developments in the denim.

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