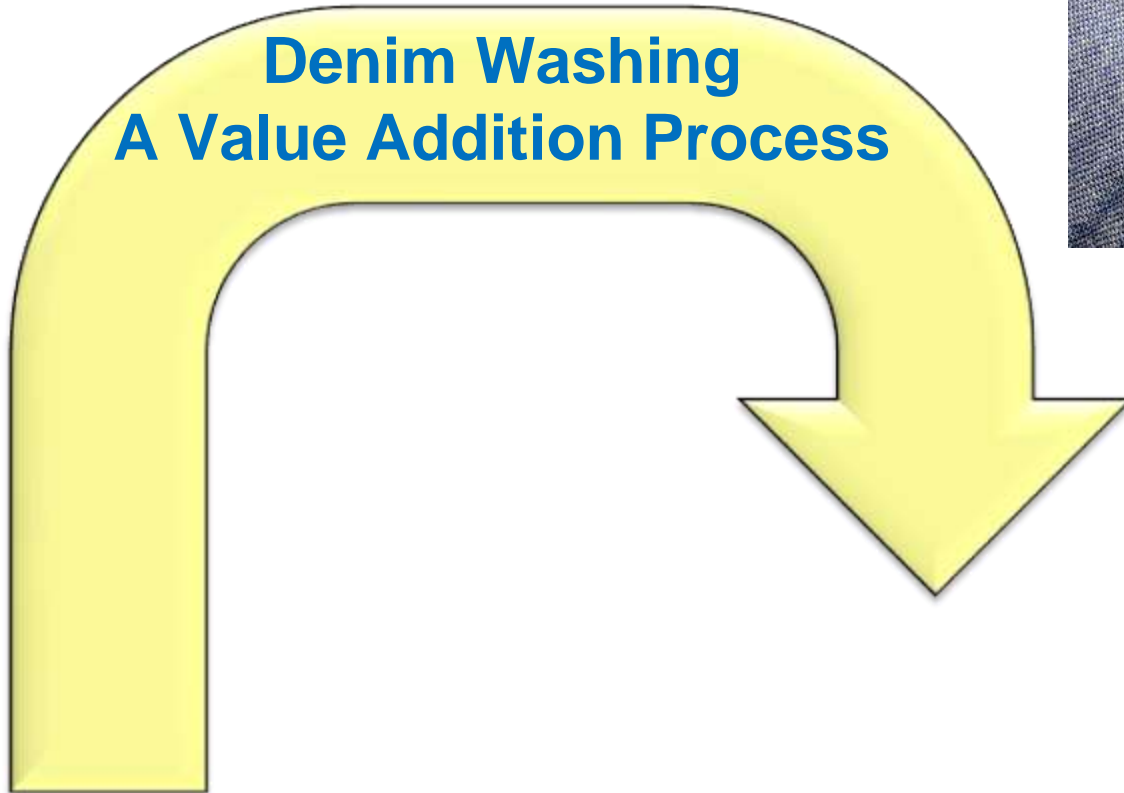




Denim Washing A Value Addition Process



t e c h n o p a k

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Global scenario and denim market

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Difficulties faced by Denim Industry



“Global Scenario and Denim Market”



technopak

Overview; Global Textile and Clothing Industry

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In Japan 5.3% upturn in export demand in 2007 as a result of higher sales to the USA, the EU, South Korea and Vietnam (13 Mn USD) . As for imports, 83.9% of the Japanese clothing import market in 2007 was supplied by China (7.8 bn USD) alone.

"China increased its textile and clothing sales to the USA by 14.8% in volume and 19.4% in value (7.8 bn USD) , despite quota restrictions on a range of products."

"Mexico continued to struggle as US importers shifted orders to China and other low cost Asian countries."

"Vietnam stepped up its supplies to the USA by 31.2% in volume and 34.2% in value (1.27 bn USD) in 2007."

Overview; Global Textile and Clothing Industry

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"US textile output fell for a tenth year in 2007, to its lowest level in over 35 years"

83.9% of the Japanese clothing import market in 2007 was supplied by China alone. In South Korea, exports regained some ground in 2007 thanks to an increase in textile sales.

"Import volume growth slowed in US as consumer spending on clothing and footwear rose by only 3.7% after rising by 4.5% in 2006 and 5.1% in 2005"

"Employment down-by 9.2% in textiles and 8.3% in clothing."

Overview ; Global Textile and Clothing Sector

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"The Industry in China progressed in 2007 despite quota restrictions on its exports to the USA and the EU."

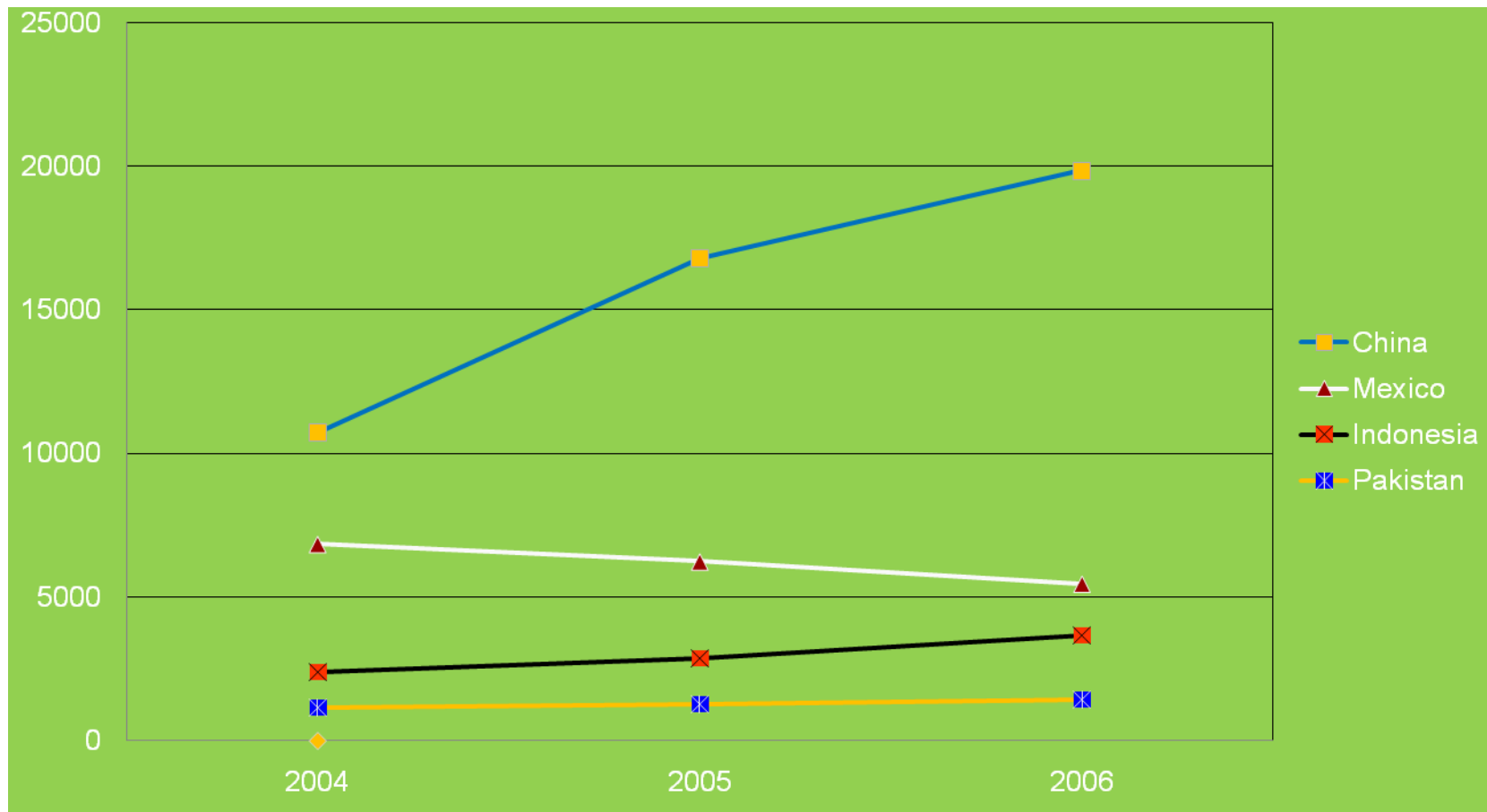
"Leading fashion labels are being associated with Indian products."

"Hong Kong domestic exports fell as production was shifted to mainland China."

"EU output stabilised in 2007, despite a drop in exports and an increase in imports. EU imports from China rose by 14.3% to Euro27.5 bn."

"Thus the need of the hour is to be innovative and enlarge both manufacturing as well as the marketing base !!!"

Exports of Knit and woven garment to the US in million US\$



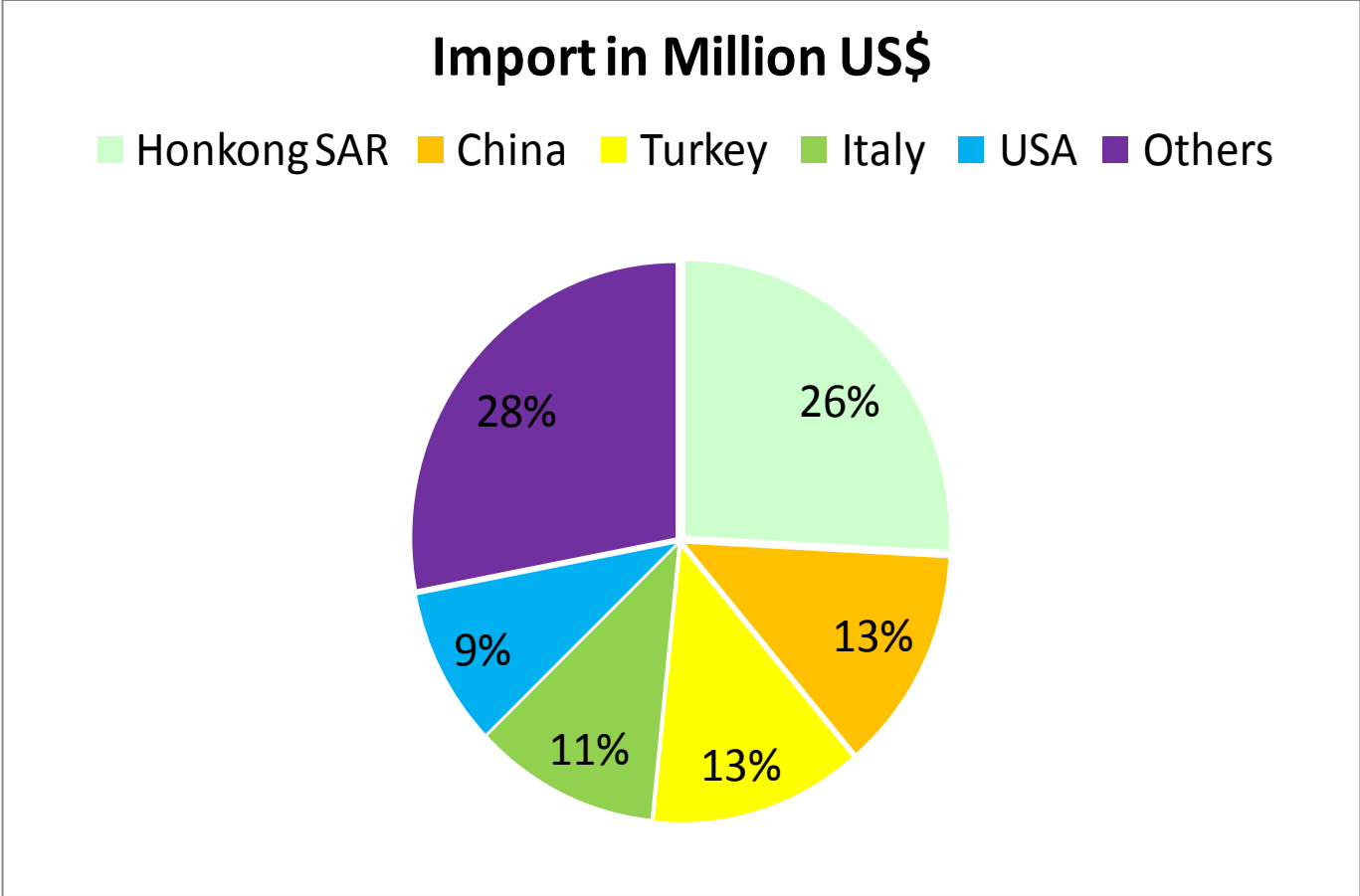
• Exports from Pakistan to the US has increased by 12% from 2005 to 2006

Exports of Knit and woven garment to Europe in million US\$



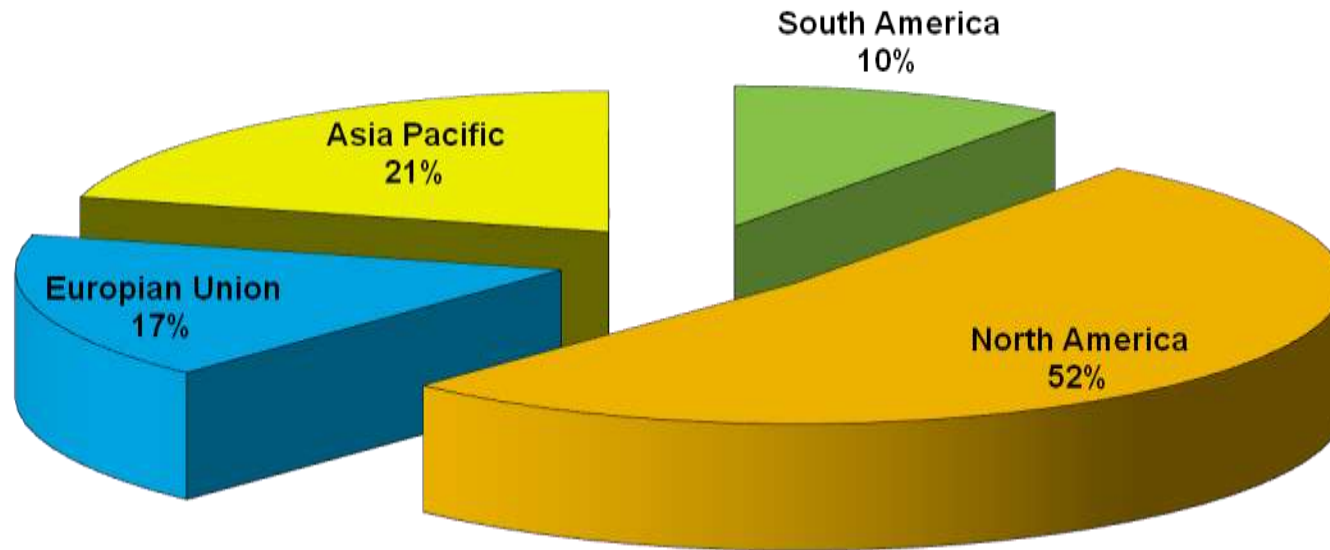
• Exports from Pakistan to the Europe has increased by 14% from 2005 to 2006

Top Importers of Denim 2007



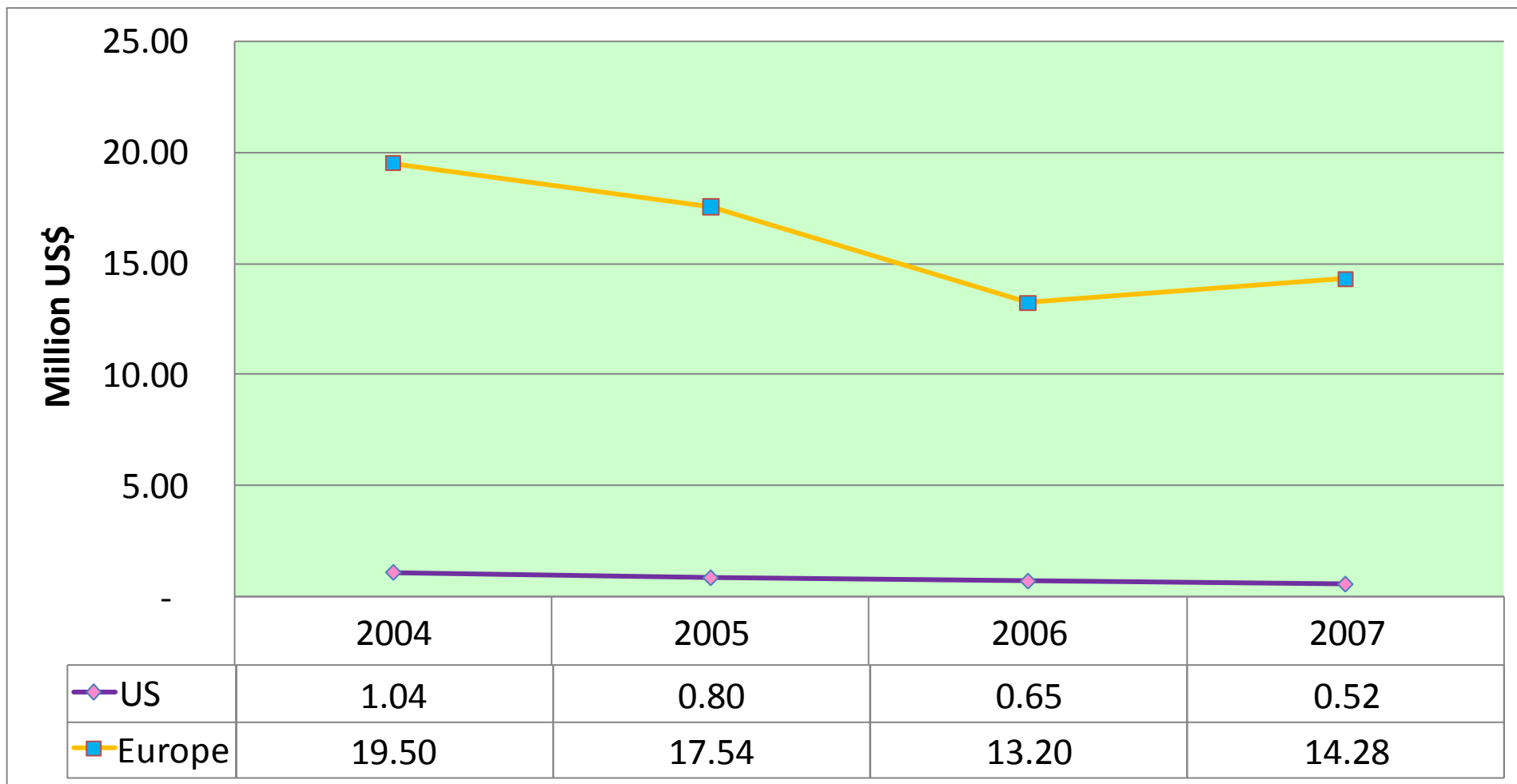
“Total Import of 198.8 million US\$”

Global Denim Consumption Pattern



“About 50% of global denim capacity is now concentrated in Asian mills, and the bulk of this is in China.”

Total Exports of Denim Fabric from Pakistan to US and EU in \$





“Value addition by different processes ”



t e c h n o p a k

Washing : The Process

- n Conventional washing i.e washing and cleaning
- n Imparting artistic and innovative look to the garments



“Provides the garment an identity and exclusive appearance and helps in creating a brand image”

Pre shrink the fabric to avoid shrinkage during home laundry

Applying artwork to white garments, using garment washing to preshrink the product benefits in two ways:

- 1) the washing process removes most contaminants, making the application of artwork (screen print, batik, garment paints, etc.) easier.**
- 2) there is less risk that the artwork will be negatively affected by shrinkage that would take place during home laundering.**



Whitening, Weathering, Distressing, Softening

- **Affect the whiteness level of garments, they can look dull or yellow after processing.**
- **Special effects, such as weathering, stone washing, acid washing, distressing, etc can be produced.**
- **Affects the hand (feel) of the fabric. Garment washers add fabric softener to the process...**



Value Addition process

Value addition substantially allows higher earnings in relation to money spent on impartation of the value

The value addition may be either functional or aesthetic

Functional value addition may not function more effectively on the denims but the aesthetic value addition attracts the customers

Value addition refers to the additional value to a commodity over the cost of commodities used to produce if from the previous stage of production

“This kind of value –addition is governed by the latest “trends” and consumers preference”

Conventional value adding denim washes

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❑ Stone washing

- Most common and is used to give denim an 'old-look'.
- Pumice stone is one of the most important components used to abrade the surface of the fabric to obtain a surface pattern effect with colour contrast and soft - handle.
- Natural patterns can be formed as the degree of abrasions varies in various parts of the garment.



❑ Enzyme washing

- This is a bio-catalytic method wherein an ultra-soft handle effect can be produced on denim.
- The hydrolytic effect of enzymes causes the loss of surface fibre, which improves surface smoothness and softness of the fabric.



Conventional value adding washes

☐ Bleach Washing :

- This process of using an oxidative bleaching agent like hypochlorite.
- Sodium hypochlorite is normally used as it is cheap, convenient and quick.
- Other agents used are sodium percarbonate and sodium perborate.
- A bio-bleaching technique known as "DeniBleach Technology" has been introduced



- ❑ Ice of snow washing :
 - Achieved by dry tumbling with pumice stones soaked with bleaching agents to produce a 'snow' pattern effect on denim.
 - Stones are used to deposit a chemical on garments to strip off the colour.
 - This chemical deposit removes colour only from the outer surface of the garments and produces a frosted appearance.
 - Indigo and select sulphur dyes are the most popular candidates for this procedure.



☐ Sand Blasting :

- Process is used to obtain localized abrasion effect.
- Usually, aluminum oxide granules are blasted onto the garment surface at a very high speed.
- This procedure is costly with a high consumption and low efficiency rate and it needs specialized skills.
- But it can produce unique patterns which is not possible using other procedures



Specialty value addition washes

- ❑ **Heavy / Semi Enzyme Wash** : Acid wash followed by neutral wash for a time varying from 30 minutes to 60 minutes
- ❑ **Distress Wash** : Enzyme wash with physical grinding , tacking or any other dry process like wrinkle making hand brush etc.
- ❑ **Acid Wash** : Well known as thermo coal wash . Washing of the denim using bleaching for 10-20 minutes followed by neutral wash
- ❑ **Stiffener Wash** : Final wash given to garments to make them less limpy .using 1-2 gpl stiffening agent



Specialty value addition washes

❑ **Stone Enzyme Wash** : A process cycle of 30-60 minutes neutral cellulose wash with pumice stones

❑ **Denemax with Tinting** : Laccase Hipozyme LAC contains a mediator, a buffer and a dispersant apart from the enzyme, The progress of Indigo decomposing can be realized by observing the color shade of the bath. Laccase enzyme wash followed by tinting finish

❑ **Crinkle Wash** : Resin application on denims followed by subsequent normal washing to retain the crinkle even after washing

n **Golf Ball Wash** : Usage of Golf balls to give beating effect on garments and used without any chemicals



Specialty value addition washes

n **Denemax with Bleach Wash** : A typical wash used to give a vintage look to the garment . Laccase wash with bleach to give a vintage look .

n **Paper Touch Finish** : Application of specialty coating chemicals to get a paper like feel

n **Bio Polish Wash** : Acid cellulose wash to reduce the pilling effect on the fabric giving a smooth and lustrous feel

n **Leather Finish** : Specialty chemical coating and curing to get leather touch feel

n Other types are abrasion, laser, 3D whisker, quick wash, tinted, grainy, Flat Look, Ozone fading, water jet, Spray, Embroidery,



Specialty value addition washes

n **Stone Enzyme with Grinding** : Hand brushing or grinding or taking ,after enzyme washing

n **Heavy Sand Silk Wash** : Specialty silicone /softener wash to impart silky hand feel

n **Shade Enhancer Wash** : Application of silicone or OBA of soaping depending on the level of desired enhancement

n **Heavy Sand Silk Wash** : Specialty silicone /softener wash to impart silky hand feel



Specialty value addition : Fabric coating

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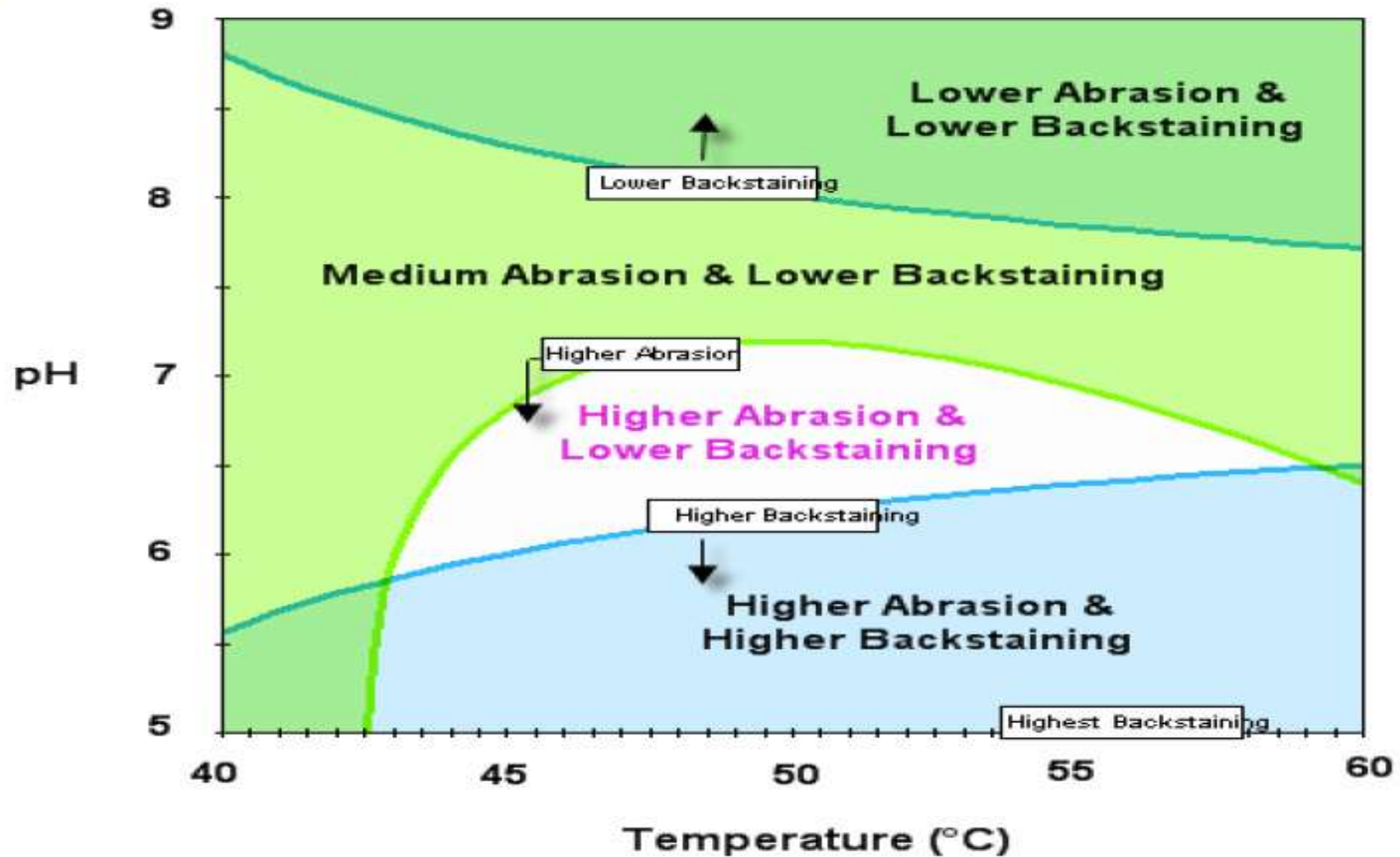
n A combination of a coating finish at fabric stage with a few permutations of wash down processes at garment stage can produce unique effects .

- Coating resin : Application of resin on the face side specially for dark shades for controlled wash down processes at garment stage
- Flock over denim : Colored flock on denim for fashionable effects
- Coating Matrix finish : Special handle and different colored effects
- Coating Glossy look : Synthetic rubber look most often done with colors , pigments



Functional Coating applicants : Various functional coatings of natural skin vitalizing ingredients like Aloe Vera , Jojoba oil ,Vitamin E and Breeze

Washing of Denim Garments : Significance of pH and Temperature



Raymond UCO Denim

- The Winter collection is focusing on darker denims, tighter warps without too much yarn effects, like slubs, thick and thin places and/or streakiness.
- The darker look can be enhanced by chemical treatments like coatings or overdyeing.
- Coatings have the advantage that the hand can be influenced which helps to create a feeling for heavier, sturdier material.
- Introduced the GALAXY finish, a colorless coating with an ingenious mix of various components that enhance the hand and performance of the fabric. Highly resistant to aggressive industrial and household washes.



Raymond UCO Denim

- Another finish is BLINK finish, an engineered coating that gives denim a new dimension through its black waxy layer, which provides the fabric with a smart and elegant leather-like hand.
- Colour denim remains a hot topic. UCO produces a wide number of colour denim qualities, rigid and stretch and offers a colour card of 24 colours, which can be delivered without minimums, to lower the threshold for brands and makers-up to introduce a new range into their collection.



K.G Denim

Winter 2008 range focused on subtle warp yarns in colors ranging between Deep Indigo and Blue Black.

- The color variations come from grey and brown tints over dark indigo or black.
- Clean flat fabrics with minimal slubs in lighter 9.5 oz weights are sophisticated and urban in dark colors.
- Green cast denim is over-dyed with Grey or Brown and then mercerized to give a clean look to the fabric. It also gives multiple color effects.
- Stretch Denim is offered with Lycra and T400 to give good elongation to the fabric. TYREX finish, a black lycra denim treated with resin and then calendared to give a soft but firm handle and leathery effect.
- Organic denim is also available in 10.5 & 11 oz weights, both in rigid and stretch. There is currently strong demand for White Denim.
- Developments in fibre variety containing tencel and polyester are done in light weights.



K.G Denim

The products for the Summer'09 are developed based on the following concepts,

- Vintage look for heavy ageing effects using super refined long staple fibres.
- Ecu Denim for a natural look with Ecu warp and pre-dyed cotton weft.
- Linen look fabrics with Ecu cotton warp and natural linen weft resulting in soft hand and good texture.
- Indigo Chambray using fine ring yarn and mercerized effect to give a special feel.
- Color denim is still strong and we present a range of blues with Green and Grey Bottom. Look out for Mint Green, Solar Green and Smoke Blue.
- Nep Denim', a dark Indigo with neppy rustic character will be a product to watch.
- Stretch comprises of dark indigo with resin treatment, cotton core spun lycra and T400 Bi-stretch mix



Rainbow Denim

Manufacture all the three categories of Denim :

1. Light Weight Denim (6.50 to 8.50 per square yard)
2. Medium Weight Denim (9.00 to 12.50 per square yard)
3. Heavy Weight Denim (13.50 to 14.75 per square yard)

Specialized in following product range :

1. Basic Denim (Open End x Open End)
2. Slub Denim (Slub x Open End)
3. Cross Hatch (Slub x Slub)
4. Poly Denim (Cotton x Polyester)
5. Stretch Denim (Cotton x Lycra)
6. Ring Slub Denim
7. Fancy Denim
8. Varieties for the fashion demanding clients.

Rainbow Denim

- Broken Twill, 3/1 weave, 2/1 weave, 2/2 weave, 1/1 weave etc.
- Denim is a mixture of colours between Warp and Weft, where the Warp is dyed and Wefted with natural yarn.
- Warp is dyed in Indigo Blue, Black, Grey, Green, Red and a host of other colours depending on the requirement of the market.
- Color range provided by Rainbow is one of the best for Denim fabric. Classic Indigo Blue, Light Indigo Blue, Dark Indigo Blue, Black, IBST (Indigo Bottom Sulphur Top) and SBIT (Sulphur Bottom Indigo Top) etc.

Aarvee Denim

Basic Indigo Blue Denims

- » In OE X OE from 6.5oz. to 15.25 oz. per sq. yd.
- » Width in non-stretch from 152 cm. to 170 cm.

Ring Denims

- » In RS X OE and RS X RS from 8 oz to 13.75 oz per sq. yd.
- » Width from 152 cm. to 170 cm.

Flat Finish Denims

- » In OE x OE/ RS x RS/ RS x OE from 8 oz. to 14 oz. per sq. yd.
- » Width ranging from 152 cm. to 160 cm.



Silky Denims

- » In OE x OE / RS x RS from 5 oz to 10 oz per sq. yd
- » In 2/1, 3/1 and Satin weave
- » Width ranging from 152 cm. to 160 cm.

Stretch Denims

- » In OE X OE, RS X OE and RS X RS from 7.5 oz to 12.25 oz per sq. yd
- » Width from 140 cm. to 150 cm.

With the help of R&D dept and various market inputs, Aarvee denim keep developing new items in denims such as mix color warps, doobby designs, distinct dyeing recipes to give varied washing results, etc..



“Difficulties faced by Denim Industry ”



Difficulties faced by Denim Industry

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Repeatability and reproducibility of the finish

Lot sizes with special finishes are small

Time and effort spent on developing the finishes

Innovative finishes lead to capital and working capital investments

Valuation of finished product

Frequent changes in various finishes

Difficulties faced in Denim Washing

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- n Inadequately organized garment sector
- n Lack of technical Know -How ,scarcity of trained labour , unavailability of superior machineries
- n High dependency on manual operation affecting the production ,labour cost and quality standards
- n Batch to Batch variations and garment to garment variations
- n Poor process control ,prioritizing the cost over quality , low training imparted to workforce and poor quality standards been adopted .
- n Garment washing is not a child's play and requires technological knowledge and artistic skills .



Difficulties faced in Denim Washing

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- n Top Loading machines v/s Front loading machines in terms of utility consumptions
- n Outsourced dry finishing v/s In-house dry finishing
- n Automation v/s manual operations
- n Environmental issues – recycling of waste water, recovery of Indigo
- n Sampling v/s bulk dyeing and finishing



Areas of improvement for washing .

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- n Technical research and developmental help
- n Enhanced level of customer care services
- n The product that are high in quality and cost effective are to be manufactured
- n Professional training from time to time to be given in order to keep the workspace equipped with latest technical information and knowledge
- n Proper quality checks for the garment at every stage of its processing

THANK YOU!!!

t e c h n o p a k

WALKING WITH YOU... STRATEGY... CONCEPT...IMPLEMENTATION

for:

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Textiles

Apparels

Health care

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