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## Book Review

**Denim: Manufacture, Finishing and Applications**— Ist edition, edited by Roshan Paul [Woodhead Publishing (Imprint of Elsevier)], 2015, pp. 599, Price \$ 246.50 hard cover [ISBN: 978-0-85709-843-6 print; 978-0-85709-849-8 online]

The book is indeed an unprecedented collection of valuable information on Denim Chronicle starting from selection of raw material to spinning, winding, warping, dyeing, sizing, weaving, washing, garmenting to jeans and so on. No such detailed study on denim has been compiled so far. The front and back cover design looks superb and something special from that used in other Woodhead books. Photographs are very attractive and are of higher resolution, and this has increased the value of the book many folds.

In Part I, the very first Chapter authored by the editor sets the ball rolling with direction of flow of information available in the book and its sequential break up. The second Chapter deals with fibre selection/cotton chemistry/various spinning details alongwith comparison of yarn properties, whereas 6th Chapter is dedicated on weaving designs and machines. Though these Chapters are not essentially supposed to be a part of this book, especially for textile fraternities, probably the editor had an idea to make the book useful for all classes of audiences, textile and non-textile both.

Synthesis of indigo and its reduction with conventional and modern reducing agents/systems alongwith application have been detailed in the third and fourth chapters respectively with all possible inputs. Prospect of all reduction techniques as well as use of machines have been well highlighted. However, commercial reduction recipes and application details could have been included to make these chapters more relevant, like typical preparation of commercial indigo pad liquor using stock and dilution liquors in the guidelines of BASF (Dystar), preparation of Fe(II) salt-ligand based reduction liquor and its performance against that of

hydrosulphite based bath. Though quantification of *pH* has been well documented, the other decisive dyeing parameters, such as indigo concentration in pad liquor, temperature of pad liquor, immersion time, influence of number of dips/nips and skying time has been kept out of critical discussion in spite their availability in the cited reference [Chong C L, Poon L W and Poon W C, *Text Asia*, 26 (1) (1995) 55] and also in other important research papers as shown below (not included in these two chapters):

- International Technical Paper competition, *Text Chem Color*, 21 (12) (1989) 25.
- Etters J N, *Proceedings of the AATCC International dyeing symposium*, 1992, 116.

Few more relevant references could have been cited as well, because, it is very important to know the more precise *pH* range to avail the monoenolate for of indigo for perfect ring dyeing avoiding any sort of diffusion. Dyeing of denim with non-indigo dyes is equally important and obviously this has been a part of this book (Chapter 4). Adequate information is available with dyebath constituents but without practical recipes, except that in Section 5.4.1.

In Part II, Chapter 7 describes influence of denim in fashion industry which is obviously a relevant topic. Type of stitch/sewing thread/needle/machine and their combined influence on making of quality jeans with variations in different parts of it as well as joining of the parts/attaching fasteners alongwith probable faults and troubleshoots citing live photographs in Chapter 8 has been a classical discussion. Though discussion on fasteners is there, the same on zip and other closures used in jeans and other denim apparels could have been included as well.

Garment dyeing using specific class of dye and type of machine is covered in Chapter 9. However, practical demonstration of a dyeing process alongwith operation of machine cycle could have been a thrust for the chapter.

Digital printing on denim/jeans is an advanced field of fashion and has been rightly selected in the book (Chapter 10). Cited designs are attractive and

represent essence of fashion. Use of coloured digital designs in place of B/W in the line of coloured figures in other chapters probably could have enhanced the beauty of designs.

Chapters 11- 13 disclose washing/bio-washing/reduced water washing of denim fabrics/jeans. In these chapters, various washing/fading techniques with both enzyme/non-enzyme methods/minimal water use, related machines, troubleshoots and remedial actions have been discussed in detail and possesses good standard. Slight overlapping/repetition has been observed for enzyme wash in Chapters 11 and 12; ozone/laser fading in Chapters 11 and 13. The information provided in these three Chapters has highly contributed to the overall standard of the book.

Finishing of jeans/garments using numerous dry and wet processes as well as denim fabric finishing/functional finishing using different techniques, final operation/inspection to locate defects and quality control measures add a positive dimension to the aspect. However, overlapping/repetition of Section 11.5.7 has been observed in Section 14.7.5. The overall repetitions in Chapters 11-14 could have been avoided to make the book more compact. Various comfort aspects and parameters alongwith test methods to evaluate the same has been highlighted in Chapter 15.

In Part III, generic, pseudo, reverse and stretch denims are the varieties of innovative denim products among others (Chapter 16). Denims made of other

fibres and blends as well as of biodegradable type have added dimension to the book.

Very interesting part of the book is Chapter 17, detailing non-apparel application of denim fabrics is highly appreciable. Recovery and recycling of denim waste (Chapter 18), effluent treatment in denim and jeans manufacture (Chapter 19) and environmental impact of denim manufacture (Chapter 20) are meaningfully included in the book. The environmental impact starts very right from the disposal of discarded parts of denim after stitching/garment formation/garment use as well as draining out of the unused reduced indigo baths. In that sense, the last chapter (Chapter 20) could have been in the position of Chapter 18 followed by rest two Chapters in sequential order. Moreover, the last chapter handles with various ecofriendly techniques and low liquor applications to reduce environmental impact. Even it could have been reported in Chapter 20 with suitable change in the title of the chapter.

Finally, the book under review possesses overall excellent standard and will remain as an asset to academicians, industry professional, domestic users, fashion designers, etc.

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