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Edited by Hassan M. Behery



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Dedicated to

My wife Mervet

My daughter Hala

My son Mohamed

For their enduring help and continuous assistance.

Without them this work may not have been completed
as it is today. H.M.B.

Contents

	<i>Contributor contact details</i>	<i>xiii</i>
	<i>Preface</i>	<i>xv</i>
1	Introduction	1
	H M BEHERY, Clemson University, USA	
1.1	Historical	1
1.2	Definition and concept of fabric hand	1
1.3	Fabric hand attributes and quality descriptors	4
1.4	Development of fabric hand evaluation	5
1.5	Elements relating to fabric hand	5
1.6	Application of statistical methods in assessing fabric hand	6
1.7	Comparison of fabric hand assessments in different cultures	6
1.8	Effect of performance and refurbishing on fabric hand	7
1.9	References	7
Part I	Understanding and evaluating fabric hand	
2	Concepts and understanding of fabric hand	11
	A DE BOOS, Australian Wool Innovation Limited, Australia	
2.1	Introduction	11
2.2	Subjective evaluation of fabric hand	11
2.3	Objective evaluation of fabric hand	18
2.4	Future trends	39
2.5	References	40
3	Developments in measurement and evaluation of fabric hand	45
	Y E EL MOGAHZY, F S KILINC and M HASSAN, Auburn University, USA	
3.1	Introduction	45

3.2	Subjectivity and objectivity in fabric hand	46
3.3	Developments in fabric hand objective evaluation	47
3.4	The El Mogahzy–Kilinc hand method	51
3.5	Conclusion	63
3.6	References	64
4	Application of statistical methods in evaluation of fabric hand	66
	J MILITKÝ, Technical University of Liberec, Czech Republic	
4.1	Introduction	66
4.2	Subjective evaluation of fabric hand	67
4.3	Analysis of factors affecting fabric hand	81
4.4	Prediction of subjective hand	107
4.5	Concluding remarks	120
4.6	Acknowledgement	121
4.7	References	121
5	Comparison of fabric hand evaluation in different cultures	124
	H M BEHERY, Clemson University, USA	
5.1	Introduction	124
5.2	Effects of culture, language and male vs female on fabric hand evaluation and their interaction (USA and Korea)	125
5.3	International comparison of fabric hand (Australia, China, Hong Kong, India, Japan, Korea, New Zealand, Taiwan, UK and USA)	134
5.4	Fabric hand equations for Australia, New Zealand, India and USA	144
5.5	Comparison between KES-FB and FAST systems in discrimination of characteristics of fabric hand	150
5.6	English version (translation) of the Japanese description of primary hand values	163
5.7	Measurement of fabric hand by different methods	168
5.8	Results of fabric hand evaluation by different methods	170
5.9	Conclusions from the comparison of fabric hand assessments between the USA and Japan measured by different methods	189
5.10	Fabric hand globalization interaction in the textile industry	190
5.11	References	192

Part II	Effect of fibre yarn and fabric factors on fabric hand	
6	Effect of fiber factors on fabric hand	197
	M L REALFF and A CASCIO, Georgia Institute of Technology, USA	
6.1	Introduction	197
6.2	Describing fibers	197
6.3	Mechanical properties	205
6.4	Chemical modification of fibers for improved fabric hand	211
6.5	Crystallinity in fibers	212
6.6	Future trends	214
6.7	Sources of further information and advice	216
6.8	References	217
7	Effect of yarn factors on fabric hand	219
	H M BEHERY, Clemson University, USA	
7.1	Introduction	219
7.2	Yarn types	219
7.3	Effect of yarn structure on fabric hand	224
7.4	Fundamental structural features of yarn	225
7.5	Comparison of hand of fabrics produced with air jet and ring spun yarns	226
7.6	Subjective hand evaluation of fabrics	229
7.7	Assessment of hand property of fabrics woven from various types of staple-fiber yarn	233
7.8	Conclusions	237
7.9	References	237
8	Effect of woven fabrics on the fabric hand of cotton and CO/PES fabrics assessed on the Instron tensile tester	239
	I FRYDRYCH, Technical University of Łódź, Poland, and M MATUSIAK, Institute of Textile Architecture, Poland	
8.1	Introduction	239
8.2	Description of measurement procedure on the Instron tensile tester	241
8.3	General hand factor (GHF) of fabrics based on the mechanical parameters from the Instron tester	247
8.4	Analysis of influence of the weft density, weave, and finishing type on the general hand factor	257
8.5	Effect of weave, weft density, raw material content, and finishing type on the mechanical fabric hand parameters	261
8.6	References	284

Part III Effect of processing on fabric hand

9	Effect of wet processing and chemical finishing on fabric hand	289
	C TOMASINO, North Carolina State University, USA	
9.1	Introduction	289
9.2	Dyeing and finishing	289
9.3	Special topics	315
9.4	Literature review	326
9.5	Future trends	337
9.6	Sources of further information and advice	338
9.7	References	338
10	Effect of mechanical finishing on fabric hand	342
	C TOMASINO, North Carolina State University, USA	
10.1	Introduction	342
10.2	Calendering	342
10.3	Compacting	346
10.4	Raising (napping, sueding)	348
10.5	Shearing	352
10.6	Polishing	353
10.7	Corduroy cutters	353
10.8	Decatizing	353
10.9	Mechanical hand breaking (softening)	364
10.10	Interrelation between fabric mechanical properties and finishing process	365
10.11	Future trends	369
10.12	Sources of further information	371
10.13	References	371
11	Effect of refurbishment on fabric hand	372
	A DE BOOS, Australian Wool Innovation Limited, Australia	
11.1	Introduction	372
11.2	Refurbishment of traditional fabrics	373
11.3	Role of fabric history/finish	379
11.4	Refurbishment of newer fabric types	382
11.5	Future trends	382
11.6	References	383

Part IV Appendices

Appendix A	The Standardization and Analysis of Hand Evaluation (second edition)	389
	S KAWABATA, The Textile Machinery Society, Japan	
A.1	History of the committee	389
A.2	Selection of the standard samples for hand evaluation	395
A.3	How to use the HESC standard of hand evaluation	409
A.4	Analysis of hand evaluation	415
A.5	Hand evaluation in the future	439
A.6	References and bibliography	440
Appendix B	SiroFAST – fabric assurance by simple testing	443
	A DE BOOS and D TESTER, CSIRO, Australia	
B.1	Introduction	443
B.2	SiroFAST – fabric assurance by simple testing	450
B.3	Application in fabric manufacture and finishing	455
B.4	References	461
Index		464

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The phenomena of fabric hand is one of the most significant characteristics in determining fabric marketing, and providing the fabric scope of end-uses, performance, and appearance.

For several decades, the study of fabric hand has attracted interest of research and development in engineering groups, textiles and fiber scientists, statisticians, fabric designer industrialists, and dyers and finishers. Many groups and committees were formed to elucidate the fundamental aspects of fabric hand, either by subjective assessments or by a more quantitative approach of objective measurements relating to the physical and mechanical properties of the fabric.

Subjective assessments of fabric hand by human judges rely on psychophysical approaches or psychological techniques. Psychophysical approaches use consumer judges, because sensory evaluation of fabric hand by consumers gives information about their perceptions and preferences of fabrics for specific end uses.

Since the 1930s, Peirce has pioneered the laboratory attempts to characterize the hand of fabrics. Initially, this was difficult by the fact that no single definition of hand existed at the time. Since then, there have been many efforts to specify what defines fabric hand.

In surmountable publications have been introduced by various groups of researchers in journals, conference proceedings, meetings, and workshops. Much new equipment has been designed and put into service for the objective assessment of fabric hand. Such activities were developed in the four corners of the globe. However, it is worth noting that Japan and Australia, not only took the lead in this activity, but contributed most in both the subjective and objective assessments of fabric hand.

This book is primarily a textbook, based on the wealth of information and experience of numerous researchers and scientists who devoted the majority of their time and effort towards the advancement of knowledge in the field of fabric hand for both subjective and objective hand assessments. The book is intended for textile students in universities and colleges. It will also be of immense assistance and help in providing knowledge and know-how to

fabric designers and industrialists who are looking for a specific product for a particular end-use. The book discusses the effect of physical and mechanical properties on fabric hand, starting with the fiber level, to yarn and fabric level, including the effect of the wet processing (dyeing and finishing). The development of equipment and instruments for objective hand measurement is also presented in the book.

The application of the advanced statistical methods are given with practical examples and illustrations. Most important, the comparison of the assessment of fabric hand between different cultures, gender and languages, and the need for common terms and definitions are outlined and presented. Finally, the effect of refurbishment on fabric hand is discussed.

The reader is also provided extensive appendices covering The Standardization and Analysis of Hand Evaluation presented by the HESC – (Hand Evaluation and Standardization Committee), The Textile Machinery Society of Japan. And, also the SiroFAST – fabric assurance by simple testing which was developed in Australia by the SCIRO Division of Wool Technology.

H.M.B.