

Fabric testing

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Textile fabrics are manufactured for many different end uses, each of which has different performance requirements. The chemical and physical structures of textile fabric determine how it will perform, and ultimately whether it is acceptable for a particular use. Fabric testing plays a crucial role in gauging product quality, ensuring regulatory compliance and assessing the performance of textile materials. It provides information about the physical or structural, chemical and performance properties of the fabrics.

As consumers become more aware and more demanding of products, the number of tests required for textile materials has grown. As a result the testing of fabrics is increasingly varied, in constant flux and full of the unprecedented challenges of globalization. With the onset of new types of fabrics for the apparel industry and of technical textiles for functional applications, and with the increasing number of innovations taking place in the garment sector, fabric testing procedures have undergone tremendous changes and there is a need to understand all the procedures before a testing system is adapted to investigate the performance of fabrics.

It is very important to predict the textile fabric's performance by testing. Fashion merchandisers, apparel designers, interior designers and textile scientists who have an understanding of textile properties and testing are equipped to make decisions that will benefit their clients and enhance profits for their businesses. Knowledge of fabric testing and its performance analysis can contribute to efficiency in solving consumer problems with textile products, and to the development of products that perform acceptably for consumers. As indicated above, retail buyers and producers of apparel and textiles are among those who use the fabric testing data and results in making decisions about their products. Most textile or apparel manufacturers will use either test methods or performance specifications that are published by testing organizations.

A number of textile research and testing organizations have published data on fabric testing and their procedures. There exists a great variety of

textile testing procedures for different fabrics for different end uses. Researchers all over the world have been constantly involved in developing newer methods of fabric testing so as to meet the ever-growing globalization and quality requirements. Their researches have resulted in an enormous quantity of data and testing procedures for fabrics. These results should be providing the industry, fabric suppliers, apparel manufacturers, exporters, fashion designers and retailers with an enormous amount of information about the testing aspects of fabrics and apparel to meet the international standards. It appears that coverage of the existing literature in textbooks on fabric testing procedures and results is insufficient, although there have been a great number of research achievements by scientists, researchers and industry experts in the areas of apparel, industrial fabrics such as technical fabrics, intelligent fabrics for special applications, nanotechnology applications, medical textiles, etc. Hence, a systematic approach towards integrating the knowledge available in the literature on fabric testing and developments in different aspects of fabric testing and the achievements of researchers and industry experts would help all those who are involved in quality assessment and evaluation of textile products to a great extent.

Based on the above considerations, it was thought desirable to compile a book on testing principles and procedures of various aspects of fabrics. Hence an effort has been made in this book to include the latest procedures of testing of fabrics for their comfort, appearance, intelligence, damage analysis, etc. Wide coverage of advanced topics on composition testing, chemical testing, physical and mechanical testing, statistical testing, flammability analysis, testing for colour and dye analysis, and permeability will help readers to understand these tests in detail.

Finally, this book is a compilation of research works on fabric testing by experienced researchers worldwide. I sincerely feel that a complete book on fabric testing of this scope will help all those involved in the fabric, garment and fashion industries and the import and export businesses to adopt new testing procedures to meet the international standards and to maximize their profits. In addition, research and academic organizations can benefit from this book in exploring the possibilities of new test methods and testing procedures for new types of fabrics, including smart and intelligent fabrics.

Professor Jinlian Hu
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