Coated And Laminated Textiles By Walter Fung | d2a1380033af37191df39a6643b6051


Coated and Laminated Textiles

Combines technical understanding and practical experience concisely Essential tool to assist in the demanding challenge of chemical finishing for textiles

Coatings and laminates allow for the introduction of smart functionalities for textile...
textile products. The first section of the book covers the fundamentals of coatings and laminates. Themes range from coating and laminating processing and production techniques to testing and quality assurance. The remainder of the book covers different types of coating and laminates such as intelligent weedproof coatings, phase change coatings, and nanostructure based coatings. In recent years, polymer nanocomposites have attracted a great deal of scientific interest due to their unique advantages over conventional plastic materials, such as superior strength, modulus, thermal stability, thermal and electrical conductivity, and gas barrier. They are finding real and fast-growing applications in wide-ranging fields such as automotive, aerospace, electronics, packaging, and sports. This book focuses on the development of polymer nanocomposites as an advanced material for textile applications, such as fibers, coatings, and nanoﬁbers. It compiles and details cutting-edge research in the science and nanotechnology of textiles with special reference to polymer nanocomposites in the form of invited chapters from scientists and subject experts from various institutes from all over the world. They include authors who are actively involved in the research and development of polymer nanocomposites with a wide range of functions—including antimicrobial, flame-retardant, gas barrier, shape memory, sensor, and energy-scavenging—and as medical applications, such as tissue engineering and wound dressings, to create a new range of smart and intelligent textiles. Edited by Mangala Joshi, a prominent nanotechnology researcher at the premier Indian Institute of Technology, Delhi, India, this book will appeal to anyone involved in nanotechnology, nanocomposites, advanced materials, polymers, fibers, and technical textiles. Advanced Textile Engineering Materials is written to educate readers about the use of advanced materials in various textile applications. In the first part, the book addresses recent advances in chemical finishing, and highlights environmental issues in textile sectors. In the second part, the book provides a compilation of innovative fabrication strategies frequently adopted for the mechanical finishing of textiles. The key topics are smart textiles. Functionally-graded textile fabrics, and textile nanotechnology. The book also provides a comprehensive overview of the various types of textile industry in which they are present. It gives a detailed account of their properties and applications. Technical textile yarns provide essential reading for yarn and fabric manufacturers, textile scientists, technicians, engineers and technologists, covering a wide range of areas within textile engineering. The second group of chapters describes the range of technical yarns such as electro-conductive textile yarns, novel yarns and plasma treated yarns for biomedical applications. Technical sewing threads and braided structures and their applications in textile engineering. The book presents a number of issues surrounding textile coatings and laminates. Discusses the fundamentals of textile coatings and laminates addressing processes and techniques examines types of smart and intelligent coatings and laminates for textiles, including microencapsulation technology, conbective and breathable coatings. Smart textiles and Their Properties outlines the fundamental principles of applied smart textiles, also reporting on recent trends and research developments. Scientific issues and proposed solutions are presented in a rigorous and constructive way that fully presents the various results, prototypes, and case-studies obtained from academic and industrial laboratories worldwide. After an introduction to smart textiles and their applications from the editor, Part One reviews smart textiles for medical purposes, including their use in health monitoring, treatment delivery, and assistive technologies. Part Two covers smart textiles for transportation and energy, with chapters covering smart textiles for the monitoring of structures and processes, as well as smart textiles for energy generation. The final section considers smart textiles for protection, security, and communication, with chapters covering smart textiles for biomedical applications. The book is presented in a rigorous and constructive way regarding various results, prototypes, and case-studies obtained from academic and industrial laboratories worldwide Useful for researchers and postgraduate students, and also for existing companies and start-ups that are developing products involving smart textiles. Authored and edited by an international team who are experts in the field ensure comprehensive coverage and global relevance.Structure and Mechanics of Textile Fibre Assemblies, Second Edition, offers detailed information on all aspects of textile structure and mechanics. This new edition is updated to include the latest technology and techniques, as well as fiber assembly for major application areas. Chapters discuss the fundamentals of materials and key mechanical concepts, such as stress-strain, tension and shear, and also examine structure and mechanics in-depth, including fabric type, covering yarns, woven fabrics, knitted fabrics, nonwoven fabrics, and braided structures. Finally, there are extensive tables and appendices. This new edition provides a rigorous and constructive way of presenting the information, and also provides new chapters on the applications of smart textiles for health monitoring and assistive technologies. Technical sewing threads and braided structures Enables the reader to understand the mechanical properties and structural parameters of fabric at a high level of detail. Expanded update includes an analysis of fiber assemblies for key technical areas, such as protective fabrics and medical textiles. Coating and laminating methods and techniques are essential for the manufacture of technical textiles. As the range of technical textiles is rapidly increasing, an understanding of the range of yarns available and their properties is important, in order to be able to meet the requirements of the intended end-use. Part one of the book begins by reviewing the advances in yarn production. Topics examine the advances in textile yarn spinning, spinning, coating and laminating technology, yarn healthiness and its reductions for technical textiles. The second group of chapters describes the range of technical textiles, such as electro-conductive textile yarns, novel yarns and plasma treated yarns for biomedical applications. Technical sewing threads and biodegradable textile yarns are also discussed. Technical textile yarns provide essential reading for yarn and fabric manufacturers, textile scientists, technicians, engineers and technologists, covering a wide range of areas within textile applications. This book will also be an important information source for academic and students. Provides a comprehensive overview of the variety of technical textile yarns available along with individual characteristics and production methods. Technical textile yarns are naturally occurring or engineered, combining properties of chemical fibers and plastic materials with those of natural or synthetic fibers. This book presents a comprehensive treatment of both functional and decorative textiles used in the automotive industry including seat covers, headliners, airbags, seat belts and tires. Written in a clear, concise style it explains material properties and the way in which they influence manufacturing processes as well as providing practical production details. The subject treatment cuts across the disciplines of textile chemistry, fabric and plastics technology and production engineering. Environmental effects and recycling are also covered. It is aimed at the design and process engineer in industry as well as researchers in universities and colleges. Quality engineers will also benefit from the book’s sections on identifying problems and material limitations. Plasma technologies present an environmentally-friendly and versatile way of treating textile materials in order to enhance a variety of properties.
such as wettability, liquid repellency, dyeability and coating adhesion. Recent advances made in commercially viable plasma systems have greatly increased the potential of using plasma technology in industrial textile finishing. This pioneering book provides an essential guide to both the technology and science related to plastics and its practical applications in the textile industry. The first part of the book discusses the science and technology behind plastics. Chapter 2 covers detailed and comprehensive descriptions on the characteristics of plastics and methods of control and treatment in the processing of textiles. Both low power cold plasma and atmospheric pressure cold plasma processes are described as well as the diagnosis and control of plasma parameters in plasma generating reactors. A chapter is devoted to the use of plasma technology to achieve nonscale treatment of textile surfaces. The second part of the book concentrates on specific applications of plasma technology. Chapters cover treatments for water and oil repellency of textiles, engineering of biodegradable textiles and woolen finishing techniques through the use of plasma technology. Further chapters cover the modification of fibres for use in composites and the potential use of plasma technologies for the finishing of fabrics made of man made fibres. The final chapter in the book gives a comprehensive analysis of the surface chemical and physical characterisation of plasma treated fabrics. Written by a distinguished international team of experts, Plasma technologies for textiles is an invaluable reference for researchers, scientists and technologists alike. Summaries both the science and technology of plasma processing, and its practical applications. Discusses how plasma technology improves textile properties such as wettability and liquid repellent. An invaluable reference for researchers, scientists and technologists.

Understand the techniques for joining fabrics together in a way that considers durability, strength, leak-tightness, comfort in wear and the aesthetics of the joints is critical to the production of successful, structurally secure fabric products. Joining textiles: Principles and applications is an authoritative guide to the key theories and methods used to join fabrics efficiently. Part one provides a clear overview of several fundamental mechanical and physical problems and goes on to explain the basic principles

of joining textiles, including principles, methods and applications, along with a review of bonding requirements in coating and laminating of textiles. Welding technologies are the focus of part three, Heat sealing, ultrasonic and dielectric textile welding are covered, as are laser sewing of fabrics and the properties and performance of welded or bonded seams. Finally, part four reviews applications of joining textiles such as seams in non-iron shirts and car seat coverings. Joining of wearable electronic components and technical textiles, and the joining techniques involved in industrial and medical products including nonwoven materials. With its distinguished editors and international team of expert contributors, Joining textiles is an important reference work for textile product manufacturers, designers and technologists, fibre scientists, textile engineers and academics working in this area. Provides an authoritative guide to the key theories and methods used to join fabrics efficiently. It offers a comprehensive description of the fundamentals of welding, provides a wealth of informative case studies and stimulating real-life applications. This unique book examines all welding technologies, bonding of textiles, including principles, methods and applications, along with a review of bonding requirements in coating and laminating of textiles. The use of distinctive colourants and finishes has a significant impact on the aesthetic appeal and functionality of technical textiles. Advances in the textile chemical industry facilitate production of diverse desirable properties, and are therefore of great interest in the production of textile products with enhanced performance characteristics. Drawing on key research, Advances in the dyeing and finishing of technical textiles details important advances in this field and outlines their development for a range of applications. Part one reviews advances in dyes and colourants, including organic materials, optical effect pigments and microencapsulated colourants for technical textile applications. Other types of functional dyes considered include UV-absorbing, anti-microbial and water-repellent dyes. Regulations relating to the use of textile dyes are discussed before part two goes on to investigate such advances in finishing techniques as mechanical finishing, softening treatments and the use of enzymes. Surfakts, Inkjet printing of technical textiles and functional finishes to improve the comfort and protection of apparel are also explored. The use of nanotechnology in producing hydrophobic, super-hydrophobic and antimicrobial finishes is dealt with alongside coating and lamination techniques, before the book concludes with a discussion of specialty polymers for the finishing of technical textiles. With its distinguished editor and international team of expert contributors, Advances in the dyeing and finishing of technical textiles is a comprehensive guide for all those involved in the development, production and application of technical textiles, including textile chemists, colour technologists, quality colour inspectors, product developers and textile finishers. Discusses important advances in the textile chemical industry. Considerations developments in various dyes and colourants used in the industry, including water repellent, functional and anti-microbial dyes. Chapters also examine advances in finishing techniques, the use of nanotechnology and speciality polymers in technical textiles. The book “Frontiers and Textile Materials will detail the important materials that can be utilized for value-addition and functionalization of textile materials. The topics covered in this book includes the materials like enymes, polymers, etc. that are utilized for conventional textile processing and the advanced processing techniques that are expected to change the textile processing. When it comes to cold weather apparel, 40% of all apparel purchases are for cold weather conditions. With the help of fabric innovations, those wishing to enter the market for cold weather apparel. Reviews the principles, materials and requirements of cold weather apparel. Discusses design and ergonomic aspects including ventilation and insulation. Examines methods used to evaluate cold weather clothing as standards and legislation in practice. Advanced Textile Engineering Materials is written to educate readers about the use of advanced materials in various textile applications. In the first part, the book addresses recent advances in textile technology, focusing on the description and analysis of the materials, processes, characteristics and uses of advanced textile technologies. The second part of the book covers the application of advanced textile technologies to technical and functional apparel, including the use of advanced materials in the development of technical and functional woven and non-woven products. In this book, the authors present a comprehensive, practical introduction to the design and evaluation of advanced textile materials, processes, and applications. Advanced Textile Engineering Materials is written to educate readers about the use of advanced materials in various textile applications. In the first part, the book addresses recent advances in textile technology, focusing on the description and analysis of the materials, processes, characteristics and uses of advanced textile technologies. 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In this book, the authors present a comprehensive, practical introduction to the design and evaluation of advanced textile materials, processes, and applications.
through protection against specific hazards, to specific applications. This is the first book of its kind to give a complete coverage of textiles for protection. Covers a wide variety of themes from materials and design, through protection against specific hazards, to specific applications. The first book of its kind to give a complete coverage of textiles for protection. Written by leading protective textiles experts from around the world. The manufacture and processing of textiles is a complex and essential industry requiring many diverse skills to ensure profitability. New products are continually being developed, and reflect the energy and innovation of those working in the field. This book focuses on the technological aspects of the chemical processing of textiles, and on the modifications necessary for specific work environments. Coverage ranges from fibre structure and its relationship to tensile properties, textile aesthetics, comfort physiology, and end-use performance, through to the effect of domestic processing by the consumer on the textile product. The industry is constantly under environmental pressure, and the book examines the nature of environmental control and the development of alternative technology to produce less environmental impact. In order to provide a balanced view of the current situation, authors have been drawn from academia, research institutes and industry to produce a text that will be useful to both industrial readers and university students. In conclusion I would like to thank the authors for their dedication and their contributions. The book “Frontiers and Textile Materials will deal with the important materials that can be utilized for value-addition and functionalization of textile materials. The topics covered in this book includes the materials like enzymes, polymers, etc. that are utilized for conventional textile processing and the advanced materials like nanoparticles which are expected to change the horizons of textiles. The futuristic techniques for textile processing like plasma are also discussed. This first book to concentrate on providing a concise, representative overview of polymer microencapsulation for novel organic coatings and all its chemical and engineering aspects collates the literature hitherto spread out among journals in various disciplines. It covers all the important methods for carrying out microencapsulations, including in situ polymerization, phase separation, emulsification, grinding and spray drying. The result is a solid introduction from first-hand practitioners working in industry and research institutions for newcomers to the field. It is equally vital reading for professionals already active in the area needing to stay abreast of developments.