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# Handbook Of Yarn Production Technology Science And Economics Woodhead Publishing Series In Textiles By P R Lord 2003 07 25

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Technology, Science and Economics Woodhead Publishing  
The most comprehensive and current introduction to the textile industry - from fibers and finishes to smart textiles and end uses in fashion and interior design - all in a convenient binder format.

The companion Fabric Science Swatch Kit provides samples of fabrics used in the industry to align with the content of this text.

**Handbook of Weaving** CRC Press

Spinning is a major industry; it is part of the textile manufacturing process where three types of fibre are converted into yarn, then fabric, then textiles. The textiles are then fabricated into clothes or other artifacts. The fundamental operations for the stocks of fibers from which a woollen yarn is made are opening, cleaning, mixing, forming a slubbing or roving

and finally thinning the roving to the required yarn number and twisting it to produce a yarn possessing the requirements for subsequent processing such as warping, winding, weaving, finishing and dyeing. These demands vary with the different conditions confronted in manufacturing but include the following features: strength, elasticity, uniformity in weight per unit length and even distribution of twist. Woollen spinning involves three principal operations, irrespective of whether the mule or the frame or ring spinner is used, namely: Drafting, final drawing out, Twisting, or insertion of twist, Winding on, or packaging. Weaving constitutes the actual production of cloth or fabric, i.e., to combine the essentially one dimensional textile structure thread or yarn in such a way as to result in an essentially two dimensional structure of cloth of certain appearance, hand and strength. Knitting is the art and science of constructing a fabric by inter lacing loops, there are two types of knitting: warp and weft knitting. In recent years whole new classes of dyes such as fiber reactive, disperse, cationic basic, neutral dyeing premetalized have been discovered and produced for the dyeing of the natural and new synthetic, hydrophobic fibers. Bleaching improves whiteness by removing natural coloration and remaining trace impurities from the cotton; the degree of bleaching necessary is determined by the required whiteness and absorbency. Cotton being a vegetable fibre will be bleached using an oxidizing agent, such as dilute sodium hypochlorite or dilute hydrogen peroxide. If the fabric is to be dyed a deep shade, then lower levels of bleaching are acceptable, for example. However, for white bed sheetings and medical applications, the highest levels of whiteness and absorbency are essential. Wool fiber production

technology necessitates full understanding of its growth, pristine structure, physical, chemical and functional properties as well as processes involving manufacture of textile fibers. Some of the fundamentals of the book are woollen spinning, atmospheric conditions in wool manufacturing, Bradford system top gilling or top finishing, the principle of weaving, woollen and worsted weaves, knitting, the changing outlook of the knitting industry, influence of fiber fineness on quantity of dye required, altering the affinity of the wool fiber for dyes, dyeing of yarn according to the packing system, special wool finishes, water repellent, stain resistant treatments for worsted and woollen fabrics, the printing of wool piece goods, lustering of wool fabrics, fluorochemicals, mothproofing etc. The present book is of its own kind which covers woollen spinning; knitting, dyeing, bleaching and printing, special wool finishes etc. This is an important reference book for wool technologists, scientists, new entrepreneurs, research scholars and all others related to this field.

**Handbook of Tensile Properties of Textile and Technical Fibres** ASIA PACIFIC BUSINESS PRESS Inc.

The book "New Technologies - Trends, Innovations and Research" presents contributions made by researchers from the entire world and from some modern fields of technology, serving as a valuable tool for scientists, researchers, graduate students and professionals. Some practical applications in particular areas are presented, offering the capability to solve problems resulted from economic needs and to perform specific functions. The book will make possible for scientists and engineers to get familiar with the ideas from researchers from some modern fields of activity. It will provide interesting examples of practical applications of

knowledge, assist in the designing process, as well as bring changes to their research areas. A collection of techniques, that combine scientific resources, is provided to make necessary products with the desired quality criteria. Strong mathematical and scientific concepts were used in the applications. They meet the requirements of utility, usability and safety. Technological applications presented in the book have appropriate functions and they may be exploited with competitive advantages. The book has 17 chapters, covering the following subjects: manufacturing technologies, nanotechnologies, robotics, telecommunications, physics, dental medical technologies, smart homes, speech technologies, agriculture technologies and management.

#### Electronically Active Textiles MDPI

Grundig gennemgang af teknologier bag maskinstrikning, herunder bl.a. computer konstruktion, mønsterstriik, maskintyper, strikkeprincipper og strukturer, strikkevidenskab og særlige striktyper

#### **Structure and Mechanics of Textile Fibre Assemblies**

William Andrew

This book addresses the emergent need to act on reducing or getting rid of micro plastic pollution, to achieve a sustainable environment. Microplastics are small plastic pieces, which are less than five millimeters long which can be harmful to our oceans and aquatic life. These predominantly include microfibers from clothing, microbeads, and plastic pellets. Microplastics impact aquatic creatures, turtles and birds. According to the first study on estimation of human ingestion of microplastic, on average a person consumes at least 50,000 particles of

microplastic a year and breathes a similar quantity. Ingested microplastic particles can physically damage organs and also compromise immune function and stymie growth and reproduction. This book presents six informative chapters in order to alleviate the above mentioned issues.

#### **Routledge Handbook of Sports Technology and**

**Engineering** Handbook of Yarn Production Technology, Science and Economics

Technical yarns are produced 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, modification of textile yarn structures, yarn hairiness and its reduction and coatings for technical textile yarns. 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 biodegradable textile yarns are also discussed. Technical textile yarns provides 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 academics and students. Provides a comprehensive overview of the variety of technical textile yarns available along with individual characteristics and production methods Documents advances in textile yarn spinning and texturising featuring compact, rotor and friction spinning

Assesses different types of technical yarns including plasma-treated yarns for biomedical applications and hybrid yarns for thermoplastic composites

**New Technologies** Elsevier

Electronically Active Textiles (e-textiles) are a type of textile material that has some form of electronic functionality. This can be achieved by attaching electronics onto the surface of the textile, incorporating electronic components as part of the fabrication of the textile itself, or by integrating electronics into the yarns or fibers that comprises the textile. The addition of electronic components can give textiles a wide range of new functions from lighting or heating to advanced sensing capabilities. As such, e-textiles have provided a platform for developing a range of new novel products in fields, such as healthcare, sports, protection, transport, and communications. The purpose of this volume is to report on the advances in the integration of electronics into textiles, and presents original research in the field of e-textiles as well as a comprehensive review of the evolution of e-Textiles. Topics include the fabrication and illumination of e-textiles and the use of e-textiles for temperature sensing.

**Technology, Science and Economics** Woodhead Publishing

The first edition of Handbook of Technical Textiles has been an essential purchase for professionals and researchers in this area since its publication in 2000. With revised and updated coverage, including several new chapters, this revised two volume second edition reviews recent developments and new technologies across the field of technical textiles. Volume 2 - Technical Textile Applications offers an indispensable guide to established and

developing areas in the use of technical textiles. The areas covered include textiles for personal protection and welfare, such as those designed for ballistic protection, personal thermal and fire protection, and medical applications; textiles for industrial, transport and engineering applications, including composite reinforcement and filtration; and the growing area of smart textiles. Comprehensive handbook for all aspects of technical textiles Provides updated, detailed coverage of processes, fabric structure, and applications Ideal resource for those interested in high-performance textiles, textile processes, textile processing, and textile applications Many of the original, recognized experts from the first edition update their respective chapters

**Textiles and Fashion** Elsevier

Handbook of Yarn Production Technology, Science and Economics Elsevier

**High-Performance Apparel** Bloomsbury Publishing USA

Textile industry is one of the few basic industries, which is characterised as a necessary component of human life. One may classify it as a more glamorous industry, but whatever it is, it provides with the basic requirement called clothes. Spinning is the process of converting cotton or manmade fibre into yarn to be used for weaving and knitting. Weaving is a method of textile production in which two distinct sets of yarns or threads are interlaced at right angles to form a fabric or cloth. Finishing refers to the processes that convert the woven or knitted cloth into a usable material. Printing is the process of applying colour to fabric in definite patterns or designs. The textile industry occupies an important position in the total volume of merchandise trade across countries. Developing countries

account for little over two-third of world exports in textiles and clothing. It is the second largest employer after agriculture, providing employment to over 45 million people directly and 60 million people indirectly. The future for the textile industry looks promising, buoyed by both strong domestic consumption as well as export demand. This book is based on the latest technology involved in textile industry, which describes the processes available at the spinning and fabric forming stages coupled with the complexities of the finishing and colouration processes to the production of wide ranges of products. The major contents of the book are dyeing of textile materials, principles of spinning, process preparatory to spinning, principles of weaving, textile chemicals, yarn preparation, weaving and woven fabrics, knitting and knit fabrics, nonconventional fabrics, cellulosics, mixed fibers, printing compositions, printing processes, transfer dyes, transfer inks etc. It describes the manufacturing processes and photographs of plant & machinery with supplier's contact details. It will be a standard reference book for professionals, entrepreneurs, textile mill owners, those studying and researching in this important area and others interested in the field of textile industry.

Sustainability in the Textile Industry Woodhead Publishing  
Spun Yarn Technology provides a comprehensive review of the principles of spun yarn technology. Chapters are devoted to topics on spun yarn technology such as yarn production, properties of yarn, opening and cleaning loose fibers, fiber blending, the process of carding, and roller drafting, doubling, and fiber control. The spinning process, yarn folding, yarn preparation (winding, tensioning, splicing, and steaming and

storage), and the kinds of specialty yarn are presented as well. Textile technologists will find the text very useful.

#### Technical Textile Applications Small-Scale Textiles

Fibres usually experience tensile loads whether they are used for apparel or technical structures. Their form, which is long and fine, makes them some of the strongest materials available as well as very flexible. This book provides a concise and authoritative overview of tensile behaviour of a wide range of both natural and synthetic fibres used both in textiles and high performance materials. After preliminary chapters that introduce the reader to tensile properties, failure and testing of fibres, the book is split into two parts. Part one examines tensile properties and failure of natural fibres, such as cotton, hemp, wool and silk. Part two discusses the tensile properties and failure of synthetic fibres ranging from polyamide, polyester and polyethylene fibres to carbon fibres. Many chapters also provide a general background to the fibre, including the manufacture, microstructure, factors that affect tensile properties as well as methods to improve tensile failure. With its distinguished editor and array of international contributors, Handbook of tensile properties of textile and technical fibres is an important reference for fibre scientists, textile technologists and engineers, as well as those in academia. Provides an overview of tensile behaviour of a wide range of both natural and synthetic fibres Examines tensile characteristics, tensile failure of textiles fibres and factors that affect tensile properties Discusses microstructures and each type of fibre from manufacture to finished product

#### *Advances in Knitting Technology* MDPI

This book provides an invaluable single source of information on

the advances in yarn spinning technologies. Advanced spinning systems are described and comparisons are made of the properties of the yarns produced, and resultant finished products, with those from conventional systems. Part one provides an introduction to yarn fibre spinning and structure. Chapters discuss the principles of ring spinning and open-end spinning of yarns. Yarn structure and properties from different spinning techniques and yarn structural requirements for knitted and woven fabrics are also examined. Part two covers advances in particular yarn spinning technologies. Topics range from siro spinning to compact spinning technology and air-jet spinning. Final chapters explore how to minimise fibre damage which occur during spinning and the use of spin finishes for textiles. With its distinguished editor and array of international contributors, *Advances in yarn spinning technology* is an important text for spinners, yarn manufacturers and fabric producers, as well as researchers, technicians, engineers and technologists in this sector of the textile industry. Documents advances in spinning technologies and presents comparisons between systems. Assesses particular textile spinning technologies with specific chapters focusing on siro, compact, rotor, friction and air-jet spinning. Reviews measures to minimise fibre damage caused by spinning are investigated with specific relevance to rotor and friction spinning.

*Overview of Materials, Sensor and Production Technologies for Industrial Smart Textiles* ASIA PACIFIC BUSINESS PRESS Inc.  
*Engineering Textiles: Integrating the Design and Manufacture of Textile Products, Second Edition*, is a pioneering guide to textile product design and development, enabling the reader to

understand essential principles, concepts, materials and applications. This new edition is updated and expanded to include new and emerging topics, design concepts and technologies, such as sustainability, the use of nanotechnology, and wearable textiles. Chapters cover the essential concepts of fiber-to-fabric engineering, product development and design of textile products, different types of fibers, yarns and fabrics, the structure, characteristics and design of textiles, and the development of products for specific applications, including both traditional and technical textiles. This book is an innovative and highly valuable source of information for anyone engaged in textile product design and development, including engineers, textile technologists, manufacturers, product developers, and researchers and students in textile engineering. Presents an integrated approach to textile product design and development. Guides the reader from initial principles and concepts, to cutting-edge applications. Includes cutting-edge design concepts and major new technologies.

*Specialist Yarn and Fabric Structures* Elsevier

*High-Performance Apparel: Materials, Development, and Applications* covers the materials and techniques used in creating high-performance apparel, the technical aspects of developing high-performance garments, and an array of applications for high-performance clothing and wearable technology. Part One covers fabric construction for high-performance garments, from fiber types and spinning methods, to weaving, knitting, finishing, and joining techniques. Development of high-performance apparel is covered in Part Two, with particular emphasis on design and product development for function and wearer.

comfort. Part Three covers a range of applications and wearable technology that make use of high-performance apparel, including chapters on sportswear, protective clothing, and medical, military, and intelligent textiles. The book provides an excellent resource for all those engaged in garment development and production, and for academics engaged in research into apparel technology and textile science. Offers a range of perspectives on high-performance apparel from an international team of authors with diverse expertise Provides systematic and comprehensive coverage of the topic from fabric construction, through apparel design and development, to the range of current and potential applications Presents an excellent resource for all those engaged in garment development and production, and for academics engaged in research

**Advances in Yarn Spinning Technology** Woodhead Publishing Nanotube Superfiber Materials refers to different forms of macroscale materials with unique properties constructed from carbon nanotubes. These materials include nanotube arrays, ribbons, scrolls, yarn, braid, and sheets. Nanotube materials are in the early stage of development and this is the first dedicated book on the subject. Transitioning from molecules to materials is a breakthrough that will positively impact almost all industries and areas of society. Key properties of superfiber materials are high flexibility and fatigue resistance, high energy absorption, high strength, good electrical conductivity, high maximum current density, reduced skin and proximity effects, high thermal conductivity, lightweight, good field emission, piezoresistive, magnetoresistive, thermoelectric, and other properties. These properties will open up the door to dozens of applications

including replacing copper wire for power conduction, EMI shielding, coax cable, carbon biofiber, bullet-proof vests, impact resistant glass, wearable antennas, biomedical microdevices, biosensors, self-sensing composites, supercapacitors, superinductors, hybrid superconductor, reinforced elastomers, nerve scaffolding, energy storage, and many others. The scope of the book covers three main areas: Part I: Processing; Part II: Properties; and Part III: Applications. Processing involves nanotube synthesis and macro scale material formation methods. Properties covers the mechanical, electrical, chemical and other properties of nanotubes and macroscale materials. Different approaches to growing high quality long nanotubes and spinning the nanotubes into yarn are explained in detail. The best ideas are collected from all around the world including commercial approaches. Applications of nanotube superfiber cover a huge field and provides a broad survey of uses. The book gives a broad overview starting from bioelectronics to carbon industrial machines. First book to explore the production and applications of macro-scale materials made from nano-scale particles. Sets out the processes for producing macro-scale materials from carbon nanotubes, and describes the unique properties of these materials Potential applications for CNT fiber/yarn include replacing copper wire for power conduction, EMI shielding, coax cable, carbon biofiber, bullet-proof vests, impact resistant glass, wearable antennas, biomedical microdevices, biosensors, self-sensing composites, supercapacitors, superinductors, hybrid superconductor, reinforced elastomers, nerve scaffolding, energy storage, and many others.

Cotton BoD – Books on Demand

Complex raw materials and manufacturing processes mean the textile industry is particularly dependent on good process control to produce high and consistent product quality. Monitoring and controlling process variables during the textile manufacturing process also minimises waste, costs and environmental impact. Process control in textile manufacturing provides an important overview of the fundamentals and applications of process control methods. Part one introduces key issues associated with process control and principles of control systems in textile manufacturing. Testing and statistical quality control are also discussed before part two goes on to consider control in fibre production and yarn manufacture. Chapters review process and quality control in natural and synthetic textile fibre cultivation, blowroom, carding, drawing and combing. Process control in ring and rotor spinning and maintenance of yarn spinning machines are also discussed. Finally part three explores process control in the manufacture of knitted, woven, nonwoven textiles and colouration and finishing, with a final discussion of process control in apparel manufacturing. With its distinguished editors and international team of expert contributors, *Process control in textile manufacturing* is an essential guide for textile engineers and manufacturers involved in the processing of textiles, as well as academic researchers in this field. Provides an important overview of the fundamentals and applications of process control methods. Discusses key issues associated with process control and principles of control systems in textile manufacturing, before addressing testing and statistical quality control. Explores process control in the manufacture of knitted, woven, nonwoven textiles and colouration and finishing, with a discussion on process

control in apparel manufacturing

*Handbook of Yarn Production* Elsevier

This major textbook is designed for students studying textiles and fashion at higher and undergraduate level, as well as those needing a comprehensive and authoritative overview of textile materials and processes. The first part of the book reviews the main types of natural and synthetic fibres and their properties. Part two provides a systematic review of the key processes involved first in converting fibres into yarns and then transforming yarns into fabrics. Part three discusses the range of range of finishing techniques for fabrics. The final part of the book looks specifically at the transformation of fabric into apparel, from design and manufacture to marketing. With contributions from leading experts in their fields, this major book provides the definitive one-volume guide to textile manufacture. Provides comprehensive coverage of the types and properties of textile fibres to yarn and fabric manufacture, fabric finishing, apparel production and fashion. Focused on the needs of college and undergraduate students studying textiles or fashion courses. Each chapter ends with a summary to emphasise key points, a comprehensive self-review section, and project ideas are also provided.

**Nanotube Superfiber Materials** Elsevier

Texturing is increasingly important in textile production, not only in yarns for weaving and knitting fashion products, but also for carpets, furnishing fabrics and a variety of technical textiles. This book covers all the major techniques including twist-texturing, jet-screen texturing, false-twist process, BCF processes and air-jet texturing in detail. Combining a comprehensive review of



the physics and chemistry of texturing with a thorough, illustrated description of current practice, this book is invaluable for yarn and fabric manufacturers, textile scientists and students on textile science and technology courses.

**Engineering Textiles** BoD - Books on Demand

Despite the increased variety of manufactured fibres available to the textile industry, demand for cotton remains high because of its suitability on the basis of price, quality and comfort across a wide range of textile products. Cotton producing nations are also embracing sustainable production practices to meet growing consumer demand for sustainable resource production. This important book provides a comprehensive analysis of the key scientific and technological advances that ensure the quality of cotton is maintained from the field to fabric. The first part of the book discusses the fundamental chemical and physical structure

of cotton and its various properties. Advice is offered on measuring and ensuring the quality of cotton fibre. Building on these basics, Part two analyses various means for producing cotton such as genetic modification and organic production. Chapters focus on spinning, knitting and weaving technologies as well as techniques in dyeing. The final section of the book concludes with chapters concerned with practical aspects within the industry such as health and safety issues and recycling methods for used cotton. Written by an array of international experts within the field, Cotton: science and technology is an essential reference for all those concerned with the manufacture and quality control of cotton. Summarises key scientific and technological issues in ensuring cotton quality Discusses the fundamental chemical and physical structure of cotton Individual chapters focus on spinning, knitting and weaving technologies