

"*The Handbook of Bioplastics & Biocomposites Engineering Applications brings together scientists, from academia and industries, to report on current research and applications, in the bioplastics and biocomposites arena, that integrates pure and applied sciences such as chemistry, engineering and materials science. The Handbook focuses on five main categories of applications: Packaging, Civil Engineering, Biomedical, Automotive, General Engineering*"--

Thermoforming of Single and Multilayer Laminates explains the fundamentals of lamination and plastics thermoforming technologies along with current and new developments. It focuses on properties and thermoforming mechanics of plastic films and in particular single and multilayered laminates, including barrier films. For environmental and economic reasons, laminates are becoming increasingly important as a replacement for solid sheets and paint finishes in many industries, including transportation, packaging, and construction. Yet the processes of film formability during the extensive deformation and elevated temperatures experienced in conventional processing technologies, such as thermoforming, are poorly understood by most engineers. This book covers production processes, such as extrusion, calendaring, and casting, as well as mechanical and impact testing methods. It also describes how testing protocols developed for metals can be leveraged for plastic films and laminates, and includes a thorough discussion on methods for performing optical strain analysis.

Applications in transportation vehicles and packaging, including packaging for food, medical and electronics applications, sports equipment, and household appliances, are discussed. Safety, recycling and environmental aspects of thermoforming and its products complete the book. First comprehensive source of information and hands-on guide for the thermoforming of multilayered laminates Covers applications across such sectors as automotive, packaging, home goods, and construction Introduces new testing methods leveraging protocols used for metals

This extensively revised and updated second edition of the only data handbook available on the properties of commercial polymeric films details the permeability characteristics of over 125 major plastic and elastomer packaging materials. New to this edition are 92 resin chapters containing textual summary information including: category, general description, processing methods, applications, and general permeability considerations for water vapor, oxygen, and other gases including aroma and flavor. The product data is presented in graphical and tabular format, retaining the familiar format of the first edition and allowing easy comparison between materials and test conditions.

Properties, Manufacturing Methods, and Applications

Processing and Finishing of Polymeric Materials, 2 Volume Set

Package Engineering Including Modern Packaging

Kirk-Othmer Food and Feed Technology, 2 Volume Set

Plastics World

Multilayer Films 2005

An authoritative reference on the processing and finishing of polymeric materials for scientists and practitioners Owing to their versatility and wide range of applications, polymeric materials are of great commercial importance. Manufacturing processes of commercial products are designed to meet the requirements of the final product and are influenced by the physical and chemical properties of the polymeric material used. Based on Wiley's renowned Encyclopedia of Polymer Science and Technology, Processing and Finishing of Polymeric Materials provides comprehensive, up-to-date details on the latest manufacturing technologies, including blending, compounding, extrusion, molding, and coating. Written by prominent scholars from industry, academia, and research institutions from around the globe, this reference features more than forty selected reprints from the Encyclopedia as well as new contributions, providing unparalleled coverage of such topics as: Additives Antistatic agents Bleaching Blowing agents Calendaring Casting Coloring processes Dielectric heating Electrospinning Embedding Processing and Finishing of Polymeric Materials is an ideal resource for polymer and materials scientists, chemists, chemical engineers, materials scientists, process engineers, and consultants, and serves as a valuable addition to libraries of chemistry, chemical engineering, and materials science in industry, academia, and government.

As new applications are developed and plastics replace traditional materials in a widening spectrum of existing applications, the potential personal injury, property damage, financial and legal consequences of failure can be high. However, nearly half of plastics failure can be traced back to the original specification and selection of the material. This book gives engineers the data they need to make an informed decision about the materials they use in their products, imparting a thorough knowledge of the advantages and disadvantages of the various materials to choose from. The data also suggests other candidate materials which the reader may not have originally considered. More than 30,000 thermoplastics grades are grouped into circa. 300 subfamilies, within which over 20 properties are assessed. The abundance or scarcity of a material and its cost are also often important deciding factors. In this book, an economical overview of the plastics industry helps clarify the actual consumption and costs of thermoplastics including bioplastic, and the relationship of cost vs. performance is also examined for each thermoplastic subfamily. Immediate and long-term common properties are reviewed, including mechanical behavior, impact, thermal properties, and many more. Environmental considerations are also covered, including ease of recycling and sustainability. Helps engineers to implement a systematic approach to material selection in their work Includes more than 300 subfamilies of thermoplastic, and a wide range of properties including chemical resistance, thermal degradation, creep and UV resistance Evaluates cost/performance relations and environmental considerations

Since their first industrial use polymers have gained a tremendous success. The two volumes of "Polymers - Opportunities and Risks" elaborate on both their potentials and on the impact on the environment arising from their production and applications. Volume 11 "Polymers - Opportunities and Risks I: General and Environmental Aspects" is dedicated to the basics of the engineering of polymers – always with a view to possible environmental implications. Topics include: materials, processing, designing, surfaces, the utilization phase, recycling, and depositing. Volume 12 "Polymers - Opportunities and Risks II: Sustainability, Product Design and Processing" highlights raw materials and renewable polymers, sustainability, additives for manufacture and processing, melt modification, biodegradation, adhesive technologies, and solar applications. All contributions were written by leading experts with substantial practical experience in their fields. They are an invaluable source of information not only for scientists, but also for environmental managers and decision makers.

This guide gives an overview and insight into the advanced technology of thermoforming, discussing different processes and applications. It reveals the possibilities of thermoforming from forming, filling, and sealing processes, to using thermoforming technology for cost saving purposes and maximum efficiency. Its coverage addresses the simulation of formed parts as well as applications of technical parts and packaging. The reader is guided through the path of development, design, machine and mold technology and production, as well as the latest innovations, from thermoformed bottles to fully automated assembly lines.

Polymers - Opportunities and Risks I

Plastics Engineering

Printing on Polymers

Injection Molding Handbook

Advances in Thermoforming

Fluoroplastics, Volume 1, compiles in one place a working knowledge of the polymer chemistry and physics of non-melt processible fluoropolymers with detailed descriptions of commercial processing methods, material properties, fabrication and handling information, technologies, and applications. Also, history, market statistics, and safety and recycling aspects are covered. Both volumes contain a large amount of specific property data which is useful for users to readily compare different materials and align material structure with end use applications. Volume 1 concentrates mostly on polytetrafluoroethylene and polychlorotrifluoroethylene and their processing techniques – which are essentially non-melt-processes – used across a broad range of industries including automotive, aerospace, electronic, food, beverage, oil/gas, and medical devices. Since the first edition was published many new technical developments and market changes have taken place and new grades of materials have entered the market. This new edition is a thoroughly updated and significantly expanded revision covering new technologies and applications, and addressing the changes that have taken place in the fluoropolymer markets. Fluoroplastics, Volume 1 is an all-encompassing handbook for non-melt processible fluoropolymers – a unique and invaluable reference for professionals in the fluoropolymer industry and fluoropolymer application industries. Exceptionally broad and comprehensive coverage of non-melt processible fluoropolymers processing and applications. Practical approach, written by long-standing authority in the fluoropolymers industry. New technologies, materials and applications are included in the new edition.

Food Packaging: Advanced Materials, Technologies, and Innovations is a one-stop reference for packaging materials researchers working across various industries. With chapters written by leading international researchers from industry, academia, government, and private research institutions, this book offers a broad view of important developments in food packaging. Presents an extensive survey of food packaging materials and modern technologies Demonstrates the potential of various materials for use in demanding applications Discusses the use of polymers, composites, nanotechnology, hybrid materials, coatings, wood-based, and other materials in packaging Describes biodegradable packaging, antimicrobial studies, and environmental issues related to packaging materials Offers current status, trends, opportunities, and future directions Aimed at advanced students, research scholars, and professionals in food packaging development, this application-oriented book will help expand the reader ' s knowledge of advanced materials and their use of innovation in food packaging.

"Provides in-depth coverage of the entire thermoforming molding process from market domain and materials options to manufacturing methods and peripheral support. Second Edition furnishes entirely new information on twin sheet forming, corrugated tubing and pipe manufacturin

gtechniques, plastics recycling, forthcoming equipment, and energy and labor costs."

This review provides a brief discussion of the thermoforming process, including its historical development and machinery and material requirements. An additional indexed section containing several hundred abstracts from the Rapra Polymer Library database provides useful references for further reading.

A Guide to Packaging and Barrier Materials

Thermoplastic Materials

Advanced Materials, Technologies, and Innovations

Handbook of Food Engineering Practice

NEWTECH 2017

Handbook of Nucleating Agents

The authoritative introduction to all aspects of plastics engineering — offering both academic and industry perspectives in one complete volume. Introduction to Plastics Engineering provides a self-contained introduction to plastics engineering. A unique synergistic approach explores all aspects of material use — concepts, mechanics, materials, part design, part fabrication, and assembly — required for converting plastic materials, mainly in the form of small pellets, into useful products. Thermoplastics, thermosets, elastomers, and advanced composites, the four disparate application areas of polymers normally treated as separate subjects, are covered together. Divided into five parts — Concepts, Mechanics, Materials, Part Processing and Assembly, and Material Systems — this inclusive volume enables readers to gain a well-rounded, foundational knowledge of plastics engineering. Chapters cover topics including the structure of polymers, how concepts from polymer physics explain the macro behavior of plastics, evolving concepts for plastics use, simple mechanics principles and their role in plastics engineering, models for the behavior of solids and fluids, and the mechanisms underlying the stiffening of plastics by embedded fibers. Drawing from his over fifty years in both academia and industry, Author Vijay Stokes uses the synergy between fundamentals and applications to provide a more meaningful introduction to plastics. Examines every facet of plastics engineering from materials and fabrication methods to advanced composites Provides accurate, up-to-date information for students and engineers both new to plastics and highly experienced with them Offers a practical guide to large number of materials and their applications Addresses current issues for mechanical design, part performance, and part fabrication Introduction to Plastics Engineering is an ideal text for practicing engineers, researchers, and students in mechanical and plastics engineering and related industries.

Plastics Engineering, Fourth Edition, presents basic essentials on the properties and processing behaviour of plastics and composites. The book gives engineers and technologists a sound understanding of basic principles without the introduction of unduly complex levels of mathematics or chemistry. Early chapters discuss the types of plastics currently available and describe how designers select a plastic for a particular application. Later chapters guide the reader through the mechanical behaviour of materials, along with a detailed analysis of their major processing techniques and principles. All techniques are illustrated with numerous worked examples within each chapter, with further problems provided at the end. This updated edition has been thoroughly revised to reflect major changes in plastic materials and their processing techniques that have occurred since the previous edition. The plastics and processing techniques addressed within the book have been comprehensively updated to reflect current materials and technologies, with new worked examples and problems also included. Gives new engineers and technologists a thorough understanding of the essential properties and processing behavior of plastics and composites Presents a great source of foundational information for students, early-career engineers and researchers Demonstrates how basic engineering principles in design, mechanics of materials, fluid mechanics and thermodynamics may be applied to the properties, processing and performance of modern plastic materials

Thermoforming of Single and Multilayer LaminatesPlastic Films Technologies, Testing, and ApplicationsWilliam Andrew

Processing Technology for Bio-Based Polymers: Advanced Strategies and Practical Aspects brings together the latest advances and novel technologies surrounding the synthesis and manufacture of biopolymers, ranging from bio-based polymers to synthetic polymers from bio-derived monomers. Sections examine bio-based polymer chemistry, discuss polymerization process and emerging design technologies, cover manufacturing and processing approaches, explain cutting-edge approaches and innovative applications, and focus on biomedical and other key application areas. Final chapters provide detailed discussion and an analysis of economic and environmental concerns, practical considerations, challenges, opportunities and future trends. This is a valuable resource for researchers, scientists and advanced students in polymer science, bio-based materials, nanomaterials, plastics engineering, biomaterials, chemistry, biotechnology, and materials science and engineering, as well as R&D professionals, engineers and industrialists interested in the development of biopolymers for advanced products and applications. Focuses on the processing of bio-based polymers, covering both traditional methods and innovative new approaches Offers novel opportunities and ideas for developing or improving technologies for biopolymer research, preparation and application Examines other key considerations, including reliability and end product, economic concerns, and environmental and lifecycle aspects

Synthetic Engineering Materials and Nanotechnology

Introduction to Plastics Engineering

Food Packaging

Processing Technology for Bio-Based Polymers

Permeability Properties of Plastics and Elastomers, 2nd Ed.

Thermoforming of Single and Multilayer Laminates