

## Handbook Polymer Degradation 2nd Edition

Properties of Polymers: Their Correlation with Chemical Structure; Their Numerical Estimation and Prediction from Additive Group Contributions summarizes the latest developments regarding polymers, their properties in relation to chemical structure, and methods for estimating and predicting numerical properties from chemical structure. In particular, it examines polymer electrical properties, magnetic properties, and mechanical properties, as well as their crystallization and environmental behavior and failure. The rheological properties of polymer melts and polymer solutions are also considered. Organized into seven parts encompassing 27 chapters, this book begins with an overview of polymer science and engineering, including the typology of polymers and their properties. It then turns to a discussion of thermophysical properties, from transition temperatures to volumetric and calorimetric properties, along with the cohesive aspects and conformation statistics. It also introduces the reader to the behavior of polymers in electromagnetic and mechanical fields of force. The book covers the quantities that influence the transport of heat, momentum, and matter, particularly heat conductivity, viscosity, and diffusivity; properties that control the chemical stability and breakdown of polymers; and polymer properties as an integral concept, with emphasis on processing and product properties. Readers will find tables that give valuable (numerical) data on polymers and include a survey of the group contributions (increments) of almost every additive function considered. This book is a valuable resource for anyone working on practical problems in the field of polymers, including organic chemists, chemical engineers, polymer processors, polymer technologists, and both graduate and PhD students.

Materials for Conservation: Organic Consolidants, Adhesives and Coatings provides an overview of one aspect of materials conservation treatment, particularly the properties of organic consolidants, adhesives, and coatings. The contents of the book are divided into two parts; these parts are background information and survey of polymers. The coverage of the first part includes polymer science and the uses and requirements of applied polymers. The second part covers resins, vinyl, thermoplastics, fillers, and colorants. The text will be most useful to individuals involved in the management and conservation of historic materials, such as museum curators. Materials engineer and polymer chemists will also benefit from the book.

When dealing with challenges such as providing fire protection while considering cost, mechanical and thermal performance and simultaneously addressing increasing regulations that deal with composition of matter and life cycle issues, there are no quick, one-size-fits-all answers. Packed with comprehensive coverage, scientific approach, step-by-step directions, and a distillation of technical knowledge, the first edition of Fire Retardancy of Polymeric Materials broke new ground. It supplied a one-stop resource for the development of new fire safe materials. The editors have expanded the second edition to echo the multidisciplinary approach inherent in current flame retardancy technology and put it in a revised, more user-friendly format. More than just an update of previously covered topics, this edition discusses: additional fire retardant chemistry developments in regulations and standards new flame retardant approaches fire safety engineering modeling and fire growth phenomena The book introduces

flame retardants polymer-by-polymer, supplemented by a brief overview of mode of action and interaction, and all the other ancillary issues involved in this applied field of materials science. The book delineates what, why, and how to do it, covering the fundamentals of polymer burning/combustion and how to apply these systems and chemistries to specific materials classes. It also provides suggested formulations, discusses why certain materials are preferred for particular uses or applications, and offers a starting point from which to develop fire-safe materials.

Handbook of Thermoplastic Elastomers, Second Edition presents a comprehensive working knowledge of thermoplastic elastomers (TPEs), providing an essential introduction for those learning the basics, but also detailed engineering data and best practice guidance for those already involved in polymerization, processing, and part manufacture. TPEs use short, cost-effective production cycles, with reduced energy consumption compared to other polymers, and are used in a range of industries including automotive, medical, construction and many more. This handbook provides all the practical information engineers need to successfully utilize this material group in their products, as well as the required knowledge to thoroughly ground themselves in the fundamental chemistry of TPEs. The data tables included in this book assist engineers and scientists in both selecting and processing the materials for a given product or application. In the second edition of this handbook, all chapters have been reviewed and updated. New polymers and applications have been added — particularly in the growing automotive and medical fields — and changes in chemistry and processing technology are covered. Provides essential knowledge of the chemistry, processing, properties, and applications for both new and established technical professionals in any industry utilizing TPEs Datasheets provide "at-a-glance" processing and technical information for a wide range of commercial TPEs and compounds, saving readers the need to contact suppliers Includes data on additional materials and applications, particularly in automotive and medical industries

This book is a complete guide to polymers, which degrade naturally once they are finished with. This is an especially important topic at the moment as landfill space is getting less and other methods of recycling can be very costly. This book discusses the different types of biodegradable polymers, both naturally occurring and synthetic, and how they are used and the mechanisms for degradation.

Handbook of Polymer Degradation CRC Press

A practical handbook rather than merely a chemistry reference, Szycher's Handbook of Polyurethanes, Second Edition offers an easy-to-follow compilation of crucial new information on polyurethane technology, which is irreplaceable in a wide range of applications. This new edition of a bestseller is an invaluable reference for technologists, marketers, suppliers, and academicians who require cutting-edge, commercially valuable data on the most advanced uses for polyurethane, one of the most important and complex specialty polymers. internationally recognized expert Dr. Michael Szycher updates his bestselling industry "bible" With seven entirely new chapters and five that are revised and updated, this book summarizes vital contents from U.S. patent literature—one of the most comprehensive sources of up-to-date technical information. These patents illustrate the most useful

technology discovered by corporations, universities, and independent inventors. Because of the wealth of information they contain, this handbook features many full-text patents, which are carefully selected to best illustrate the complex principles involved in polyurethane chemistry and technology. Features of this landmark reference include: Hundreds of practical formulations Discussion of the polyurethane history, key terms, and commercial importance An in-depth survey of patent literature Useful stoichiometric calculations The latest "green" chemistry applications A complete assessment of medical-grade polyurethane technology Not biased toward any one supplier's expertise, this special reference uses a simplified language and layout and provides extensive study questions after each chapter. It presents rich technical and historical descriptions of all major polyurethanes and updated sections on medical and biological applications. These features help readers better understand developmental, chemical, application, and commercial aspects of the subject.

As a new and exciting field of interdisciplinary macromolecular science and engineering, polymeric materials will have a profound presence in 21st century chemical, pharmaceutical, biomedical, manufacturing, infrastructure, electronic, optical and information technologies. The origin of this field derived from an area of polymer science and engineering encompassing plastic technologies. The field is rapidly expanding to incorporate new interdisciplinary research areas such as biomaterials, macromolecular biology, novel macromolecular structures, environmental macromolecular science and engineering, innovative and nano-fabrications of products, and is translating discoveries into technologies. · Unique in combining scientific concepts with technological aspects · Provides a comprehensive and broad coverage of thermodynamic and thermal behaviours of various polymeric materials as well as methodologies of thermal analysis and calorimetry · Contributions are from both pioneering scientists and the new generation of researchers

Service Life Prediction of Polymeric Materials: Global Perspectives combines developed content derived from topics discussed in the Fourth International Symposium on Service Life Prediction (Key Largo, Florida, December 2006). This critical examination of the existing and alternative methodologies used to assess the service life of polymeric materials presents readers with the advances in accelerated and field exposure testing protocols. Written by established experts in the service life community, this volume introduces advanced methods, including high throughput and combinatorial analyses, models data collection and storage formats. Researchers and engineers involved with materials and polymer science, coatings technologists and automotive materials will find Service Life Prediction of Polymeric Materials: Global Perspectives a useful tool.

Plastics offer a variety of environmental benefits. However, their production, applications, and disposal present many environmental concerns. Plastics and the Environment provides state-of-the-art technical and research information on the complex relationship between the plastic and polymer industry and the environment, focusing on the sustainability, environmental impact, and cost—benefit tradeoffs associated with different technologies. Bringing together the field's leading researchers, Anthony Andrady's innovative collection not only covers how plastics affect the environment, but also how environmental factors affect plastics. The relative benefits of recycling, resource recovery, and energy recovery are also discussed in detail. The first of the book's four sections represents a basic introduction to the key subject matter of plastics and the environment; the second explores several pertinent applications of plastics with environmental implications—packaging, paints

and coatings, textiles, and agricultural film use. The third section discusses the behavior of plastics in some of the environments in which they are typically used, such as the outdoors, in biotic environments, or in fires. The final section consists of chapters on recycling and thermal treatment of plastics waste. Chapters include: Commodity Polymers Plastics in Transportation Biodegradation of Common Polymers Thermal Treatment of Polymer Waste Incineration of Plastics The contributors also focus on the effectiveness of recent technologies in mitigating environmental impacts, particularly those for managing plastics in the solid waste stream. Plastic and design engineers, polymer chemists, material scientists, and ecologists will find *Plastics and the Environment* to be a vital resource to this critical industry.

The complete and authoritative guide to modern packaging technologies —updated and expanded From A to Z, *The Wiley Encyclopedia of Packaging Technology, Third Edition* covers all aspects of packaging technologies essential to the food and pharmaceutical industries, among others. This edition has been thoroughly updated and expanded to include important innovations and changes in materials, processes, and technologies that have occurred over the past decade. It is an invaluable resource for packaging technologists, scientists and engineers, students and educators, packaging material suppliers, packaging converters, packaging machinery manufacturers, processors, retailers, and regulatory agencies. In addition to updating and improving articles from the previous edition, new articles are also added to cover the recent advances and developments in packaging. Content new to this edition includes: Advanced packaging materials such as antimicrobial materials, biobased materials, nanocomposite materials, ceramic-coated films, and perforated films Advanced packaging technologies such as active and intelligent packaging, radio frequency identification (RFID), controlled release packaging, smart blending, nanotechnology, biosensor technology, and package integrity inspection Various aspects important to packaging such as sustainable packaging, migration, lipid oxidation, light protection, and intellectual property Contributions from experts in all-important aspects of packaging Extensive cross-referencing and easy-to-access information on all subjects Large, double-column format for easy reference

Addcon World 2003 was our 9th international conference on additives for plastics. The two day conference focused on the technical advances and issues facing the plastics additives and modifiers industry. Papers consider value creation in the additives business and various aspects of additive technology, including flame retardants, stabilisers, process aids, compatibilisers, impact modifiers, and new pigments.

Annotation An essential reference for engineers, scientists and product designers that already work with polymers and plastics who wish to convert to a sustainable plastic. It covers the properties, synthesis and polymerisation of PLA and processing techniques involved in fabricating parts from this polymer.

This book, the second edition of the first monograph fully devoted to UV degradation and stabilization ever published in English, has 12 chapters discussing different aspects of UV related phenomena occurring when polymeric materials are exposed to UV radiation. In the introduction the existing literature has been reviewed to find out how plants, animals and humans protect themselves against UV radiation. This review permits evaluation of mechanisms of protection against UV used by living things and potential application of these mechanisms in protection of natural and synthetic polymeric materials. This is followed by chapters with a more detailed look at more specific aspects of UV degradation and stabilization. A practical and up-to-date reference guide for engineers and scientists designing with plastics, and formulating plastics materials Explains the effects of UV light on plastics, and how to mitigate its effects through the use of UV stabilizers Surveys the range of UV stabilizers on the market, and provides advice on their selection and use

The use of reactive polymers enables manufacturers to make chemical changes at a late stage in the production process—these in turn cause

changes in performance and properties. Material selection and control of the reaction are essential to achieve optimal performance. The second edition of *Reactive Polymers Fundamentals and Applications* introduces engineers and scientists to the range of reactive polymers available, explains the reactions that take place, and details applications and performance benefits. Basic principles and industrial processes are described for each class of reactive resin (thermoset), as well as additives, the curing process, and applications and uses. The initial chapters are devoted to individual resin types (e.g. epoxides, cyanacrylates, etc.); followed by more general chapters on topics such as reactive extrusion and dental applications. Material new to this edition includes the most recent developments, applications and commercial products for each chemical class of thermosets, as well as sections on fabrication methods, reactive biopolymers, recycling of reactive polymers, and case studies. Injection molding of reactive polymers, radiation curing, thermosetting elastomers, and reactive extrusion equipment are all covered as well. Most comprehensive source of information about reactive polymers Covers basics as well as most recent developments, including reactive biopolymers, recycling of reactive polymers, nanocomposites, and fluorosilicones Indispensable guide for engineers and advanced students alike—providing extensive literature and patent review

*Handbook of Biodegradable Polymers*, the seventh volume in the *Drug Delivery and Targeting* book series, provides a source manual for synthetic procedures, properties and applications of bioerodible polymers. The authors describe widely available materials such as polyactides, collagen and gelatin, as well as polymers of emerging importance, such as the genetically-engineered and elastin-based polymers which are either proprietary or in early stages of development. Section 1 addresses synthetic absorbable polymers, and Section 2 profiles natural, semi-synthetic and biosynthetic polymers. Section 3 discusses the surface characterization of degradable polymers, the modeling of biodegradation and non-medical polymers. This book is ideal for researchers from academia and industry as well as chemists, pharmacists and physicians who deal with biopolymers, drug delivery and targeting, bioengineering and implantable devices.

This book aims to rehabilitate kinetic modeling in the domain of polymer ageing, where it has been almost abandoned by the research community. Kinetic modeling is a key step for lifetime prediction, a crucial problem in many industrial domains in which needs cannot be satisfied by the common empirical methods. The book proposes a renewed approach of lifetime prediction in polymer oxidative ageing. This approach is based on kinetic models built from relatively simple mechanistic schemes but integrating physical processes (oxygen diffusion and stabilizer transport), and use property (for instance mechanical failure) changes. An important chapter is dedicated to radiation-induced oxidation and its most important applications: radiochemical ageing at low dose rates and photo-chemical ageing under solar radiation. There is also a chapter devoted to the problem of ageing under coupled oxidation and mechanical loading.

"Covers recent advances in polymer degradation and stabilization. Focuses on the basics of photo- and bio-degradability. Delineates special and general environmental parameters such as solar irradiation, temperature, and agrochemical exposure. Surveys plastic waste disposal strategies such as recycling, incineration, chemical recovery by pyrolysis,

"Provides the latest authoritative research on the developments, technology, and applications of rubbery materials. Presents structures, manufacturing techniques, and processing details for natural and synthetic rubbers, rubber-blends,

rubber composites, and thermoplastic elastomers. 80% revised and rewritten material covers major advances since publication of the previous edition."

Sealing is an age-old problem that dates back to our earliest attempts to create a more comfortable living environment. Prehistoric people used natural sealants such as earth, loam, grass, and reeds to protect the interior of their homes against the weather. Today's applications extend to a myriad of uses. The Handbook of Sealant Technology provide Polylactic Acid: A Practical Guide for the Processing, Manufacturing, and Applications of PLA, Second Edition, provides a practical guide for engineers and scientists working in PLA and on the development of emerging new products. The current market situation for PLA and biodegradable polymers is described, along with applications across a range of market sectors. In addition, the mechanical, chemical, thermal, rheology and degradation properties are included. Updates include new chapters covering various processing methods, as well as recycling methods, and additives and processing aids. New applications cover a range of products (including 3D Printing), and an environmental assessment, including regulatory aspects. The book is not only a useful introduction to this topic, but also a practical, readily applicable reference book that will support decision-making in the plastics industry. Presents an essential reference for engineers, scientists and product designers considering switching to a sustainable plastic Covers the properties, synthesis and polymerization of PLA, along with processing techniques involved in fabricating parts from this polymer Includes critical new chapters on processing, additives, recycling and environmental considerations relating to PLA

Long-Term Durability of Polymeric Matrix Composites presents a comprehensive knowledge-set of matrix, fiber and interphase behavior under long-term aging conditions, theoretical modeling and experimental methods. This book covers long-term constituent behavior, predictive methodologies, experimental validation and design practice. Readers will also find a discussion of various applications, including aging air craft structures, aging civil infrastructure, in addition to engines and high temperature applications.

The Polymer Blends Handbook is a fundamental reference work on polymer blends, covering all aspects: science, engineering, technology and application. It will appeal to anyone working in the field of blends, researchers as well as engineers. The Handbook is designed to be the source of information on all aspects of polymer blends. To this end the Editors have put together an international group of highly respected contributors, each an expert in his chosen subjects. The book provides comprehensive, up-to-date information on the physical properties of polymers including, viscoelasticity, flammability, miscibility, optical properties, surface properties and more. Containing carefully selected reprints from the Wiley's renowned Encyclopedia of Polymer Science and Technology, this reference features the same breadth and quality of coverage and clarity of presentation found in the original.

A handbook on polyolefins. This second edition includes new material on the structure, morphology and properties of polyolefin (PO) synthesis. It focuses on synthetic advances, the use of additives, special coverage of PO blends, composites and fibres, and surface treatments. It also addresses the problem of interfacial and superficial phenomena.

During the past decade, the field of polymer degradation and stabilization has become a subject of central importance in polymer science and technology. This book provides a fundamental source of information designed for those with only a basic understanding of the background of the field.

Thermal analysis is an old technique. It has been neglected to some degree because developments of convenient methods of measurement have been slow and teaching of the understanding of the basics of thermal analysis is often wanting. Flexible, linear macromolecules, also not as accurately simply called polymers, make up the final, third, class of molecules which only was identified in 1920. Polymers have never been fully integrated into the disciplines of science and engineering. This book is designed to teach thermal analysis and the understanding of all materials, flexible macromolecules, as well as those of the small molecules and rigid macromolecules. The macroscopic tool of inquiry is thermal analysis, and the results are linked to microscopic molecular structure and motion. Measurements of heat and mass are the two roots of quantitative science. The macroscopic heat is connected to the microscopic atomic motion, while the macroscopic mass is linked to the microscopic atomic structure. The macroscopic units of measurement of heat and mass are the joule and the gram, chosen to be easily discernable by the human senses. The microscopic units of motion and structure are  $10^{-12}$  the picosecond (10<sup>-10</sup> seconds) and the ångström (10<sup>-10</sup> meters), chosen to fit the atomic scales. One notes a factor of 10,000 between the two atomic units when expressed in "human" units, second and gram—with one gram being equal to one cubic centimeter when considering water. Perhaps this is the reason for the much better understanding and greater interest in the structure of materials, being closer to human experience when compared to molecular motion.

Wood has played a major role throughout human history. Strong and versatile, the earliest humans used wood to make shelters, cook food, construct tools, build boats, and make weapons. Recently, scientists, politicians, and economists have renewed their interest in wood because of its unique properties, aesthetics, availability, abundance, and perhaps most important of all, its renewability. However, wood will not reach its highest use potential until we fully describe it, understand the mechanisms that control its performance properties, and, finally, are able to manipulate those properties to give us the desired performance we seek. The Handbook of Wood Chemistry and Wood Composites analyzes the chemical composition and physical properties of wood cellulose and its response to natural processes of degradation. It describes safe and effective chemical modifications to strengthen wood against biological, chemical, and mechanical degradation without using toxic, leachable, or corrosive chemicals. Expert researchers provide insightful analyses of the types of chemical modifications applied to polymer cell walls in wood. They emphasize the mechanisms of reaction involved and resulting changes in performance properties including modifications that increase water repellency, fire retardancy, and resistance to ultraviolet light, heat, moisture, mold, and other biological organisms. The text also explores modifications that increase mechanical strength, such as lumen fill, monomer polymer penetration, and plasticization. The Handbook of Wood Chemistry and Wood Composites concludes with the latest applications, such as adhesives, geotextiles, and sorbents, and future trends in the use of wood-based composites in terms of sustainable agriculture, biodegradability and recycling, and economics. Incorporating decades of teaching experience, the editor of this handbook is well-attuned to educational demands as well as industry standards and research trends.

Nothing stays the same for ever. The environmental degradation and corrosion of materials is inevitable and affects most aspects of life. In

industrial settings, this inescapable fact has very significant financial, safety and environmental implications. The Handbook of Environmental Degradation of Materials explains how to measure, analyse, and control environmental degradation for a wide range of industrial materials including metals, polymers, ceramics, concrete, wood and textiles exposed to environmental factors such as weather, seawater, and fire. Divided into sections which deal with analysis, types of degradation, protection and surface engineering respectively, the reader is introduced to the wide variety of environmental effects and what can be done to control them. The expert contributors to this book provide a wealth of insider knowledge and engineering knowhow, complementing their explanations and advice with Case Studies from areas such as pipelines, tankers, packaging and chemical processing equipment ensures that the reader understands the practical measures that can be put in place to save money, lives and the environment. The Handbook's broad scope introduces the reader to the effects of environmental degradation on a wide range of materials, including metals, plastics, concrete, wood and textiles. For each type of material, the book describes the kind of degradation that affects it and how best to protect it. Case Studies show how organizations from small consulting firms to corporate giants design and manufacture products that are more resistant to environmental effects.

Because of unique water properties, humidity affects materials and many living organisms, including humans. Humidity control is important in various fields, from production management to creating a comfortable living environment. The range of materials that can be used in the development of humidity sensors is very broad, and the third volume of the Handbook of Humidity Measurement offers an analysis on various humidity-sensitive materials and sensor technologies used in the fabrication of humidity sensors and methods acceptable for their testing. Additional features include: ? numerous strategies for the fabrication and characterization of humidity-sensitive materials and sensing structures used in sensor applications, ? methods and properties to develop smaller, cheaper, more robust, and accurate devices with better sensitivity and stability, ? a guide to sensor selection and an overview of the humidity sensor market, and ? new technology solutions for integration, miniaturization, and specificity of the humidity sensor calibration. Handbook of Humidity Measurement, Volume 3: Sensing Materials and Technologies provides valuable information for practicing engineers, measurement experts, laboratory technicians, project managers in industries and national laboratories, and university students and professors interested in solutions to humidity measurement tasks. Despite the fact that this book is devoted to the humidity sensors, it can be used as a basis for understanding fundamentals of any gas sensor operation and development.

The Concise Encyclopedia of Biomedical Polymers and Polymeric Biomaterials presents new and selected content from the 11-volume Biomedical Polymers and Polymeric Biomaterials Encyclopedia. The carefully culled content includes groundbreaking work from the earlier published work as well as exclusive online material added since its publication in print. A diverse and global team of renowned scientists provide cutting edge information concerning polymers and polymeric biomaterials. Acknowledging the evolving nature of the field, the encyclopedia also features newly added content in areas such as tissue engineering, tissue repair and reconstruction, and biomimetic materials.

This book discusses some of the state-of-the-art techniques of recycling post-consumer plastic materials and focuses on mechanical recycling, chemical recycling and energy recovery. The book is intended for all those who are interested in recycling of post consumer plastic waste. Although, this book discusses technical aspects of recycling, the authors have endeavoured to make this book easily understandable to anyone interested in the subject enabling the reader to gain a thorough grounding in all the subjects discussed.

UHMWPE Biomaterials Handbook describes the science, development, properties and application of ultra-high molecular weight polyethylene (UHMWPE) used in artificial joints. This material is currently used in 1.4 million patients around the world every year for use in the hip, knee, upper extremities, and spine. Since the publication of the 1st edition there have been major advances in the development and clinical adoption of highly crosslinked UHMWPE for hip and knee replacement. There has also been a major international effort to introduce Vitamin E stabilized UHMWPE for patients. The accumulated knowledge on these two classes of materials are a key feature of the 2nd edition, along with an additional 19 additional chapters providing coverage of the key engineering aspects (biomechanical and materials science) and clinical/biological performance of UHMWPE, providing a more complete reference for industrial and academic materials specialists, and for surgeons and clinicians who require an understanding of the biomaterials properties of UHMWPE to work successfully on patient applications. The UHMWPE Handbook is the comprehensive reference for professionals, researchers, and clinicians working with biomaterials technologies for joint replacement. New to this edition: 19 new chapters keep readers up to date with this fast moving topic, including a new section on UHMWPE biomaterials; highly crosslinked UHMWPE for hip and knee replacement; Vitamin E stabilized UHMWPE for patients; clinical performance, tribology and biologic interaction of UHMWPE. State-of-the-art coverage of UHMWPE technology, orthopedic applications, biomaterial characterisation and engineering aspects from recognised leaders in the field.

This handbook covers characteristics, processability and application areas of biodegradable polymers, with key polymer family groups discussed. It explores the role of biodegradable polymers in different waste management practices including anaerobic digestion, and considers topics such as the different types of biorefineries for renewable monomers used in producing the building blocks for biodegradable polymers.

A comprehensive overview of biodegradable polymers, covering everything from synthesis, characterization, and degradation mechanisms while also introducing useful applications, such as drug delivery systems and biomaterial-based regenerative therapies. An introductory section deals with such fundamentals as basic chemical reactions during degradation, the complexity of biological environments and experimental methods for monitoring degradation processes. The result is a reliable reference source for those wanting to learn more about this important class of polymer materials, as well as scientists in the field seeking a deeper insight.

"Covers recent advances in polymer degradation and stabilization. Focuses on the basics of photo- and bio-degradability. Delineates special and general environmental parameters such as solar irradiation, temperature, and agrochemical exposure. Surveys plastic waste disposal strategies such as recycling, incineration, chemical recovery by pyrolysis, and source reduction." Radical polymerization is one of the most widely used means of producing vinyl polymers, supporting a myriad of commercial uses. Maintaining the quality of the critically acclaimed first edition, the Handbook of Vinyl Polymers: Radical Polymerization, Process, and Technology, Second Edition provides a fully updated, single-volume source on the chemistry, technology, and applications of vinyl polymers. Emphasizes radical initiating systems and mechanisms of action... Written by renowned

researchers in the field, this handbook is primarily concerned with the physical and organic chemistry of radical vinyl polymerization. The authors survey the most recent advances, processing methods, technologies, and applications of free radical vinyl polymerization. The book features thorough coverage of polymer functionalization, photo initiation, block and graft copolymers, and polymer composites. Analyzes living/controlled radical polymerization, one of the latest developments in the field... Combining fundamental aspects with the latest advances, processing methods, and applications in free radical vinyl polymerization and polymer technology, this invaluable reference provides a unified, in-depth, and innovative perspective of radical vinyl polymerization.

The fifth edition of this seminal work provides comprehensive and current information on material weathering for over forty families of polymers. It presents discussions on formulating mechanisms of degradation, effect of thermal processes, present characteristic changes in properties, and tables of available numerical data. This single source reference will dramatically reduce the time used searching for answers in many different sources. This book is an important reference monograph for those involved in studying material durability, producing materials for outdoor use and actinic exposure, research chemists in the photochemistry field, chemists and material scientists designing new materials, users of manufactured products, those who control the quality of manufactured products, and students who want to apply their knowledge to real materials.

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