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Product Design

E. Campo
The Complete Part Design Handbook For Injection Molding of Thermoplastics
ISBN 978-3-446-40309-3
©2006, hardcover, € 399.00
891 pages/995 figures/68 tables
This indispensable, all-inclusive reference guide to plastic part design was compiled with the product designer in mind, who is looking for more detailed information on plastic resins, the rules and geometries underlying their use in product design, and the advantages and limitations of their use in industrial applications. The designer will also find valuable advice on resin selection and processing and tool selection and processing. Thousands of hours of research and cross referencing have gone into the completion of this work. In addition, the “hands-on” knowledge of a plastics expert with more than 35 years of experience is incorporated.

P. Tres
Designing Plastic Parts for Assembly 6E
ISBN 978-3-446-40321-5
©2006, hardcover, € 149.90
311 pages/125 figures
This book provides an excellent tool for both seasoned part designers and novices to the field, facilitating cost-effective design decisions and ensuring that the plastic parts and products will stand up under use. The detailed, yet simplified discussion of material selection, manufacturing techniques, and assembly procedures enable the reader to evaluate plastic materials and to adequately design plastic parts for assembly. The book describes good joint design and implementation, the geometry and nature of the component parts, the types of load involved, and other basic information necessary in order to work successfully in this field. Throughout, the treatment is practice-oriented and focused on everyday problems and situations.

G. Erhard
Designing with Plastics
ISBN 978-3-446-22753-8
©2005, hardcover, € 149.90
320 pages/185 figures/45 tables
Designing with Plastics is an indispensable tool for every engineer and designer working with plastic materials. It assists in the development of plastic parts that are not only functional and esthetically pleasing but also manufacturable while meeting ever increasing end-use requirements. The short but concise introduction into the specific properties of this material class focuses on the practical needs of the designer and lays the foundation for the following in depth discussion of part design suitable for production and the intended end-use application. Numerous detailed examples highlight practical tips and rules of thumb for successful part design.

P. Bonenberger
The First Snap-Fit Handbook 2E
Creating and Managing Attachments for Plastic Parts
ISBN 978-3-446-22590-9
©2006, hardcover, € 249.00
530 pages/925 figures
This completely updated handbook organizes and presents all the ‘system level’ knowledge and design skills needed to create good snap-fit interfaces. The book organizes and presents all design aspects of snap-fits with an emphasis on the systems level thinking required to create world-class attachments. Beginning, as well as experienced, product designers will find the information they need to develop snap-fits more efficiently and avoid many common snap-fit problems.

J. Rotheiser
Joining of Plastics 3E
Handbook for Designers and Engineers
ISBN 978-3-446-07888-2
©2009, hardcover, € 179.90
624 pages/485 figures
This completely updated handbook emphasizes the relationship between the assembly methods, the materials, and the plastics manufacturing processes, thus enabling the reader to identify the best design/assembly method for a given application. A new chapter on laser welding of plastics has been added. All principle fastening and joining methods used to assemble plastic parts today are described with their particular advantages and disadvantages. Assembly method limitations for a given material and/or a given molding process are discussed in great detail. This how-to book offers a wealth of hard-to-find, detailed information.

R. Malloy
Plastic Part Design for Injection Molding 2E
An Introduction
ISBN 978-3-446-60668-7
©2010, hardcover, € 99.90
568 pages/476 figures/28 tables
The goal of the book is to assist the designer in the development of parts that are functional, reliable, manufacturable, and aesthetically pleasing. Because injection molding is the most widely used manufacturing process for the production of plastic parts, a full understanding of the integrated design process presented is essential to achieving economic and functional design goals. This book features over 450 drawings and photographs.

Additive manufacturing (AM) is the term used for layer-oriented or generative manufacturing, which was introduced in the late 1980s as rapid prototyping. Over the last 20 years it has developed dramatically. Today it is not only a valuable tool for making models and prototypes but also a manufacturing method for final parts and mold inserts. AM is about to revolutionize manufacturing technology. This valuable quick guide provides support material for AM technology courses, updated content for traditional manufacturing lessons, and basic information to facilitate self-studies. 


A. Gebhardt
Understanding Additive Manufacturing
Rapid Prototyping – Rapid Tooling – Rapid Manufacturing
ISBN 978-3-446-42552-1
©2012, hardcover, € 69.90
168 pages/183 figures
Additive manufacturing (AM) is the term used for layer-oriented or generative manufacturing, which was introduced in the late 1980s as rapid prototyping. Over the last 20 years it has developed dramatically. Today it is not only a valuable tool for making models and prototypes but also a manufacturing method for final parts and mold inserts. AM is about to revolutionize manufacturing technology. This valuable quick guide provides support material for AM technology courses, updated content for traditional manufacturing lessons, and basic information to facilitate self-studies. 


D. Kazmer
Injection Mold Design Engineering
ISBN 978-3-446-41266-8
©2007, hardcover, € 129.90
444 pages/280 figures/55 tables
This book offers a vision and structure to synthesize all the engineering disciplines that converge in the mold design process. Topics are presented in a top-down manner, from introductory definitions and the “big picture” to layout and detailed design of molds. This book provides pragmatic analysis with worked examples that can be adapted to real-world mold design applications. It helps students and practitioners to understand the inner workings of injection molds and encourage them to think “outside the box” in developing innovative and highly functional mold designs. 


P. Unger
Hot Runner Technology
ISBN 978-3-446-40584-4
©2006, hardcover, € 129.90
249 pages/210 figures/25 tables
Quality and profitability of injection molding operations can be considerably influenced by the hot runner system. The many variations and design principles of hot runners are material-dependent and therefore not universally applicable. Knowing about and recognizing these limitations will make or break a molder’s success. This book provides a comprehensive overview of hot runner technology, advantageous design principles, and applications. It includes the necessary basics as well as many proven designs and application examples.


N. Rao, G. Schumacher
Design Formulas for Plastics Engineers 2E
ISBN 978-3-446-22674-6
©2004, softcover, € 79.90
176 pages/135 figures
The second edition of this well-received book presents a summary of important formulas and their applications to solve design and processing problems. The formulas are classified according to specific fields, rheology, thermodynamics, heat transfer, and part design. Each chapter covers the relevant relations with detailed examples. In addition, this work contains new, straightforward, practical relationships that have been developed and tested in recent years for solving design problems in the area of extrusion and injection molding.


Three-Dimensional Molded Interconnect Devices (3D-MID) Materials, Manufacturing, Assembly and Applications for Injection Molded Circuit Carriers
©2013, softcover, ca. € 129.99
360 pages
Three-dimensional molded interconnect devices (MIDs) enable mechanical, electronic, optical, thermal and fluidic functions to be integrated into injection-molded components. Function integration on this scale goes hand in hand with a high level of geometrical design freedom and opportunities for miniaturization, plus the associated reduction in weight and savings on product costs. MIDs are made primarily of recyclable thermoplastics, so they are more environmentally compatible than alternatives produced using other available technologies.


J. Franke
Injection Mold Design
ISBN 978-3-446-21587-0
©2001, softcover, € 59.90
127 pages/36 figures
This book provides the reader with the ground rules for designing injection molds. It explains the basic mold principles regardless of what size and type of product is to be injection molded, whether the mold is small or large, has single or multiple cavities, and who designs or builds the mold.

H. Rees
Understanding Injection Mold Design
ISBN 978-3-446-42552-1
©2012, hardcover, € 69.90
168 pages/183 figures
Selecting Injection Molds: Weighing Cost versus Productivity

ISBN 978-3-446-40308-6
€129.90
240 pages/213 figures/12 tables

This book explains to the mold designer the importance of knowing the expected productivity of the mold and how this information affects the cost of the planned mold and the cost of the molded product. It suggests many approaches to reduce mold cost and also to improve productivity by often just simple design changes. Above all, it emphasizes again and again that the ultimate goal is not to procure the lowest cost but to produce the lowest expected productivity of the mold and the cost of the molded product. It suggests many approaches to reduce mold cost and manufacturing. Completely revised, this edition includes the latest developments in technology, such as CAD and rapid prototyping.

Partial Contents: Molds for Various Processing Methods (Injection, Compression and Transfer Molds, Blow Molds, Thermoforaming and Rotational Molds, Molds for Processing Reaction Resins, EPS and PU, Prototyping Molds. Materials (Steels, Bronzes, Aluminum and Zinc Alloys, Materials for Rapid Tooling, Manufacturing and Machining Methods (CEM in Metal Working, EDM, Electroformed Mold Cavities, Polishing, Hobbing, Surface Treatment, Cast Bronze and Light Alloy Molds.


How to Make Injection Molds 3E

ISBN 978-3-446-41256-5
€249.00
632 pages/608 figures

This classic covers all aspects of injection mold design and manufacturing including material selection, general mold design, fabricating cavities and cores, dimensioning for mechanical and thermal design, and venting.


Runner and Gating Design Handbook 2E

ISBN 978-3-446-40765-7
€149.90
324 pages/331 figures/10 tables

For the first time, both the art and the science of designing runners and gates are presented in a concise format. Tried and true runner and gating design techniques successfully used with various materials and molding applications are described together with cutting-edge new technologies. This handbook helps determine the optimum design, when to use what type of runner systems, and how to isolate molding problems generated from the gate and runner vs. other molding issues. Full-color 3-D graphics, illustrations and photographs as well as charts, checklists, troubleshooting guides, and contributions from the industry’s leading expert John Bozzelli complete this handbook.

Gastrow Injection Molds 4E

ISBN 978-3-446-40592-9
€149.90
345 pages/400 figures

Designing the perfect mold is probably the most challenging task in plastics processing, especially in injection molding. The mold determines the quality, performance, and the profitability of a plastic part. Neither modern computer technology nor sophisticated CAE software can substitute the experience of the practicing mold engineer. This is why the “Gastrow” is so special to plastics engineers: 130 mold designs are presented in this extensively revised edition of the great classic in mold making. Each of the case studies was actually built, tested, and run successfully in production. The book is written by practitioners, describing problem solving in the design and the manufacture of injection molds. The wealth of information includes rules of thumb, design details, and practical tips invaluable for everyone involved in this field.
General Overview

Plastics Failure Guide 2E
M. Ezrin
Cause and Prevention
ISBN 978-3-446-41684-0
868 pages

Cause and Prevention
Plastics Failure Guide 2E
M. Ezrin
Introduction
ISBN 978-3-446-42278-0
206 pages/169 figures/26 tables

Understanding Polymer Processing
T. Osswald
Processes and Governing Equations
ISBN 978-3-446-42044-4
2010, softcover, € 89.90
304 pages/266 figures/15 tables

Plastics manufacturing is a highly interdisciplinary endeavor requiring knowledge related to materials science, physics, engineering, and management. Because of this diversity, the plastics process engineer interacts with many stakeholders, including customers, designers, materials suppliers, machine builders, mold/die suppliers, systems integrators, operators, quality engineers, and managers. With so many stakeholders involved, it isn’t surprising that many plastics manufacturing processes are not precisely engineered systems. The resulting processes can be poorly designed, requiring too much investment to achieve too little productivity. This book was written for plastics processing engineers, but it is also highly useful to others involved with plastics manufacturing who are performing process development, research, and even machinery design.


Polymer Processing Modeling and Simulation
T. Dowald, J. Hernandez
ISBN 978-3-446-40381-9
2006, hardcover, € 179.90
633 pages/513 figures/24 tables

This book provides a polymer processing background to engineering students and practicing engineers. It addresses traditional polymer processing as well as emerging technologies. Many applications are presented through examples and illustrations, which also serve the practicing engineer as a guide when determining important parameters and factors during the design process or when optimizing a process.


Plastics Failure Guide 2E
M. Ezrin
Contents:
- Interdependence of material, design, and prevention. The concept of the product failures, emphasizing cause and prevention. The concept of the product failures, emphasizing cause and prevention.


Understanding Plastics Engineering Calculations
N. Rao, N. Schott
Handson Examples and Case Studies
ISBN 978-3-446-42378-0
2012, softcover, € 89.90
206 pages/169 figures/26 tables

This book deals with the analytical procedures for troubleshooting extrusion and injection molding equipment and processes. Starting from fundamental melt rheology, thermodynamics of polymers, and heat transfer in plastics processing, this book offers the computational procedures for designing and optimizing machinery. All the calculations can be performed on site with a pocket calculator, while the machines are running. This guide is a valuable tool to troubleshoot and estimate the effect of design and process parameters on the product quality in plastics processing.


Plastics Manufacturing Systems Engineering
D. Kazmer
ISBN 978-3-446-42044-4
2009, hardcover, € 129.90
520 pages/321 figures/76 tables

Plastics manufacturing is a highly interdisciplinary endeavor requiring knowledge related to materials science, physics, engineering, and management. Because of this diversity, the plastics process engineer interacts with many stakeholders, including customers, designers, materials suppliers, machine builders, mold/die suppliers, systems integrators, operators, quality engineers, and managers. With so many stakeholders involved, it isn’t surprising that many plastics manufacturing processes are not precisely engineered systems. The resulting processes can be poorly designed, requiring too much investment to achieve too little productivity. This book combines practical engineering concepts with modeling of realistic polymer processes.

It is intended for people entering the plastics manufacturing industry and students taking an introductory course in polymer processing. It also serves as a guide to the practicing engineer when choosing a process, determining important parameters and factors during the early stages of process design, and when optimizing such a process. Practical examples illustrating basic concepts are presented throughout.

Contents: Polymeric Materials. Polymer Processing, Modeling.
General Overview

R.J. Del Vecchio

Understanding Design of Experiments
ISBN 978-3-446-18657-6
©1997, softcover, € 39.90
188 pages/42 figures/5 tables

This book explains the basics underlying designed experiments, supplies instructions on how to use several families of convenient designs, and gives an overview on assorted subtopics of the large field that comprise the design of experiments.

Providing an introduction to the design of experiments, this text leads the reader step by step through the basic concepts and practices of this methodology. Special coursework or degree is not necessary, because this book uses understandable examples to introduce concepts and practices of this methodology. Special coursework or degree is not necessary, because this book uses understandable examples to introduce concepts and practices of this methodology.

J. Shoemaker

Moldflow Design Guide
A Resource for Plastics Engineers
ISBN 978-3-446-40640-7
©2006, hardcover, € 149.00
346 pages/241 figures/15 tables

This book helps plastics designers and engineers solve common problems afflicting plastic parts and molds. Moldflow pioneered injection molding simulation in 1978 and has helped over 5,000 manufacturers make better parts faster and with higher profit. Whether you use Moldflow software or not, this guide is an indispensable tool to understand plastic flow, CAE analysis and results, and cooling and warp effects to aid in the successful design and manufacture of parts and molds.

The book includes an overview of polymer flow behavior and the injection molding process, design principles to facilitate integrated part and mold design, and examples of how Moldflow technology can be used both to solve problems and optimize design and manufacturing.

T. Osswald, E. Baur, S. Brinkmann, K. Oberbach, E. Schmachtenberg

International Plastics Handbook 4E
The Resource for Plastics Engineers
ISBN 978-3-446-22905-1
©2006, hardcover, € 99.00
920 pages/450 figures/177 tables
Includes eBook

This comprehensive handbook provides everything there is to know about plastics, from material properties to machines, processing, and applications, the reader will find detailed information for the successful implementation of new materials and technologies. This concise, modern reference not only explains the basic facts and interrelations of approximately 2,200 terms, but also offers a practical guide for engineers to succeed in today’s challenging global industrial world.


W. Gürzen

A Glossary of Plastics Terminology in 7 Languages 7E
English – German – Spanish – French – Italian – Russian – Chinese
ISBN 978-3-446-42320-6
©2010, book and CD, € 89.00
480 pages
Includes CD

Trying to serve plastics engineers speaking different languages and to breach the language barriers within the international plastics community, the idea was born to compile a glossary of plastics terminology in several languages.

Companion CD: The glossary is now also available in electronic format. For the first time it covers Chinese and Russian as well as English, French, Spanish, Italian, and German translations of approximately 2,200 terms related to chemistry, properties, testing and technology of plastics. The user will find only one translation for any technical term in each language, used most often in the daily work of people involved with plastics.

A. Limper

Mixing of Rubber Compounds
ISBN 978-3-446-40773-2
©2009, hardcover, € 299.00
1200 pages/1213 figures
Includes eBook

Completely updated, the second edition of this classic handbook provides a state-of-the-art review of mixing and compounding technology in polymer processing. It covers all aspects of mixing, from the basic principles to the various practical applications, with due consideration to material properties and mixing devices.

Contents: Mechanisms and Theory, Mixing Equipment-Modeling, Simulation, Visualization, Compounding, Mixing Practices.

eBook Bonus: Now get full-text search capability in this treasure trove of information for the plastics professional. Included free with the purchase of this book is an online access code for the electronic version.

I. Manas-Zloczewer

Mixing and Compounding of Polymers 2E
Theory and Practice
ISBN 978-3-446-41743-4
©2012, hardcover, € 129.90
252 pages/186 figures

Theory and Practice - covered in one comprehensive volume.

The different mixing technologies add value to a compound during processing—whether it is machine design, process technology, or material parameters—covered in one comprehensive volume.

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Thermoforming

A Practical Guide

A. Illig

ISBN 978-3-446-40796-1
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280 pages/110 figures/26 tables

Modern thermoforming practice is a balance of practical experience and the application of engineering principles. This very practical book introduces the process, its tools and machinery, and the commonly used materials to novices and practicing engineers alike.


Understanding Injection Thermoforming 2E

J. Throne

ISBN 978-3-446-40795-4
©2001, hardcover, € 99.90
250 pages/219 figures

This book provides comprehensive information on thermoforming principles and processes. It introduces students, as well as engineers and technicians with experience in this field, to this area of plastics manufacturing.

The reader will find extensive information on thermoforming-related subjects, from materials’ properties and processing data, to machines, tools, and trouble shooting.


Understanding Injection Mold Design

H. Rees

ISBN 978-3-446-21587-0
©2001, softcover, € 59.90
127 pages/36 figures

This book provides the reader with the ground rules for designing injection molds. It explains the basic mold principles regardless of what size and type of product is to be injection molded, whether the mold is small or large, has single or multiple cavities, and who designs or builds the mold.


Understanding Injection Thermoforming

Thermoforming ∙ Injection Molding

H. Rees

ISBN 978-3-446-40797-5
©2008, flexcover, € 69.90
280 pages/110 figures/26 tables

Modern thermoforming practice is a balance of practical experience and the application of engineering principles. This very practical book introduces the process, its tools and machinery, and the commonly used materials to novices and practicing engineers alike.

Injection molding is arguably the most successful area of modeling and simulation for any polymer forming process. This is demonstrated by the number of companies devoted to development of software for molding simulation. This book describes modern molding simulation technology for users and researchers. It provides the major technologies used and assumptions made by commercial codes as to provide a guide to users of limitations and a basis for further development. Ideas and approaches for improving simulation technology for fiber-filled and semi-crystalline materials are provided.


Flow Analysis of Injection Molds

Understanding Injection Molds

Robust Process Development and Scientific Molding

SPC: Statistical Process Control in Injection Molding and Extrusion

Injection Molding Handbook

Injection Molding Technology and Fundamentals

Contents:

- Flow Analysis of Injection Molds
- Understanding Injection Molds
- Robust Process Development and Scientific Molding
- SPC: Statistical Process Control in Injection Molding and Extrusion
- Injection Molding Handbook
- Injection Molding Technology and Fundamentals

N. Kennedy, R. Zheng
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C. Rauwendaal
T. Dowald, L. Tung, P. Gramann
M. Kamal, A. Isayev, S. Liu
Injection Molding

G. Pötsch, W. Michaeli
Injection Molding 2E
An Introduction
ISBN 978-3-446-40635-3
©2007, softcover, € 99.90
256 pages/275 figures/25 tables

This book provides an overview of the injection molding process and all its related aspects, such as material behavior, machine and mold design. Although the book is highly useful to advanced professionals, it is written in clear, simple language to enable beginners to understand the technology. In discussing the various operations related to the injection molding process, emphasis is placed on practical ways of processing and using plastics. The second edition is expanded to include all industrially relevant special injection molding techniques developed since the publication of the first edition.


J. Shoemaker
Moldflow Design Guide
A Resource for Plastics Engineers
ISBN 978-3-446-40640-7
©2006, hardcover, € 149.90
346 pages/241 figures/15 Tables

This book helps plastics designers and engineers solve common problems affecting plastic parts and molds. Moldflow pioneered injection molding simulation in 1978 and has helped over 5,000 manufacturers make better parts faster and with higher profit. Whether you use Moldflow software or not, this guide is an indispensable tool to understanding plastic flow, CAE analysis and results, and cooling and warp effects to aid in the successful design and manufacture of parts and molds. Incorporating much of the knowledge developed at Moldflow, this book includes an overview of polymer flow behavior and the injection molding process, design principles to facilitate integrated part and mold design, and examples of how Moldflow technology can be used both to solve problems and optimize design and manufacturing.


J. Avery
Gas-Assist Injection Molding Principles and Applications
ISBN 978-3-446-21289-3
©2001, hardcover, € 99.90
215 pages/202 figures

This book provides in-depth coverage of all aspects of designing, developing, and manufacturing parts using gas-assist injection molding, comparing this relatively new technology to other possible manufacturing methods. The reader will gain an understanding of how to identify the specific version of this technology best suited for his/her application, as well as design and tooling details required to optimize cost and performance.


J. Beaumont
Runner and Gating Design Handbook 2E
Tools for Successful Injection Molding
ISBN 978-3-446-40765-7
©2007, hardcover, € 149.90
324 pages/231 figures/10 tables

For the first time, both the art and the science of designing runners and gates are presented in a concise format. Tried and true runner and gating design techniques successfully used with various materials and molding applications are described together with cutting-edge new technologies.

This handbook helps determine the optimum design, when to use what type of runner systems, and how to isolate molding problems generated from the gate and runner vs. other molding issues. Full-color 3-D graphics, illustrations and photographs as well as charts, checklists, troubleshooting guides, and contributions from the industry’s leading expert John Bozzelli complete this handbook.


…”accomplishes its intended purpose of being an excellent [general] teaching aid.”

—Injection Molding Magazine

F. Johannaber
Injection Molding Machines 4E
A User’s Guide
ISBN 978-3-446-22581-7
©2007, hardcover, € 179.90
390 pages/250 figures/35 tables

Since the publication of the 3rd edition of Injection Molding Machines, there has been considerable progress in certain process applications that make special demands on machinery and their control functions in particular. The book provides an elegant, succinct description of the injection molding process. By concentrating on a few key parameters, such as pressure, temperature, their rates, and their influence on the properties of moldings, it provides a clear insight into this technology. The subsequent comprehensive presentation of technical data relating to individual machine components and performance is unique and will be especially appreciated by practitioners.
**Injection Molding**

**D. Kazmer**

**Injection Mold Design Engineering**
ISBN 978-3-446-41266-8  
©2007, hardcover, € 129.90

444 pages/280 figures/93 tables

This book offers a vision and structure to synthesize all the engineering disciplines that converge in the mold design process. Topics are presented in a top-down manner, from introductory definitions and the “big picture” to layout and detailed design of molds. This book provides pragmatic analysis with worked examples that can be adapted to real-world mold design applications. It helps students and practitioners to understand the inner workings of injection molds and encourages them to think “outside the box” in developing innovative and highly functional mold designs.


**P. Unger**

**Hot Runner Technology**
ISBN 978-3-446-40594-4  
©2006, hardcover, € 129.90

249 pages/210 figures/25 tables

This classic covers all aspects of injection molding operations that can be considerably influenced by the hot runner system. The many variations and design principles of hot runners are material-dependent and therefore not universally applicable. Knowing about and recognizing these limitations will make or break a molder’s success. This book provides a comprehensive overview of hot runner technology, advantageous design principles, and applications. It includes the necessary basics as well as many proven designs and application examples.


**J. Greener, R. Wimberger-Friedl**

**Precision Injection Molding Process, Materials, and Applications**
ISBN 978-3-446-21570-9  
©2006, hardcover, € 149.90

344 pages/188 figures/15 tables

One key aspect of the production of high precision components is the need to meet extremely tight dimensional tolerances, often in the submicron range, and maintain these tolerances over the practical lifetimes of the molded articles. This book examines precision injection molding from different perspectives, covering materials, process, mold and machine aspects of the technology, with special emphasis on factors affecting the dimensional integrity and stability of the molded components. Special topics covered in this volume include: mechanisms of dimensional instability of molded plastics, models for prediction of warpage and shrinkage, crystalization phenomena in injection molding, process control, optical disc molding, micro-molding and microstructure replication for microfluidics.

**G. Menges, W. Michaeli, P. Mohren**

**How to Make Injection Molds 3E**
ISBN 978-3-446-21256-5  
©2001, hardcover, € 249.00

632 pages/810 figures/62 tables

This classic covers all aspects of injection mold design and manufacturing, including material selection, general mold design, fabricating cavities and cores, dimensioning for mechanical and thermal design, and venting.


**P. Unger**

**Gastrow Injection Molds 4E**
ISBN 978-3-446-40592-9  
©2006, hardcover, € 149.90

345 pages/400 figures

Designing the perfect mold is probably the most challenging task in plastics processing, especially in injection molding. The mold determines the quality, performance, and the profitability of a plastic part. Neither modern computer technology nor sophisticated CAE software can substitute the experience of the practicing mold engineer. This is why the “Gastrow” is so special to plastics engineers: 130 mold designs are presented in this extensively revised edition of the great classic in mold making. Each of the case studies was actually built, tested, and run successfully in production. The book is written by practitioners, describing problem solving in the design and the manufacture of injection molds. The wealth of information includes rules of thumb, design details, and practical tips invaluable for everyone involved in this field.

**Contents:** How to approach selection of the mold features, How productivity affects mold selection, How selection of design features affects mold cost, How to reduce mold and product cost by simple design changes, How to approach estimating mold cost.

**H. Rees, B. Catoen**

**Selecting Injection Molds Weighing Cost versus Productivity**
ISBN 978-3-446-60008-6  
©2006, hardcover, € 129.90

240 pages/213 figures/12 tables

This book explains to the mold designer the importance of knowing the expected productivity of the mold and how this information affects the cost of the planned mold and the cost of the molded product. It suggests many approaches to reduce mold cost and also to improve productivity by often just simple design changes. Above all, it emphasizes again and again that the ultimate goal is not to procure the lowest cost but to produce the lowest cost product.

**Contents:** How to approach selection of the mold features, How productivity affects mold selection, How selection of design features affects mold cost.
Extrusion

G. Campbell, M. Spalding
Analyzing and Troubleshooting Single-Screw Extruders
ISBN 978-3-446-41371-9
©2013, hardcover, € 249.99 ca. 800 pages

The book is an excellent resource on the fundamentals of single-screw extrusion. These fundamentals are combined with the chemistry of polymers and the physical properties related to processing to efficiently troubleshoot and optimize extrusion processes. This book provides over 30 case studies for troubleshooting extrusion problems, describing the relationship between the process and the physical properties of the resin. A solution is described in detail for implementation. Some of the physical properties related to single-screw processing that are presented in depth include rheology, heat capacity, screw processing that are presented in physical properties related to single-screw extrusion. These fundamentals are combined with the chemistry of polymers and the physical properties related to processing to efficiently troubleshoot and optimize extrusion processes. This book provides over 30 case studies for troubleshooting extrusion problems, describing the relationship between the process and the physical properties of the resin. A solution is described in detail for implementation. Some of the physical properties related to single-screw processing that are presented in depth include rheology, heat capacity, dynamic friction, bulk density and pellet compaction, and melt density.

Polymer Extrusion 5E
ISBN 978-1-56990-516-6
©2013, hardcover, ca. € 149.99 ca. 800 pages

Initially published “to bridge the gap between theory and practice in extrusion,” this 5th edition of Polymer Extrusion continues to serve the practicing polymer engineer and chemist, providing the theoretical and the practical tools for successful extrusion operations. In its revised and expanded form, it also incorporates the many new developments in extrusion theory and machinery over the last years.


Companion CD: The Blown Film Extrusion Simulator enhances the learning process by teaching blown film extrusion equipment operation and processing principles.

K. Cantor
Blown Film Extrusion 2E
An Introduction
ISBN 978-3-446-41705-2
©2011, hardcover, € 99.90 180 pages/108 figures Includes CD

From hardware and materials through processing and properties, this book presents a broad coverage of blown film extrusion and offers a balance of theory and practice. It explains certain effects in the blown film process so readers can troubleshoot and improve their operations. Also, current practices and equipment are emphasized to keep readers up to date with the most productive and efficient technology.


C. Chung
Extrusion of Polymers 2E
Theory & Practice
ISBN 978-3-446-42609-8
©2010, hardcover, € 179.90 504 pages/231 figures/17 tables Includes CD

Single-screw extrusion technology is presented together with the relevant polymer fundamentals, with an emphasis on screw design. The book provides an in-depth tutorial for the conceptual understanding and an analytical part with mathematical models. Practical applications of the mathematical models are illustrated by examples. A brief description of twin-screw extrusion technology is also presented.


C. Rauwendaal
Understanding Extrusion 2E
A Systematic Approach to Solving Plastic Extrusion Problems
ISBN 978-3-446-42244-5
©2010, hardcover, € 99.90 208 pages/152 figures/29 tables

No engineering degree required! This book presents basic information on extrusion technology. Written for operators, supervisors, technical service professionals, as well as newcomers to the industry and students, this book introduces the process, machinery, process control, materials, and trouble shooting tips. The extended second edition covers high-speed extrusion, how to reduce material cost, efficient extrusion, purging and product changeover, how to reduce energy consumption, and new developments in extruder screw design.

C. Rauwendaal

**SPC: Statistical Process Control in Injection Molding and Extrusion 2E**
ISBN 978-3-446-40785-5
©2008, hardcover, € 129.90
264 pages/159 figures/44 tables

Many SPC training programs are taught by people that are familiar with statistics but know little about process technology. Successful implementation of SPC also requires process know-how. This book teaches not only the principles of SPC but also basic injection molding and extrusion process technology. It also includes lists of commercially available software for SPC and DOE.

**Contents:** Injection Molding Technology, Extrusion Technology, Plastics and Plastics Properties Important in Injection Molding and Extrusion, Introduction to Statistical Process Control, Data Collection, Data Analysis, and Problem Solving Measurement, Control Charts, Process Capability and Special SPC Techniques for Molding and Extrusion, Other Tools to Improve Process Control.

K. Kohlgrueber

**Co-Rotating Twin-Screw Extruders**
Fundamentals, Technology, and Applications
ISBN 978-3-446-41372-6
©2007, hardcover, € 179.90
369 pages/390 figures/22 tables

Co-rotating screws are used in many branches of industry for producing, preparing and processing highly viscous materials. These machines usually have modular configurations and are thus quite flexible for adapting to changing tasks and material properties. Well-founded knowledge of machines, processes and material behavior are required in order to design twin-screw extruders for economically successful operations.

This book provides basic engineering knowledge regarding twin-screw machines; it lists the most important machine-technical requirements and provides examples based on actual practice. Better understanding of the processes is emphasized as this is a prerequisite for optimizing twin-screw designs and operating them efficiently.

J. White, E.K. Kim

**Twin Screw Extrusion 2E**
Technology and Principles
ISBN 978-3-446-42272-8
©2010, hardcover, € 149.90
336 pages/227 figures/43 tables

This book distinguishes between the different types of twin screw extruders and clearly describes their capabilities. It examines the fundamentals, development, and technology of twin screw extruders widely used for compounding, blending, reactive extrusion, and devolatilization.


J. Thrane

**Thermoplastic Foam Extrusion**
An Introduction
ISBN 978-3-446-22848-1
©2004, hardcover, € 69.90
150 pages/57 figures/30 tables

Foams enjoy growing popularity because they have unique insulating properties, impact-resistant characteristics, buoyancy, and outstanding strength-to-weight ratios. This unique introduction covers both low- and high-density thermoplastic foams in an easy-to-follow style, avoiding excursions into the theoretical aspects of foam processing.

This book includes information on materials and their properties and all major foam extrusion processes, as well as a comprehensive troubleshooting guide, designed to help newcomers as well as seasoned practitioners navigate the pitfalls of foam production.


H. Harris

**Extrusion Control**
Machine – Process – Product
ISBN 978-3-446-21167-3
©2004, hardcover, € 89.90
162 pages/62 figures

Discover how quality in extrusion can be measured, controlled, and improved. This book offers an understanding of how extruders should be controlled and what good closed-loop controls can accomplish. Based on the author’s years of experience, this book describes how to tackle the problems an extrusion operator faces. It is a helpful tool to improve and stabilize the extrusion process, thus facilitating a more profitable operation.

**Contents:** Extruder, Puller, Cutter, Control, Control of the Machine, Temperature, RPM, Control of the Process, Melt Temperature, Melt Pressure, Melt Pump, Control of the Product, Sheet, Blown Film, Tubing and Pipe, Profile, Wire Insulation, Specialty Extrusion, Coextrusion, Alternate Polymer, Measurement and Control of Viscosity, Unattended Operation, Statistical Quality Control.

D. Klempner, V. Sendijarevic

**Handbook of Polymeric Foams and Foam Technology 2E**
ISBN 978-3-446-21831-4
©2004, hardcover, € 299.00
603 pages/241 figures

This handbook helps engineers to develop practical solutions for industrial design and manufacturing challenges. It describes all classes of polymeric foams, including their chemistry, synthesis, commercial production methods, properties, and applications. Many industry issues – such as environmentally acceptable blowing agents, combustibility, and solid waste disposal – are addressed.

Blow Molding

N. Lee

**Blow Molding Design Guide 2E**
ISBN 978-3-446-41264-4
©2008, softcover, € 129.90
288 pages/224 figures

The second edition of this widely accepted book provides a general understanding of the blow molding process. It offers a practical, hands-on approach, concentrating on real-life, day-to-day problems faced by those working to create cost-effective blow molded parts. The author uses an integrated approach to plastic part design, considering material properties, process benefits and limitations, mold engineering, packaging, finishing, and assembly techniques, while always keeping a focus on manufacturability and assembly techniques.

**Contents:** Overview, Blow Mold Process/Extrusion Blow Molding, Materials, Molds/Basic Construction, Plastic Surface Modification, Adhesion and Adhesives Technology, Applications of Adhesives and Sealants, Joining, Economics of Blow Molding.

D. Rosato, A. Rosato, D. DiMattia

**Blow Molding Handbook 2E**
ISBN 978-3-446-22017-1
©2004, hardcover, € 349.00
642 pages/250 figures/50 tables

This book offers hands-on, practical applications that benefit those new to the plastic blow molding industry, as well as those who are experienced but may not have been exposed to all facets of a blow molding plant. All disciplines—such as engineering, marketing, design, research and development, and operations—will gain insight into solving the everyday problems of a blow molding operation. This edition provides a comprehensive troubleshooting guide that proves particularly helpful to any practitioner.


A. Pocius

**Adhesion and Adhesives Technology 3E**
ISBN 978-3-446-42748-8
©2010, hardcover, € 179.90
386 pages

The emphasis of this book is on understanding the science of adhesion. Each section or chapter starts with a simple view of the subject area and then builds to a point at which more detail is available for the reader who is interested in finding out what the science of adhesion is about. The book is divided into sections that cover different aspects of adhesion.


F. Wolff-Fabris, V. Altstädt, U. Arnold, M. Döring

**Electron Beam Curing of Composites**
ISBN 978-3-446-42405-0
©2010, hardcover, € 89.90
136 pages/83 figures/13 tables

Electron beam curing technology for advanced composites has emerged as a credible and attractive alternative to thermal curing for most composite products. Technical advantages, such as aerospace structures, include curing at room temperature, using low-cost tooling, and the ability to fabricate large integrated structures. This book describes the polymer adhesion issues faced by manufacturers, processors, and converters, outlining methods for attaining appropriately activated surface, and provides the diagnostics for various adhesion promotion issues and troubleshooting guidelines.


R. Wolf

**Plastic Surface Modification**
©2010, hardcover, € 99.90
192 pages/102 figures/26 tables

Although polymer surface modification has been investigated by academia and industry, relatively little attention has been paid to surface activation technologies which, when appropriately utilized, make specific polymer-based surfaces receptive to value-adding interfaces such as links, coatings, and adhesives. This book describes the polymer adhesion issues faced by manufacturers, processors, and converters, outlining methods for attaining appropriately activated surface, and provides the diagnostics for various adhesion promotion issues and troubleshooting guidelines.


Other Processes

F. Wolff-Fabris, V. Altstädt, U. Arnold, M. Döring

**Adhesives Technology 3E**
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©2010, hardcover, € 89.90
136 pages/83 figures/13 tables

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**Other Processes**

- **Custom Molding of Thermoset Elastomers**
  A Comprehensive Approach
to Materials, Mold Design, and Processing

  B. Stritzke

  ISBN 978-3-446-41964-3
  ©2009, hardcover, € 99.90
  200 pages/156 figures/8 tables

  This book covers chemistry of thermo-set elastomers but only to the extent needed for understanding how to process them through a manufacturing environment and how they react in various manufacturing methods. The focus of the book is to provide in-depth understanding of various manufacturing methods. The emphasis of this book is on product design while providing an introduction to the process. It also helps readers understand and apply the manufacturing techniques involved in rotational molding.

  **Contents:**
  - Introduction to Thermoset Elastomer Chemistry.
  - Compounding, Mixing and Equipment.

- **Rotational Molding**
  Design, Materials, Tooling, and Processing

  G. Beall

  ISBN 978-3-446-22166-6
  ©2003, hardcover, € 99.90
  208 pages/150 figures/25 tables

  A highly versatile process, rotational molding allows for incredible design flexibility with the added benefit of low production costs. One of its advantages over other plastics processes is that one can mold more complex shapes with uniform wall thickness. The emphasis of this book is on product design while providing an introduction to the process. It also helps readers understand and apply the manufacturing techniques involved in rotational molding.

  **Contents:**
  - Fiber orientation influence part strength—how the quantity, length and aspect ratios of fibers influence mechanical properties.
  - In Situ Frequency Dependent Dielectric Properties.
  - Influence of Processing on Properties.

- **Compression Molding**

  B. Davis, P. Gramann, T. Osswald, A. Rios

  ISBN 978-3-446-18044-4
  ©2003, hardcover, € 249.00
  504 pages/222 figures

  This book not only covers the advantages and disadvantages of molding operations with SMC/BMC (thermosetting) and GMT/LFT (thermoplastic) materials but also provides the reader with relatively simple models for monitoring, troubleshooting, and quality control of their process. Also covered is the important role of fiber reinforcement—and how the quantity, length and fiber orientation influence part strength and stiffness.

  **Contents:**
  - Materials Science of Composites
  - Heat, Mass, and Momentum in Processing.
  - Morphology of Toughened Thermosets.
  - Rheology. Phase Separation and Coatings and Adhesives.

- **Processing of Composites**

  R. Davé, A. Loos

  ISBN 978-3-446-19534-9
  ©2003, hardcover, € 99.90
  258 pages/95 figures/14 tables

  This book covers chemistry of thermostet elastomers but only to the extent necessary for understanding how to process them through a manufacturing environment and how they react in various manufacturing methods. The focus of the book is to provide an in-depth understanding of various manufacturing methods. The emphasis of this book is on product design while providing an introduction to the process. It also helps readers understand and apply the manufacturing techniques involved in rotational molding.

  **Contents:**
  - Introduction to Thermoset Elastomer Chemistry.
  - Compounding, Mixing and Equipment.

- **Materials Science of Polymers for Engineers 3E**

  T. Osswald, G. Menges

  ©2012, hardcover, € 99.90
  616 pages/525 figures/58 tables

  This introduction to polymer materials science is divided into three major sections: Basic Principles, Influence of Processing on Properties, and Engineering Design Properties. The first edition of this textbook was praised for its vast number of graphs and data that can be used as reference. The new second edition further strengthens this attribute with a new appendix containing material property graphs for the commonly used polymers. However, the most important change implemented in this edition is the introduction of real-world examples and a variety of problems at the end of each chapter.

  **Contents:**
  - (III) Engineering Design Properties.
Polymer Composites. In situ Nano- and Microfibrillar Polymer-composites with Pre-Made Fibrous Reinforcement.

Contents:
- Transportation vehicles and aircrafts.
- Manufacturing light-weight products.
- Mechanical properties that allow high loading rates, they have advantages, as compared to the polymer composites.
- Inorganic fibers as reinforcement for the replacement of glass and other materials.

In addition to their environmental advantages, as compared to the glass fiber reinforced composites, which are more environmentally acceptable than glass fiber reinforced composites because of their organic nature.

In addition to their environmental advantages, as compared to the polymer composites with mineral reinforcement, which do not have the advantages of biodegradable natural fibers, the synthetic polymer-composite materials are more environmentally acceptable than glass fiber reinforced composites because of their organic nature.

General Overview

Yury V. Kissin
Polyethylene
End-Use Parameters and their Physical Meaning
©2013, hardcover, € 89.90
152 pages

This book bridges the meaning of engineering end-use parameters of polyethylene resins (HDPE, LDPE, LLDPE, HLDPE) and their molecular characteristics. The goal is to translate common end-use characteristics of the resins or properties of standard items manufactured from resins into the universal language of the polymer science, average molecular weight and molecular weight distribution of a polymer, and composition and a statistical description of a copolymer.


©2006, hardcover, € 299.00
920 pages/450 figures/177 tables
Includes eBook

This comprehensive handbook provides everything there is to know about plastics. From material properties to machines, processing, and applications, the reader will find detailed information for the successful implementation of new materials and technologies. This concise, modern reference not only explains the basic facts and interrelationships about plastics but also offers a practical guide for engineers to succeed in today's challenging global industrial world.


©2010, hardcover, € 399.00
692 pages/278 figures/70 tables

This handbook covers all aspects of PVC from monomer manufacture to polymerization; additives such as stabilizers, lubricants, plasticizers, impact modifiers, fillers, and reinforcing agents; blends and alloys; compounding and processing; characterization; combustion resistance and weatherability; product engineering design; applications; environmental and safety; and the dynamics of the PVC industry. This handbook contains practical formulation information as well as a mechanistic view of why PVC behaves as it does.

General Overview

N. Pasquini
Polypropylene Handbook 2E
ISBN 978-3-446-22978-5
2005, hardcover, € 299.00
604 pages/126 figures/38 tables

Following the successful approach of the first edition, this book presents the current state of the PP industry. At its core is a detailed description of the polymerization, the catalysts, and the breakthroughs that occurred during the last two decades. Comprehensively covered are morphology, characterization, stabilization, properties, manufacturing, worldwide demand, environmental considerations, applications, and regulatory considerations. This update covers more than products, technology, and market, which undoubtedly are the most important dimensions of the PP industry.


G. Ehrenstein
Polymeric Materials
Structure, Properties, Applications
ISBN 978-3-446-21461-3
2001, softcover, € 89.90
295 pages/205 figures

Focuses on the relationships between the chemical structure and the related physical characteristics of plastics, which determine appropriate material selection, design, and processing of plastic parts. One of the special features is the extensive discussion and explanation of the interdependence between structure-properties and processing. The book contains numerous application-oriented examples and is presented at an intermediate level for both practicing plastic engineers and advanced engineering students.


J. White, D. Choi
Polyolefins
Processing, Structure Development, and Properties
ISBN 978-3-446-22962-4
2005, hardcover, € 179.90
271 pages/123 figures

Polyolefins, the polymers synthesized from olefinic monomers, are the major commercial thermoplastics. They are also important elastomers and the components of major thermoplastic elastomers. Polyethylene and polypropylene in volume are the two largest thermoplastics and are fabricated into filaments, films, and moldings.

For the first time, the reader will find a comprehensive description of the structure of molten polyolefins in fiber, film and molding processes with correlation between structural order such as crystalline unit cell, polymorphic effect and orientation, and processing parameters.

E. Campo
Industrial Polymers
ISBN 978-3-446-41191-7
2007, hardcover, € 99.90
192 pages/280 figures/5 tables

This book provides a practical, comprehensive overview of the various plastic materials used in today's industrial applications. It focuses on material properties and areas of application.

All industrially significant plastic families and grades are introduced following the same approach: their chemical constitution, manufacturing, properties, processing, and end-use applications. It focuses on material properties and areas of application.

For the first time, the reader will find a comprehensive description of the structure of molten polyolefins in fiber, film and molding processes with correlation between structural order such as crystalline unit cell, polymorphic effect and orientation, and processing parameters.

S. Fakirov, D. Bhattacharyya
Handbook of Engineering Biopolymers
Homopolymers, Blends, and Composites
ISBN 978-3-446-40591-3
2007, hardcover, € 299.00
901 pages/250 figures

This volume presents the results of numerous worldwide studies focusing on the implementation of natural polymers as engineering plastics and the use of their inherent properties. It discusses the processing and, more extensively, the application of natural materials (cellulose and protein-based) as reinforcements for polymer composites. The structural, morphological, and thermal characteristics, as well as the mechanical behavior of the obtained materials are covered comprehensively. In addition, the book includes case studies of commercial relevance. All natural polymers used in the blending or reinforcement of synthetic polymers are discussed in an attempt to cover the isolation, pretreatment, blending, and manufacturing of the respective materials.

This comprehensive reference book incorporates the latest developments in the synthesis, production, characterization, and application of various types of polymeric nanocomposites. It outlines the various preparation techniques using different types of nanoparticles and polymer matrices with emphasis on clay nanoparticles. All fundamental issues such as thermodynamics, kinetics, and rheology are discussed. Also, the structure and the characterization of polymeric nanocomposites, including their molecular characteristics, thermal properties, morphology, and mechanical properties, are covered in detail.

The manufacturing process for preparing very thin polymer products has developed into what is arguably the largest outlet for synthetic polymers. This book focuses on the developments in process hardware and operating techniques that permit increasingly high production rates, optimum property development, unusual degrees of molecular orientation, and the coextrusion of multi-layer, multi-component film and sheet. The strong focus on the developments in process technology, or material parameters—whether it is machine design, process data, and calculations for different materials and varying function parameters. Written by one of the pioneers in the field, this book covers materials, specific processes, the corresponding installations, machines, process data, and designs and calculations for different materials and varying function properties. Also discussed are rheology and mechanical and optical properties, are also discussed.


**Influence of Processing on Properties.** In this edition is the introduction of second edition further strengthens this attribute with a new appendix containing material property graphs for the commonly used polymers. However, the most important change implemented in this edition is the introduction of real-world examples and a variety of problems at the end of each chapter. **Contents:** (I) Basic Principles. (II) Influence of Processing on Properties. (III) Engineering Design Properties.
Rubber compounding is a very complex endeavor. There are many interactions and many ways to achieve the target properties and economic goals while maintaining an acceptable tradeoff for these characteristics.

This book provides the reader with various experimental ideas that may guide them to developing better compounds and solving technical problems. In a combined effort, 20 renowned industrial experts compiled a large number of diverse experimental suggestions for enhancing a specific compound property.

The successful manufacture of engineered rubber products is complicated. It involves different disciplines, materials, and types and designs of equipment. Problems sometimes occur because of poor communication among personnel involved in the development and manufacture of rubber products. This book helps improve communication among different disciplines. Using a systems approach, it also introduces chemists and engineers to the unique capabilities of rubber in a wide range of tire and non-tire products.


In this book covers chemistry of thermoset elastomers but only to the extent needed for understanding how to process them through a manufacturing environment and how they react in various manufacturing methods. The book provides in-depth coverage of tooling, processing, and secondary operations that can improve manufacturing efficiencies. Detailed and easy to understand diagrams display specific conditions and how they can be improved upon. Innovative ideas and solutions are shared and discussed.


This book covers fatigue testing of specimens, curve fitting of equations to the test data, and the use of such equations in life prediction. Stress-strain testing and behavior are covered to the extent relevant to fatigue analysis. It covers the application of finite element analysis to components to determine high stress points vulnerable to fatigue failure. This is a useful reference for practicing engineers, as well as a supplemental text for a rubber engineering course.


Thermoplastic elastomers are one of the fastest growing material groups. They can be processed like thermoplastics but their properties are close to those of vulcanized elastomers. New products, processing techniques, properties, and applications have been developed recently. This is a unique, comprehensive, up-to-date guide to all scientific and technical aspects of thermoplastic elastomers – indispensable for everyone working in this field.


This book describes the composition of all major types of polymer compounds, both thermoplastics as well as rubbers. It describes the intended effects of various additives and the complexity of their, sometimes unintended, interactions.

Rubber

P. Johnson
Rubber Processing
An Introduction
ISBN 978-3-446-21578-8
©2001, hardcover, € 69.90
159 pages/43 figures
This book deals with all aspects of rubber processing; mixing, milling, calendering, extrusion and molding, and also testing and specification of raw materials, mixed compound, and end products. It also covers the importance of flow behavior (rheology) in rubber processing. It deals with basic theory and its application to practice.

J. White
Rubber Processing
Technology – Materials – Principles
ISBN 978-3-446-16600-4
©1995, hardcover, € 249.00
608 pages/313 figures
This book covers the development of rubber processing technology and provides a fundamental understanding of all theoretical and experimental aspects of rubber processing and engineering, including flow simulation.
It also presents a detailed treatment of many areas never combined before, such as rubber materials and the technological development and flow simulation of mixing, extrusion, calendering, and mending.

J. Dick
Raw Materials
Supply Chain for Rubber Products
ISBN 978-1-56990-537-1
©2013, hardcover, € 179.90
592 pages/483 figures/11 tables
This book provides a current overview of the chemical supply chain for the global rubber industry. It also reviews the present and future international changes and their effects on this chemical supply chain for rubber producers, compounding ingredient manufacturers, custom mixers, rubber fabricators, molders, extruders and others.
The reader will be enabled to understand the chemical connectivity of rubber compounding materials to their chemical feedstocks. The reader should also be able to directly link new commercial changes in 175 commonly used chemical feedstocks to hundreds of different rubber compounding ingredients and polymers.

J. Sommer
Troubleshooting Rubber Problems
ISBN 978-1-56990-553-1
©2013, hardcover, € 99.99
300 pages
Many challenges confront the rubber technologist in the development, manufacture, and use of rubber products. These challenges include selecting and combining materials to form rubber compounds suitable for processing, successfully operating a range of manufacturing equipment, and meeting product performance in difficult and diverse environments. Case studies and literature references relate problem solutions to the everyday experience of the rubber technologist. From materials to processes to products, this book identifies many different rubber-related problems and suggests approaches to solve them.

About the Congress
The Congress for Biobased Materials, Natural Fibres and WPC provides the platform for industrial researchers and engineers and academics to exchange and discuss the latest innovations, strategic questions and present recent results. The congress, which was initiated 1998 in Kassel, has helped to drive the expansion of applications of this group of materials. Considering the advancements and future trends, the congress has expanded the focus from WPC to biobased composites and bioplastics and to renewable materials.
Over the years the congress has attracted a tremendous number of participants (in the recent years from 40 countries), which makes it one of the leading events in Europe.

Organized by
Kunststoffe international

www.biobased-materials.com
Additives ∙ Colors & Coatings

A. Gebhardt
Understanding Additive Manufacturing
Rapid Prototyping – Rapid Tooling – Rapid Manufacturing
ISBN 978-3-446-42552-1
©2012, hardcover, € 69.90
168 pages/183 figures
Additive manufacturing (AM) is the term used for layer-oriented or generative manufacturing, which was introduced in the late 1980s as rapid prototyping. Over the last 20 years it has developed dramatically. Today it is not only a valuable tool for making models and prototypes but also a manufacturing method for final parts and molds. AM is about to revolutionize the area of plastic technology. This valuable quick guide provides support material for AM technology courses, updated content for traditional manufacturing lessons, and basic information to facilitate self-studies.


H. Zweifel
Plastics Additives Handbook 6E
ISBN 978-3-446-40801-2
©2009, hardcover, € 299.00
1248 pages/300 figures/480 tables
Includes eBook
Plastics without additives are not viable. Additives are essential to make plastics processable and to assure their end-use properties.
The demands on additives have continued to evolve, not only because of changes in processing conditions and production techniques but also because plastics are being used in more demanding applications.
This revised and updated edition, described earlier by one reviewer as the “bible” for anyone involved in the chemistry and technology of plastics additives, again provides an excellent overview of the complex science and technology of plastics additives and their industry. It offers guidance for all professionals involved in the development of new thermoplastic resin grades and novel end-use applications.

E. Weil, S. Levchik
Flame Retardants for Plastics and Textiles Practical Applications
ISBN 978-3-446-41652-9
©2009, hardcover, € 129.90
304 pages/32 tables
This book gives an overview of flame retardants, which are either in commercial use or in advanced stage of market development, reviewed polymer-by-polymer, supplemented by a brief overview of mode of action and interaction. It is more of a how-to book rather than an academic study. As such, it names trademarked materials as well as products that are in an active stage of development, gives suggestions for selecting among alternatives, provides suggested formulations, and offers a starting point for the compounder or plastics fabricator to pass commercial flammability requirements.


J. Troitsch
Plastics Flammability Handbook 3E
Principles, Regulations, Testing, and Approval
ISBN 978-3-446-21308-1
©2004, hardcover, € 399.00
774 pages/218 figures/50 tables
The completely revised and updated third edition of this handbook covers all aspects of plastics flammability from fundamentals to the detailed description of national and international regulations, standards, test methods, and the approval procedures for plastics and plastic components in various fields of application. This unique and comprehensive handbook is a mandatory and essential reference for everyone concerned with plastics flammability.

“A book is particularly welcome in simplifying the difficult and often confusing area of national regulations and fire test procedures.”
—Plastics and Rubber International

A. Müller
Coloring of Plastics
Fundamentals – Colorants – Preparations
ISBN 978-3-446-22346-2
©2003, hardcover, € 129.90
278 pages/31 figures
This book describes the various aspects of coloring plastics, such as the construction of the processing machine, the processing technology, quality assurance of the raw materials and final products, toxicity of the raw materials, and the legal aspects from the handling of all ingredients during the production of a color preparation to the processing of plastic parts. It also includes the safe use of the plastic products in their specific application.

Electron Beam Curing of Composites

F. Wolff-Fabris, V. Altstädt, U. Arnold, M. Doring

ISBN 978-3-446-42405-0

136 pages/83 figures/13 tables

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Electron beam curing technology for advanced composites has emerged as a credible and attractive alternative to thermal curing for most composite products. Technical advantages, such as aerospace structures, include curing at room temperature, using low-cost tooling, and the ability to fabricate large integrated structure including tooling, and the ability to fabricate large integrated structure including tooling. Studies by aerospace companies for products. Technical advantages, such as aerospace structures, include curing at room temperature, using low-cost tooling, and the ability to fabricate large integrated structure including tooling, and the ability to fabricate large integrated structure including tooling. Studies by aerospace companies have shown potential cost savings of 10-60% by using electron beam curing. This book provides an overview of the complete process of textile manufacturing. The various raw materials, the different methods of yarn and fabric manufacturing, and an introduction to knitting technology, nonwovens, finishing, and ready-made garment production are described in detail. The book includes a discussion of current recycling processes. To provide a better understanding of the individual textile processes, an example at the end of each chapter describes a particular textile product and the respective processing steps necessary for its manufacture.


Textile Technology

B. Wulfhorst, T. Gries

ISBN 978-3-446-22963-1

328 pages/225 figures

€ 99.90

This book provides an overview of the complete process of textile manufacturing. The various raw materials, the different methods of yarn and fabric manufacturing, and an introduction to knitting technology, nonwovens, finishing, and ready-made garment production are described in detail. The book includes a discussion of current recycling processes. To provide a better understanding of the individual textile processes, an example at the end of each chapter describes a particular textile product and the respective processing steps necessary for its manufacture.


Plastics in Automotive Engineering

R. Staub, L. Vollrath

ISBN 978-3-446-41120-3

423 pages/600 figures/25 tablets

€ 249.00

Today’s automotive industry is challenged by ever more stringent demands to reduce fuel consumption and exhaust emissions. Lightweight design and increased use of advanced plastic components will be crucial for the next generation of cars complying with legislation. Engineers and manufacturers who develop and produce polymer-based components for automotive applications are under pressure to reduce development times and to optimize production processes for quality and economic viability. Tools of choice are computer-aided design and simulation for both, material properties and processes. This book describes the various aspects of coloring plastics, such as the construction of the processing machine, the processing technology, quality assurance of the raw materials and final products, toxicology of the raw materials, and the legal aspects from handling ingredients during the production of a plastic parts. It also includes the safe use of the products made of plastics in their specific applications.

Material properties and how they relate to the chemical structure of the polymers, common processing methods for packaging applications, help with writing specifications, designing, fabricating, testing, and controlling the quality of the plastic materials are covered comprehensively.

Testing & Analytics

G. Ehrenstein, S. Pongratz
Resistance and Stability of Polymers
ISBN 987-3-446-41645-1
©2013, hardcover, € 499.99
1,488 pages/2-volume set

A polymeric material’s resistance to different environmental or processing related influences determines its suitability in any number of applications. Reliable information and performance predictions influence material selection. They take a variety of influences into consideration, among them resin manufacture, compounding, stabilization, processing, and part design and end use.


G. Ehrenstein, L. Engel, H. Klingele, H. Schaper
Scanning Electron Microscopy of Plastics Failure
ISBN 987-3-446-42242-1
©2010, hardcover, € 199.00
280 pages/230 figures

Scanning electron microscopy (SEM) is often used in plastics failure analysis when light microscopy cannot provide images of high enough resolution. SEM images also provide higher contrast, in particular of surface textures. SEM is also advantageous with very dark surfaces and transparent materials.

This book is an unrivaled comprehensive collection of SEM images covering topics such as surface properties, adhesion, joining, fracture, and other types of failure of plastic parts, which are of decisive importance for the economic success of plastics manufacturing operations.


G. Ehrenstein, G. Riedel, P. Trawiel
Thermal Analysis of Plastics
Theory and Practice
ISBN 987-3-446-22673-9
©2004, hardcover, € 179.90
397 pages/268 figures

Thermal analysis has proven to be one of the most important and meaningful test methods in the plastics industry and in testing laboratories. Although thermal analysis is used for fundamental studies related to materials science of polymers, its power lies in understanding this behavior during manufacturing processes. This understanding aids in process optimization, reduction of manufacturing cycle times, failure analysis, and the overall improvement of the material properties of the finished product. In this book, the different test methods and their variations are described in detail, emphasizing the principles and their application in practice. Using practical examples, different approaches to problem solving are presented with a focus on the interpretation of the experimental results.


W. Grellmann, S. Sedlter
Polymer Testing 2E
ISBN 987-1-56990-548-7
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712 pages

The staggering growth rates in plastics production and applications increase the demand for meaningful measuring and analysis methods in polymer testing. The advances in electronic measuring techniques led to further developments in classic testing methods as well as to completely new methods. This book describes the significance of characteristic data for the quantification of the interrelationship between microstructure and macroscopic properties.

Additional information about damage processes and deformation mechanisms can be gained with the help of coupled non-destructive polymer testing methods and hybrid methods of polymer diagnostics, respectively. Numerous examples for the optimization of polymers and their composites and the assessment of component properties provide a material science focused insight into modern polymer testing.


D. Hylton
Understanding Plastics Testing
ISBN 987-3-446-22246-5
©2004, softcover, € 59.90
342 pages/56 figures/4 tables

This overview of plastics testing provides an understanding of how polymer structure and morphology affect properties that are important for plastics processing and how to test for these properties. The reader will get an overview of basic material testing, the specific properties tested, and why they are important. The book also provides insight into which tests are useful for predicting the behavior of plastics products after they have been produced and in end-use.


A. Naranjo, M. Noriega, T. Osswald, A. Roldán-Alzate, J. Sierra
Plastics Testing and Characterization
Industrial Applications
ISBN 987-3-446-41315-3
©2008, hardcover, € 179.90
376 pages/234 figures/119 tables

Combined with a solid engineering background, this book provides the information and industrial case studies an engineer needs to both make informed decisions about selecting appropriate testing techniques and effectively troubleshoot problems in the field of plastics manufacturing. The scope of this book also includes relevant and concise information for data interpretation using the most important characterization techniques.

Physics & Chemistry

G. Michler, F. Baltá-Calleja
Nano- and Micro-mechanics of Polymers
Structure Modification and Improvement of Properties
ISBN 987-3-446-42767-9
©2012, hardcover, € 299.00
560 pages/480 figures/14 tables
The book is unique in its focus on micro- and nanomechanical processes of polymers and their role to improve the properties of polymeric materials. It combines the detailed knowledge of structure and morphology of polymers with the explanation and theoretical interpretation of micro- and nanoscopic processes and mechanisms in different polymers. Thus, it offers a better understanding and approaches. All these aspects are highlighted on polymeric systems of both academic and practical relevance.


J. Karger-Kocsis, S. Fakirov
Nano- and Micro-mechanics of Polymer Blends and Composites
ISBN 978-3-446-41323-8
©2009, hardcover, € 299.00
624 pages/262 figures/34 tables
This book gives a state-of-the-art overview on aspects of micro- and nanomechanics of polymers, polymeric blends and composites. Major issues tackled are the following: experimental techniques to study the mechanical performance of polymer systems especially in respect with molecular, supermolecular and filler architectures on suitable model materials; prediction methods of the mechanical performance (short- and long-term properties); modeling tools and approaches. All these aspects are highlighted on polymeric systems of both academic and practical relevance.


T. Osswald, G. Menges
Materials Science of Polymers for Engineers 3E
©2012, hardcover, € 99.90
616 pages/525 figures/58 tables
This introduction to polymer materials science is divided into three major sections: Basic Principles, Influence of Processing on Properties, and Engineering Design Properties. The first edition of this textbook was praised for its vast number of graphs and data that can be used as reference. The new second edition further strengthens this attribute with a new appendix containing material property graphs for the commonly used polymers. However, the most important change implemented in this edition is the introduction of real-world examples and a variety of problems at the end of each chapter.


J. Dealy, R. Larson
Structure and Rheology of Molten Polymers
From Structure to Flow, Behavior and Back Again
ISBN 978-3-446-21771-3
©2006, hardcover, € 249.00
530 pages/130 figures/52 tables
Developments in recent years have made it possible to predict the detailed molecular structure of a polymer based on polymerization conditions and to use this knowledge to predict rheological properties. New techniques for using rheological data to infer molecular structure have also been developed. Soon it will be possible to use this new knowledge to design a molecular structure having prescribed processability and end-product properties, to specify the catalyst and reaction conditions necessary to produce a polymer having this structure, and to use rheology to verify that the structure desired has been produced.


A. Peacock, A. Calhoun
Polymer Chemistry
Properties and Applications
ISBN 978-3-446-22283-0
©2006, hardcover, € 129.00
418 pages/216 figures/35 tables
This book is a comprehensive introduction to the study of polymers. Special emphasis is given to the characteristics that set polymers apart from small molecules, as studied in classic chemistry courses. The various branches of polymer science are introduced and discussed in a systematic manner, starting from basic chemical structures, continuing through supermolecular organization, and physical properties. Specific examples are used throughout to illustrate how end use relates to the principles under discussion. A series of chapters is devoted to case studies describing the principle classes of synthetic polymers.

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