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"Rheology in Polymer
Processing" introduces

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the fundamentals of
rheology and rheometry
as the basis for
modeling and computer-
aided design in plastics
processing. The
logically structured

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content enables the reader to intelligently use the tools of computer-aided design and modeling of plastics processing, with correct interpretation of the

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results. The book presents difficult and complex issues of rheology and modeling in an accessible way, with particular emphasis on the practical

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engineering aspects. The software described in the book allows modeling all the important problems of plastics processing. Particular attention is paid to the

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extrusion process, which is fundamentally important as a processing technology in mass manufacture of plastic parts, and the basis of compounding

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processes (blending, filling, granulation, and reinforcement). This book is aimed equally at engineers, researchers, and scientists, as well as intermediate

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students, for whom it
will serve as an ideal
course book.

Dr.-Ing. Michael Thielen
is a PR consultant,
editorial service
provider, and founder

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and publisher of the
trade journal

bioplastics MAGAZINE. As

a mechanical engineer,

he studied plastics

engineering at the RWTH

Aachen University, where

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he also earned his
doctorate. After several
years in various sales
and communication
positions, including at
the Krupp Research
Institute, Krupp Kautex

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Maschinenbau, and SIG

Plastics International,

he went freelance in

2003 as a consultant and

publicist. He has

written several books on

blow molding technology

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and bioplastics and has
taught plastics
engineering in numerous
lectures and teaching
assignments at
universities of applied
sciences in Germany and

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abroad.

This primer was developed during many in-plant short courses and the basic thermoforming course sponsored by the University of Wisconsin-

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Milwaukee. It is designed for people who may not have extensive formal education, such as plant supervisors and foremen, machine operators, quality

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control people,
purchasing agents and
technical secretaries.
However, it also offers
a first introduction to
the technology for
plastics product

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manufacturers who would

like to add

thermoforming to the

processes they currently

run, such as injection

molding or blow molding.

The plastics engineer

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working on the shop floor in a plastics manufacturing plant often needs quick answers to questions such as why the extruder output is low or whether

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he can expect better quality product by changing the resin or if the die pressure can be lowered. Applying state-of-the art numerical software to address

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these issues is time-consuming and costly.

Starting from practical design formulas which are easily applicable, and yet take the resin rheology into account,

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this guide provides

answers to these

questions quickly and

effectively by guiding

the user step by step

through the

computational procedures

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on the basis of
illustrative technical
examples. Problems
related to melt
fracture, homogeneity of
the melt, effect of
screw geometry on the

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quality of the melt and
the effect of die
pressure on the pellet
surface and their
troubleshooting are only
few of the topics among
many that are dealt with

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in detail. All the calculations involved can be handled by pocket calculators and hence can be performed right on the site where the machines are running.

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This guide is a valuable tool not only to troubleshoot but also to estimate the effect of design and process parameters on the product quality in

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plastics processing.

Advanced Strategies and

Practical Aspects

Stretch Blow Molding

Processes and Governing

Equations

Plastics Institute of

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America Plastics

Engineering,

Manufacturing & Data

Handbook

Understanding

Thermoforming

Concise Encyclopedia of

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Plastics

The Second Edition of Giant Molecules presents an introductory textbook on large molecules that exhibit specific physical and biological properties related to their size, orientation, and

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environment, making this subject accessible to students from high school to universities. Written by Charles Carraher, author of more than forty books on the subject, this up-to-date guide presents material in an

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integrated fashion, marrying fundamentals with illustrative applications. The text assumes no previous formal scientific training, and includes new and updated questions and answers, a glossary of relevant terms,

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**bibliographies, visual aids,
and related Web links in every
chapter. Giant Molecules,
Second Edition will appeal to
individuals who have a
personal or professional
interest in polymers, as well
as to college chemistry and**

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**materials science students
who study polymers.**

**Blow molding is a rapidly
growing technology, and this
comprehensive new volume
provides a practical aid and
reference for those already
involved in the process as well**

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as for those who need to take advantage of this low-cost technique. Blow Molding Handbook covers the entire blow molding process, discussing technological, performance, marketing and financial aspects. Unique in

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**the field, this is a dual
sourcebook--both a step-by-
step guide to design and
processing methods and a
practical reference filled with
trouble-shooting tips,
techniques, and advice.
Encyclopedic in detail and**

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encompassing the latest technical advancements, the Handbook will benefit design and production professionals, quality control, purchasing and sales specialists, and R & D managers.

Plastics Engineering, Fourth

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Edition, presents basic essentials on the properties and processing behaviour of plastics and composites. The book gives engineers and technologists a sound understanding of basic principles without the

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introduction of unduly complex levels of mathematics or chemistry. Early chapters discuss the types of plastics currently available and describe how designers select a plastic for a particular application. Later chapters

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guide the reader through the mechanical behaviour of materials, along with a detailed analysis of their major processing techniques and principles. All techniques are illustrated with numerous worked examples within each

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**chapter, with further
problems provided at the end.
This updated edition has been
thoroughly revised to reflect
major changes in plastic
materials and their processing
techniques that have occurred
since the previous edition.**

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The plastics and processing techniques addressed within the book have been comprehensively updated to reflect current materials and technologies, with new worked examples and problems also included. Gives

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**new engineers and
technologists a thorough
understanding of the essential
properties and processing
behavior of plastics and
composites Presents a great
source of foundational
information for students,**

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early-career engineers and researchers Demonstrates how basic engineering principles in design, mechanics of materials, fluid mechanics and thermodynamics may be applied to the properties,

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**processing and performance
of modern plastic materials**

**"The book provides a practical
understanding of basic
information on extrusion in a
way useful to readers without
an engineering degree as well
as to those new to the field. It**

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is primarily written for extruder operators, supervisors, technical service personnel, and process engineers. Designed for on-the-job use, it guides the reader step by step through material issues, machinery,

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**processing, and
troubleshooting. This revised
and extended third edition
now also covers interpretation
of extrusion process data,
analysis of shrink void
formation, dimensional
variation by melt temperature**

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**fluctuations, efficient
extrusion, grooved barrel
extruder technology, and
more. Contents: Extrusion
Machinery Instrumentation
and Control Complete
Extrusion Lines Plastics and
Their Properties Important in**

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Extrusion How an Extruder Works How to Run an Extruder How to Troubleshoot Extrusion Problems New Developments in Extrusion and Methods to Increase Efficiency"-- Hands-on Examples and Case

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Studies

**Processing Technology for Bio-
Based Polymers**

Plastics Injection Molding

**Essential Guide to Metals and
Manufacturing**

Rheology in Polymer

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Processing

Hollow plastic parts range in size from small unit dose liquor bottles, doll heads and syringe bulbs to large gasoline tanks, pallets, and playground equipment. Designers and design engineers are often familiar with one way of making these parts but may not be aware of other methods that may offer

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greater design and performance flexibility. The book provides comprehensive design and manufacturing comparisons of three major methods - blow molding, rotational molding and twin-sheet thermoforming- as well as an overview of other methods used to produce hollow plastic parts. Not only will the seasoned designer be able to determine

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the advantages and limitations of specific technologies, but the newcomer will also be able to quickly select the best manufacturing method for his particular hollow product. This extensively updated and revised Third Edition is a comprehensive and practical guide to the study of the microstructure of polymers. It is the result of the authors'

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many years of academic and industrial experience. Introductory chapters deal with the basic concepts of both polymer morphology and processing and microscopy and imaging theory. The core of the book is more applied, with many examples of specimen preparation and image interpretation leading to materials

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characterization. Emerging techniques such as compositional mapping in which microscopy is combined with spectroscopy are considered. The book closes with a problem solving guide.

Stretch Blow Molding, Third Edition, provides the latest on the blow molding process used to produce bottles of the

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strength required for carbonated drinks. In this updated handbook, Ottmar Brandau introduces the technology of stretch blow molding, explores practical aspects of designing and running a production line, and looks at practical issues for quality control and troubleshooting. As an experienced engineer, manager, and

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consultant, Brandau 's focus is on optimizing the production process, improving quality, and reducing cycle time. In this new edition, the author has thoroughly reviewed the content of the book, providing updates on new developments in stretch blow molding, including neck sizes, new equipment and

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processes, and the economics of the process. The book is a thoroughly practical handbook which provides engineers and managers with the toolkit to improve production and engineering aspects in their own businesses, allowing them to save money, increase output, and improve competitiveness by adopting new

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technologies. Provides knowledge and understanding of the latest technological and best practice developments in stretch blow molding Includes money saving, practical strategies to optimize the production process, improve quality, and reduce cycle times Provides a guide to the training of operators, as well as tactics on

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how to troubleshoot when products are faulty, productivity is low, or machinery is not operating as expected

This book is intended for new owners, engineers, technicians, purchasing agents, chief operating officers, finance managers, quality control managers, sales managers, or other employees who want to learn and

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grow in metal manufacturing business. The book covers the following: 1. Basic metals, their selection, major producers, and suppliers ' websites 2. Manufacturing processes such as forgings, castings, steel fabrication, sheet metal fabrication, and stampings and their equipment suppliers ' websites 3. Machining and finishing

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processes and equipment suppliers ' websites 4. Automation equipment information and websites of their suppliers 5. Information about engineering drawings and quality control 6. Lists of sources of trade magazines (technical books that will provide more information on each subject discussed in the book)

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Virtual and Rapid Manufacturing

Understanding Polymer Processing

Understanding Thermoplastic Elastomers

American Book Publishing Record

An In-depth Look at the History,

Technology, Catalysts, and Modern

Commercial Manufacture of Polyethylene

and Its Products

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Understanding Plastics Engineering
Calculations

The second edition of this widely accepted book provides a general understanding of the blow molding process. It offers a practical, hands on approach,

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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

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benefits and limitations, mold engineering, decoration, finishing, and assembly techniques, while always keeping a focus on manufacturability issues.

Maintaining a balance between

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depth and breadth, the Sixth Edition of Principles of Polymer Systems continues to present an integrated approach to polymer science and engineering. A classic text in the field, the new edition offers a comprehensive

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exploration of polymers at a level geared toward upper-level undergraduates and beginning graduate stu

Collection of 120 peer-reviewed papers that were presented at the 3rd International

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Conference on Advanced
Research in Virtual and Rapid
Prototyping, held in Leiria,
Portugal in September 2007.
Essential reading for all those
working on V&RP, focused on
inducing increased

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collaboration between industry and academia. In addition to key After over a century of worldwide production of all kinds of products, cost estimators, buyers, vendors, consultants, of products, the

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plastics industry is now the fourth largest and others.

industry in the United States.

This brief, concise, and practical

bulk of the book is the

alphabetical listing of essential

book is a cutting edge

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compendium of the plastics
tries. Preceding those entries is
A Plastics Overview: Fig
industry's information and
terminology-ranging from ures
and Tables (which presents
eight summary guides on

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design, materials, and processes, to testing, quality control, the subjects examined in the text) and then the World of regulations, legal matters, and profitability. New and use Plastics Reviews (which presents

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14 articles that provide full developments in plastic materials and processing with general introductory information, comprehensive updates, continually are on the horizon, and the examples of

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these de and important networking avenues within the world of velopments that are discussed in the book provide guides plastics). Following the alphabetical listing of entries, at the to past and future trends.

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end of the encyclopedia, seven
appendices provide back This
practical and comprehensive
book reviews the ground and
source guide information keyed
to the text of the book. The
extensive and useful Appendix

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A, List of plastics industry virtually from A to Z through its more than 25,000 entries. Its concise entries cover the basic is Abbreviations, lists all abbreviations used in the text. Scientific Molding,

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Recommendations, and Best
Practices

Handbook of Plastic Processes

Understanding Product Design
for Injection Molding

Polymer Microscopy

Giant Molecules

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Hollow Plastic Parts

The increasing importance of plastic materials in packaging makes it mandatory for everyone in this industry to command a basic understanding of the

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**properties of the common
packaging plastics.**

**One of the outstanding
advantages of TPE's can be
summarized in a single
phrase: They allow
rubberlike articles to be**

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produced using the rapid processing techniques developed by the thermoplastic industry. The commercial development of TPE's enabled the rubber industry to utilize

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new processing techniques including blow molding, comolding and coextrusion, hot melt coating of pressure sensitive adhesives, and direct injection molding. New

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products, new processing techniques, new properties, and new applications have been experienced in the last decade. All this is reflected in this general

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introduction to the

subject.

Your personal Ullmann's:
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characteristics,
production processes and
production figures, main

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**applications, toxicology
and safety information are
all to be found here in
one single resource -
bringing the vast
knowledge of the Ullmann's
Encyclopedia to the desks**

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**of industrial chemists and
chemical engineers. The
ULLMANN'S perspective on
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brings reliable
information on more than
1500 compounds and**

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**products straight to your
desktop Carefully selected
“best of” compilation of
61 topical articles from
the Encyclopedia of
Industrial Chemistry on
economically important**

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polymers provide a wealth of chemical, physical and economic data on more than 1000 different polymers and hundreds of modifications Contains a wealth of information on

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**the production and use of
all industrially relevant
polymers and plastics,
including organic and
inorganic polymers,
fibers, foams and resins
Extensively updated: more**

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than 30% of the content has been added or updated since the launch of the 7th edition of the Ullmann's encyclopedia in 2011 and is now available in print for the first

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time 4 Volumes

**Every successful
manufacturer of blow
molded products faces the
challenge of utilizing
advanced techniques which
demand an understanding of**

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the different plastic melt flow behaviors, operational monitoring and control systems, testing and quality control, statistical analysis, and so on. However, these

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techniques are only helpful if the basic operations of molding are understood to ensure the elimination or a significant reduction of potential problems. This

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**second edition of Blow
Molding Handbook - an
industry standard for more
than a decade - provides
insight to critical areas
such as: product design
meeting performance**

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**requirements reducing
costs zero defect targets
The information contained
in this volume is of value
to even the most
experienced fabricators,
designers, and engineers;**

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it also provides a firm basis for the beginner. The intent is to provide a complete review of the important aspects of the blow molding process that goes from the practical to

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**the theoretical, and from
the elementary to the
advanced.**

Mold-making Handbook

Chemical Engineering and

Chemical Process

Technology - Volume VII

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Plastics Packaging

Blow Molding Handbook

Business and Technology of

the Global Polyethylene

Industry

Principles of Polymer

Systems

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This handbook provides an exhaustive description of polyethylene. The 50+ chapters are written by some of the most experienced and prominent authors in the field,

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providing a truly unique view of polyethylene. The book starts with a historical discussion on how low density polyethylene was discovered and how it

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provided unique opportunities in the early days. New catalysts are presented and show how they created an expansion in available products including linear low

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density polyethylene, high density polyethylene, copolymers, and polyethylene produced from metallocene catalysts. With these different catalysts systems a wide

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range of structures are possible with an equally wide range of physical properties. Numerous types of additives are presented that include additives for the protection of the

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*resin from the environment
and processing, fillers,
processing aids, anti-
fogging agents, pigments,
and flame retardants.*

*Common processing methods
including extrusion, blown*

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film, cast film, injection molding, and thermoforming are presented along with some of the more specialized processing techniques such as rotational molding, fiber

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*processing, pipe
extrusion, reactive
extrusion, wire and cable,
and foaming processes. The
business of polyethylene
including markets, world
capacity, and future*

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prospects are detailed.

This handbook provides the most current and complete technology assessments and business practices for polyethylene resins.

This book provides a

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simplified, practical, and innovative approach to understanding the design and manufacture of plastic products in the World of Plastics. The concise and comprehensive information

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defines and focuses on past, current, and future technical trends. The handbook reviews over 20,000 different subjects; and contains over 1,000 figures and more than 400

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tables. Various plastic materials and their behavior patterns are reviewed. Examples are provided of different plastic products and relating to them critical

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factors that range from meeting performance requirements in different environments to reducing costs and targeting for zero defects. This book provides the reader with

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*useful pertinent
information readily
available as summarized in
the Table of Contents,
List of References and the
Index.*

Blow moulding is a

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manufacturing process used to form hollow plastic parts. It evolved from the ancient art of glass blowing and it is used to particular advantage with plastic materials.

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Celluloid was used first to blow mould baby rattles and novelties in the 1930s, linear low-density polyethylene was used in the 1940s for high production bottles and

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these days polyethylene terephthalate is used to make anything from soda bottles, to highly sophisticated multilayered containers and automotive fuel tanks in the last

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decade. When designing a product it is important to consider aspects such as a material's characteristics, the processing methods available, the assembly

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*and finishing procedures,
and the life cycle and
expected performance of
the product. This book
presents the basics of
blow moulding as well as
the latest state-of-the-*

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art and science of the industry. A key feature is the approach of discussing the 'basics' and then taking the reader through the entire process from design development through

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to final production.

*An outstanding and
thorough presentation of
the complete field of
plastics processing
Handbook of Plastic
Processes is the only*

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*comprehensive reference
covering not just one, but
all major processes used
to produce plastic products -
helping designers and
manufacturers in selecting
the best process for a*

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given product while enabling users to better understand the performance characteristics of each process. The authors, all experts in their fields, explain in

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clear, concise, and practical terms the advantages, uses, and limitations of each process, as well as the most modern and up-to-date technologies available

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in their application.

*Coverage includes chapters
on: Injection molding
Compression and transfer
molding Sheet extrusion
Blow molding Calendering
Foam processing Reinforced*

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plastics processing Liquid

resin processing

Rotational molding

Thermoforming Reaction

injection molding

Compounding, mixing, and

blending Machining and

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*mechanical fabrication
Assembly, finishing, and
decorating Each chapter
details a particular
process, its variations,
the equipment used, the
range of materials*

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utilized in the process, and its advantages and limitations. Because of its increasing impact on the industry, the editor has also added a chapter on nanotechnology in plastics

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processing.

*Ullmann's Polymers and
Plastics
Properties, Processing,
Applications, and
Regulations
Definitive Guide to*

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*Manufacturing, Properties,
Processing, Applications
and Markets Set*

*Practical Guide to Blow
Moulding*

*Understanding Blow Molding
Plastics Engineering*

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Chemical Engineering and
Chemical Process Technology
is a theme component of
Encyclopedia of Chemical
Sciences, Engineering and
Technology Resources in the
global Encyclopedia of Life

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Support Systems (EOLSS), which is an integrated compendium of twenty Encyclopedias. Chemical engineering is a branch of engineering, dealing with processes in which materials

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undergo changes in their physical or chemical state. These changes may concern size, energy content, composition and/or other application properties. Chemical engineering deals

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with many processes
belonging to chemical industry
or related industries
(petrochemical, metallurgical,
food, pharmaceutical, fine
chemicals, coatings and colors,
renewable raw materials,

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biotechnological, etc.), and finds application in manufacturing of such products as acids, alkalis, salts, fuels, fertilizers, crop protection agents, ceramics, glass, paper, colors, dyestuffs,

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plastics, cosmetics, vitamins and many others. It also plays significant role in environmental protection, biotechnology, nanotechnology, energy production and sustainable

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economical development. The Theme on Chemical Engineering and Chemical Process Technology deals, in five volumes and covers several topics such as: Fundamentals of Chemical

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Engineering; Unit Operations -
Fluids; Unit Operations -
Solids; Chemical Reaction
Engineering; Process
Development, Modeling,
Optimization and Control;
Process Management; The

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Future of Chemical
Engineering; Chemical
Engineering Education; Main
Products, which are then
expanded into multiple
subtopics, each as a chapter.
These five volumes are aimed

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at the following five major target audiences: University and College students
Educators, Professional practitioners, Research personnel and Policy analysts, managers, and decision

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makers and NGOs.

The focus of Understanding Blow Molding is on hands-on practical applications, which will benefit those new to the plastic blow molding industry, as well as those who are

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experienced but may not have been exposed to all facets of a blow molding plant. People from various disciplines such as product and manufacturing engineering, marketing, design, research and

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development, as well as operation personnel, will also gain insight into solving the everyday problems of a blow molding operation. This revised second edition is expanded by a comprehensive

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troubleshooting guide that will prove particularly helpful to any practitioner.

Handbook of Thermoplastic Elastomers, Second Edition presents a comprehensive working knowledge of

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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

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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

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industries including
automotive, medical,
construction and many more.
This handbook provides all the
practical information
engineers need to successfully
utilize this material group in

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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

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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

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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,

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processing, properties, and applications for both new and established technical professionals in any industry utilizing TPEs Datasheets provide "at-a-glance" processing and technical

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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

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medical industries

Stepped guidelines are supplied for the design of molds, from product drawing to complete mold assembly. Emphasis is given to the relationship between mold

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performance, productivity, and
mold life.

Handbook of Thermoplastic
Elastomers

Modeling and Simulation

Understanding Extrusion

Processing and Materials

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Products and Processes

Blow Molding Design Guide

Plastics Injection Molding: Scientific

Molding, Recommendations, and Best

Practices is a user-friendly reference book

and training tool, with all the essentials to

understand injection molding of plastics. It

is a practical guide to refining and

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controlling the process, increasing robustness and consistency, increasing productivity and profitability, and reducing costs. This book contains structured information on process definitions and parameters, optimization methods, key points, interpretation of data sheets, among other useful

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recommendations regarding both technology and design. It also provides analysis of process deviation, defects, incidents, etc. as well as a section dedicated to material selection and comparison. It includes a bonus of downloadable Excel spreadsheets for application to scientific molding, process

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analysis, and optimization. This book is aimed at injection molding technicians, process engineers, quality engineers, mold designers, part designers, simulation engineers, team leaders, plant managers, and those responsible for purchasing plastic materials.

A practical reference for all plastics

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engineers who are seeking to answer a question, solve a problem, reduce a cost, improve a design or fabrication process, or even venture into a new market. Applied Plastics Engineering Handbook covers both polymer basics - helpful to bring readers quickly up to speed if they are not familiar with a particular area of plastics

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processing - and recent developments - enabling practitioners to discover which options best fit their requirements. Each chapter is an authoritative source of practical advice for engineers, providing authoritative guidance from experts that will lead to cost savings and process improvements. Throughout the book, the

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focus is on the engineering aspects of producing and using plastics. The properties of plastics are explained along with techniques for testing, measuring, enhancing and analyzing them. Practical introductions to both core topics and new developments make this work equally valuable for newly qualified plastics

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engineers seeking the practical rules-of-thumb they don't teach you in school, and experienced practitioners evaluating new technologies or getting up to speed on a new field The depth and detail of the coverage of new developments enables engineers and managers to gain knowledge of, and evaluate, new technologies and

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materials in key growth areas such as biomaterials and nanotechnology This highly practical handbook is set apart from other references in the field, being written by engineers for an audience of engineers and providing a wealth of real-world examples, best practice guidance and rules-of-thumb

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This book provides a simplified and practical approach to designing with plastics that fundamentally relates to the load, temperature, time, and environment subjected to a product. It will provide the basic behaviors in what to consider when designing plastic products to meet

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performance and cost requirements. Important aspects are presented such as understanding the advantages of different shapes and how they influence designs. Information is concise, comprehensive, and practical. Review includes designing with plastics based on material and process behaviors. As de signing with any

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materials (plastic, steel, aluminum, wood, etc.) it is important to know their behaviors in order to maximize product performance-to-cost efficiency. Examples of many different designed products are reviewed. They range from toys to medical devices to cars to boats to underwater devices to containers to springs to pipes to buildings

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to aircraft to space craft. The reader's product to be designed can directly or indirectly be related to product design reviews in the book. Important are behaviors associated and interrelated with plastic materials (thermoplastics, thermosets, elastomers, reinforced plastics, etc.) and fabricating processes (extrusion,

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injection molding, blow molding, forming, foaming, rotational molding, etc.). They are presented so that the technical or non-technical reader can readily understand the interrelationships.

Handbook of Industrial Polyethylene and
Technology
Design and Manufacture

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Advanced Research in Virtual and Rapid
Prototyping

Extrusion Blow Molding

Rheology - Part II

Applied Plastics Engineering Handbook

This unique book covers the
wide spectrum of extrusion
blow-molded hollow bodies,

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which find application for instance in packaging, storage, and transport or channeling of liquids, gases, or bulk materials, as well as for toys, sporting goods, or technical applications in the

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automotive or household appliances sectors. The necessary information for fundamental understanding of extrusion blow molding technology is provided, making it easy to comprehend the interrelationships

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during processing and in applications. This practical knowledge is aimed at facilitating the reader's daily work and studies. In addition to various fields of application and manufacturing processes,

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aspects of product development and possibilities of blow molding simulation are presented. Further sections on peripheral equipment, downstream equipment, and recycling round off the

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This easy-to-understand guide provides the necessary information to implement a scientific molding program. It is a hands-on reference for people on the molding floor, including those

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previously lacking theoretical background or formal education. The book covers how the injection molding machine prepares the plastic and understanding of plastic flow. The functions of the main machine

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components are explained and understanding of correct procedures and testing is developed. Each step of the process is clearly explained in a step-by-step manner, and simple examples of important calculations are

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provided. The practical approach is augmented by useful guides for troubleshooting and machine set-up. An Excel spreadsheet with a process test and a machine performance test is available as bonus material.

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Barrel 3. Clamping Unit 4.
Ejectors/Controllers, Human
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6. Process Development Test
7. Plastic Temperature 8.

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Plastic Flow 9. Plastic
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Aspects brings together the

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latest advances and novel technologies surrounding the synthesis and manufacture of biopolymers, ranging from bio-based polymers to synthetic polymers from bio-derived monomers. Sections examine bio-based polymer

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chemistry, discuss
polymerization process and
emerging design
technologies, cover
manufacturing and processing
approaches, explain cutting-
edge approaches and
innovative applications, and

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focus on biomedical and other key application areas. Final chapters provide detailed discussion and an analysis of economic and environmental concerns, practical considerations, challenges, opportunities

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and future trends. This is a valuable resource for researchers, scientists and advanced students in polymer science, bio-based materials, nanomaterials, plastics engineering, biomaterials, chemistry,

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biotechnology, and materials science and engineering, as well as R&D professionals, engineers and industrialists interested in the development of biopolymers for advanced products and applications. Focuses on the

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processing of bio-based polymers, covering both traditional methods and innovative new approaches Offers novel opportunities and ideas for developing or improving technologies for biopolymer research,

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preparation and application

Examines other key
considerations, including
reliability and end product,
economic concerns, and
environmental and lifecycle
aspects

The history of the business

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and technology that was responsible for the enormous growth of the global polyethylene industry from the laboratory discovery in 1933 to reach an annual production of over 75 million metric tons in 2012

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and become the leading plastic material worldwide. This book is an in-depth look at the history of the scientists and engineers that created the catalysts and the methods used for the modern commercial

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manufacture of polyethylene and its products. The book outlines the processes used for the manufacture of polyethylene are reviewed which include the high-pressure process and the three low-pressure

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processes; slurry, solution and the gas-phase methods. The techniques used to fabricate polyethylene into end-use products are reviewed with a discussion of blow-molding, injection molding, rotational molding,

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blown-film, cast-film and

thermoforming are also
discussed in detail.

A Practical Approach to
Scientific Molding

Basic Polymer Engineering
Data

Essential Materials for

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Everyday Living and Problem
Solving
Mold Engineering
Technology, Performance,
Markets, Economics : the
Complete Blow Molding
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Plastics Design Handbook

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This book provides the background needed to understand not only the wide field of polymer processing, but also the emerging technologies associated with the plastics industry in the 21st Century. It

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combines practical engineering concepts with modeling of realistic polymer processes.

Divided into three sections, it provides the reader with a solid knowledge base in polymer materials, polymer processing,

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and modeling. "Understanding Polymer Processing" is intended for the person who is entering the plastics manufacturing industry and as a textbook for students taking an introductory course in polymer processing. It

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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.

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Practical examples illustrating basic concepts are presented throughout the book. New in the second edition is a chapter on additive manufacturing, together with associated examples, as well as improvements and

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corrections throughout the book.

Contents: o Part I - Polymeric

Materials This section gives a

general introduction to polymers,

including mechanical behavior of

polymers and melt rheology o

Part II Polymer Processing The

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major polymer processes are introduced in this section, including extrusion, mixing, injection molding, thermoforming, blow molding, film blowing, and many others. o Part III Modeling This last section delivers the

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tools to allow the engineer to solve back-of-the-envelope polymer processing models. It includes dimensional analysis and scaling, transport phenomena in polymer processing, and modeling

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polymer processes

This primer offers assistance when selecting the proper material for any product and determining whether injection molding is the process best suited for the application.

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The Mold-Making Handbook is an essential resource for the plastics industry, providing all of the fundamental engineering aspects of mold design, construction, and manufacturing. Written by industry experts, this

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book captures the current state of the technique for all major processing methods. This third edition has been completely updated and includes new chapters on micro injection molds, rubber industry molds,

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and rapid prototyping. Separate sections describe the tool materials and various manufacturing and processing methods. This handbook appeals to a broad range of plastics professionals--from the beginner

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who is looking for an introduction to a key area of plastics processing to the specialist who needs a quick reading into related technical areas, which can result in ideas for their own work. The Mold-Making

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Handbook is extremely useful for engineers, designers, processors, technical sales reps, and students interested in all aspects of mold construction.

Much more than a data reference, this book shows how

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to apply basic design data to solve practical problems in polymer engineering, via numerous examples. It uniquely offers both resin and up-to-date machine design data in a concise format, and shows how

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*resin-compatible polymer
processing equipment can be
designed by using easily
understandable computational
procedures based on
thermodynamics and rheology.
Basic design data for resins*

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(mechanical, thermal, rheological, electrical, and optical properties), machines, parts, and processes is complemented by demonstrations of how to apply this data for application in extrusion, blown film,

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thermoforming, and injection molding. It is designed for simplicity, and all calculations can be carried out with a handheld calculator. With a practical and time-saving approach to problem-solving in

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plastics processing, which in many cases negates the need for complex and expensive software or databases, this book is a handy tool for beginners, practicing engineers, students, and instructors in the field of

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*plastics technology, and
scientists from other fields with
an interest in polymer
engineering.*