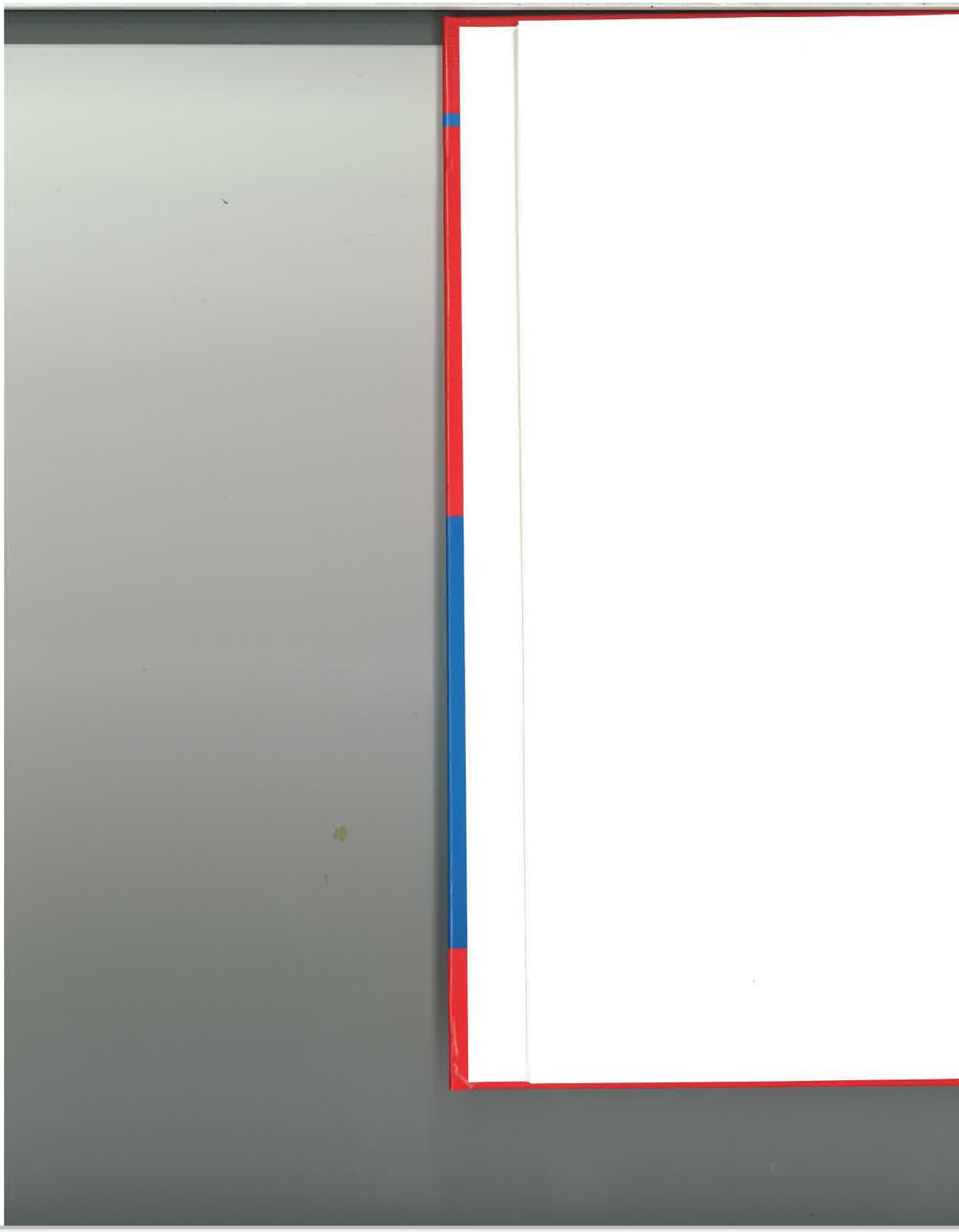
Compression Molding

Davis / Gramann /
Osswald / Rios

HANSER



The Authors:
Dr. Bruce A. Davis, Dr. Paul J. Gramann, Dr. Antoine C. Rios
all: The Madison Group, Polymer Processing Research Corp., 505 S. Ros
Prof. Dr. Tim A. Osswald, Polymer Engineering Center, University of W
Engineering, 1513 University Avenue, Madison WI 53706, USA

Distributed in the USA and in Canada by
Hanser Gardner Publications, Inc.
6915 Valley Avenue, Cincinnati, Ohio 45244-3029, USA
Fax: (513) 527-8801
Phone: (513) 527-8977 or 1-800-950-8977
Internet: http://www.hansergardner.com

Distributed in all other countries by
Carl Hanser Verlag
Postfach 86 04 20, 81631 München, Germany
Fax: +49 (89) 98 48 09
Internet: http://www.hanser.de

Library of Congress Cataloging-in-Publication Data

Compression molding / Paul J. Gramann ... [et al.].
p. cm.
ISBN 1-56990-346-8 (Hardcover)
1. Thermosetting plastics. 2. Reinforced plastics. I. Gramann, Paul
J.
TP1180.T55C66 2003
668.4'22—dc21
2003007485

Bibliografische Information Der Deutschen Bibliothek
Die Deutsche Bibliothek verzeichnet diese Publikation in der Deutsch
detaillierte bibliografische Daten sind im Internet über <http://dnb.ddb

ISBN 3-446-22166-2

Production Management: Oswald Immel
Typeset by Angela Ospina-Garcia, USA
Coverillustration by Mike Shinedling
Coverdesign: MCP • Susanne Kraus GbR, Holzkirchen, Germany
Printed and bound by Kösel, Kempten, Germany

exchange membrane (PEM), which uses numerous h
plates that contain complex patterns of flow channels.
functions: manage the hydrogen on one side and the
contain the cells where the reaction will take place
produced. Originally, the plates were individually
such as isostatic graphite, aluminum, stainless steel,
plates extremely expensive. Once again plastic was
and in doing so, made the product significantly less
more superior product. The final product has
dimensions with extreme flatness and creep, therma
and not leach-out contaminants. All this has to b
highly filled material that contained evenly mixed
each fuel cell contains numerous plates, the volum
and processing had to be completely automated. T
operation is the injection-compression process. Th
for this application is huge. One percent penetration
could consume between 50 and 100 million pounds
[8]. This is one example of how compression moldi
used to mold plastic materials in the future.

References

1. Jacobi, H.R., Kunststoffe, 55, 3, 173, (1965)
2. Dubois, J.H., Plastics History U.S.A., Cahners Boo
3. Northrup, F.B., U.S. Patent 1,158,830, (1915).
4. Report, SMC/BMC European Alliance, Nov. 2002
5. Crain's International Newspaper for the Plastics I
6. Fenichell, S., Plastic, HarperBusiness, New York, (
7. Application of Carbon Fiber SMC for the 2003 Do
   Conference (2002).
8. Composites Technology Sept/Oct (2001).

thermoset or elastomer category. Thermoplastics in turn which are called thermoplastic elastomers. However, all common that they are made of huge molecules. Some uncrosslinked, which means that each molecule can mov neighbors, and others are crosslinked, which means that links interconnect the polymer molecules. Thermoplas elastomers are uncrosslinked. Vulcanized rubber, thermosets are cross-linked.

The configuration of the polymer molecules has a properties of the polymer component. The configuration about the distribution and spatial organization of polymerization it is possible to place the X groups backbone in different directions. The order in which the the *tacticity*. The polymers with side groups that are plac are called *atactic*. The polymers whose side groups are a called *isotactic*, and those molecules with regularly alter called *syndiotactic*. Figure 2.1 shows the three differ polypropylene. The tacticity in a polymer deter crystallinity that a polymer can reach. For example, pol isotactic content will reach a high degree of crystallinity strong and hard. Branching of the polymer chains al structure, crystallinity and properties of the polymeric n

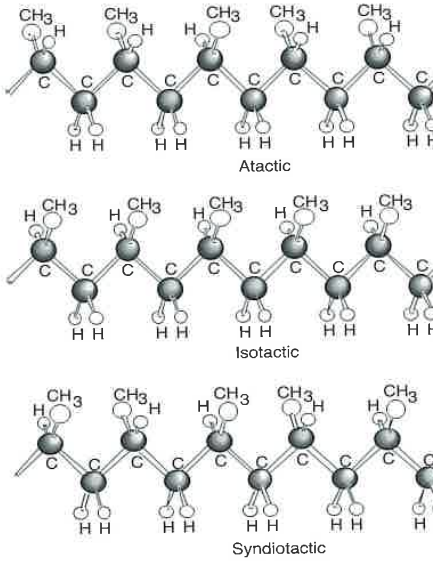


Figure 2.1 Different polypropylene structures.

DOCKET ALARM

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts

Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research

With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips

Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS
Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS
Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS
Sync your system to PACER to automate legal marketing.