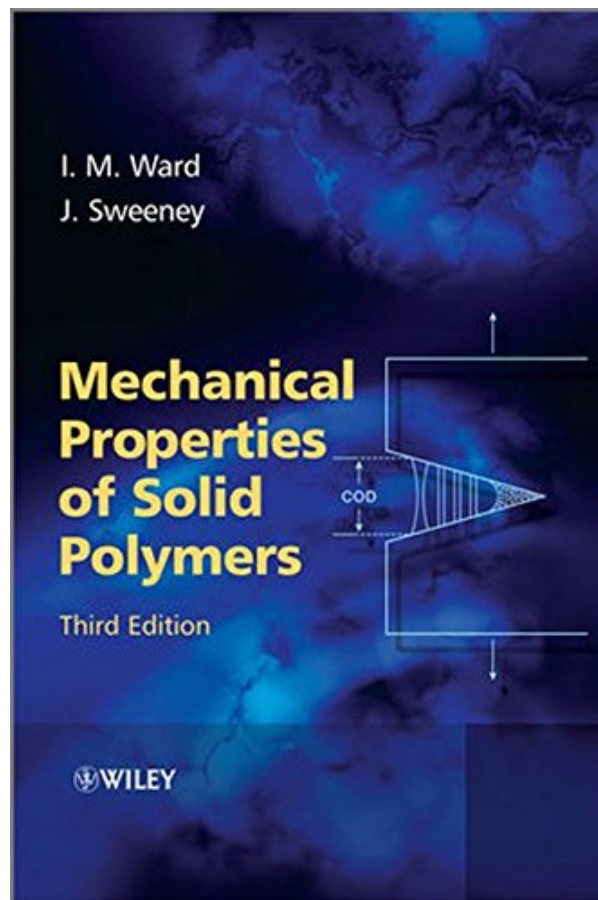


# MECHANICAL PROPERTIES OF SOLID POLYMERS BY IAN M. WARD, JOHN SWEENEY



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# Mechanical Properties of Solid Polymers

Third Edition



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From the Back Cover

When assessing the mechanical properties of a polymer, questions of ductility, strength and flexibility are paramount. Understanding how a polymer behaves under stress is critical to selecting the correct polymer for any given application. In Mechanical Properties of Solid Polymers 3e, the approach is to provide a formal description of the behaviour using the mathematical techniques of solid mechanics, followed by interpretations in terms of the molecular structure and morphology. The third edition combines the best qualities of its highly successful predecessors and includes:

- Finite strain and rubber-like elasticity
- Linear viscoelasticity and mechanical relaxation
- Anisotropic mechanical behaviour
- Polymer composites and nanocomposites
- Non-linear viscoelasticity
- Yield, instability, and breaking phenomena

Drawing on more than thirty years of teaching and research experience, Ward and Sweeney present all aspects of mechanical behaviour in an accessible way without compromising the in-depth treatments of foundational techniques and theories. The result is a straightforward, rigorous and practical guide.

“Introduces the mechanical properties of solid polymers in a straightforward, rigorous, and practical manner... an essential volume for students and scholars of physics, chemistry and chemical engineering, as well as polymer researchers, chemists, and chemical engineers or material scientists in government and industry.”—Professor F. J. Baltá-Calleja (Inst. Estructura de la Materia, CSIC, Spain)

About the Author

Professor Ian M. Ward is an internationally recognized and well respected authority on this subject. Chair in Physics at Leeds University since 1970, he has gained a reputation as an outstanding scientist. He is also a

co-founder of the British Polymer Physics Group and the winner of several awards, including the Glazebrook medal of the Institute of Physics (2004) and the Netlon award (2004) both given for his work in polymer physics.

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# **MECHANICAL PROPERTIES OF SOLID POLYMERS BY IAN M. WARD, JOHN SWEENEY PDF**

Providing an updated and comprehensive account of the properties of solid polymers, the book covers all aspects of mechanical behaviour. This includes finite elastic behavior, linear viscoelasticity and mechanical relaxations, mechanical anisotropy, non-linear viscoelasticity, yield behavior and fracture. New to this edition is coverage of polymer nanocomposites, and molecular interpretations of yield, e.g. Bowden, Young, and Argon.

The book begins by focusing on the structure of polymers, including their chemical composition and physical structure. It goes on to discuss the mechanical properties and behaviour of polymers, the statistical molecular theories of the rubber-like state and describes aspects of linear viscoelastic behaviour, its measurement, and experimental studies.

Later chapters cover composites and experimental behaviour, relaxation transitions, stress and yielding. The book concludes with a discussion of breaking phenomena.

- Sales Rank: #1177647 in Books
- Brand: Brand: Wiley
- Published on: 2012-12-17
- Original language: English
- Number of items: 1
- Dimensions: 9.90" h x 1.02" w x 6.90" l, 1.65 pounds
- Binding: Hardcover
- 476 pages

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Great book for polymer modeling

By YUAN-LUNG LUO

I have read many polymer science books on mechanical properties of polymer (Treloar, Sperling, Young, to name a few). This book by Ward is by far the best book that clearly explain the mechanical phenomena of polymers. Furthermore, the author provides both phenomenological models as well as fundamental studies of polymer physics, which is very useful as a practical engineer to immediately apply the models for polymer modeling while at the same time use fundamental studies to judge the quality of the modeling results. Lastly, the book provides detailed references for people that want to understand deeply of any particular model in order to implement it into work.

I highly recommend this book.

2 of 7 people found the following review helpful.

Old Edition

By TheGreatJon

I thought I was purchasing a cheap version of the book "Mechanical Properties of Solid Polymers - Second Edition". Technically I did. You may even note that IM Ward is the same author. However, take note that this book is 30 years old! The current "Mechanical Properties of Solid Polymers - Second Edition" is about 8 years old, and has a second author.

Why Wiley thought it was a good idea to publish the book with the exact title and restart the edition numbering is beyond me. Why Amazon felt it was OK to use the product info from the new version is also beyond me. I will contact Amazon about the product description. It is completely inaccurate - the material described, and even the authors are different.

This old version of the book has a lot of the same material, some sections of the chapters are even word for word with the same images. But it was also missing entire chapters - most of which is material that has been developed in the last 30 years - that is a good amount of time when we talk about our understanding of plastics.

Do not be fooled. Unless you are looking for the book that your Dad used in college, this is not the one you want.

1 of 1 people found the following review helpful.

Brilliant update of the standard text

By A. Ward

Contrary to another (misleading) review, this fantastic new version of the book updates the earlier text to include recent advances in polymer science. It is not the student focussed 'Introduction' book but one that can be used by all, through doctorate and beyond. I found it essential reading during my degree and still use it as a reference book.

There are also no 'missing' chapters as claimed and it should be noted that the other reviewer even admits that they based their review on the earlier edition (1983), that they bought in 2013... which would, of course, be dated since it was published thirty years earlier! Reviews should be checked by Amazon before they are allowed to be published. Amazon should also check that their links are tied to the correct edition. My review of the third edition (2013) appears on the second edition (1983) sales page as well! Still, my comments would be equally valid for this earlier edition if they are read in context.

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