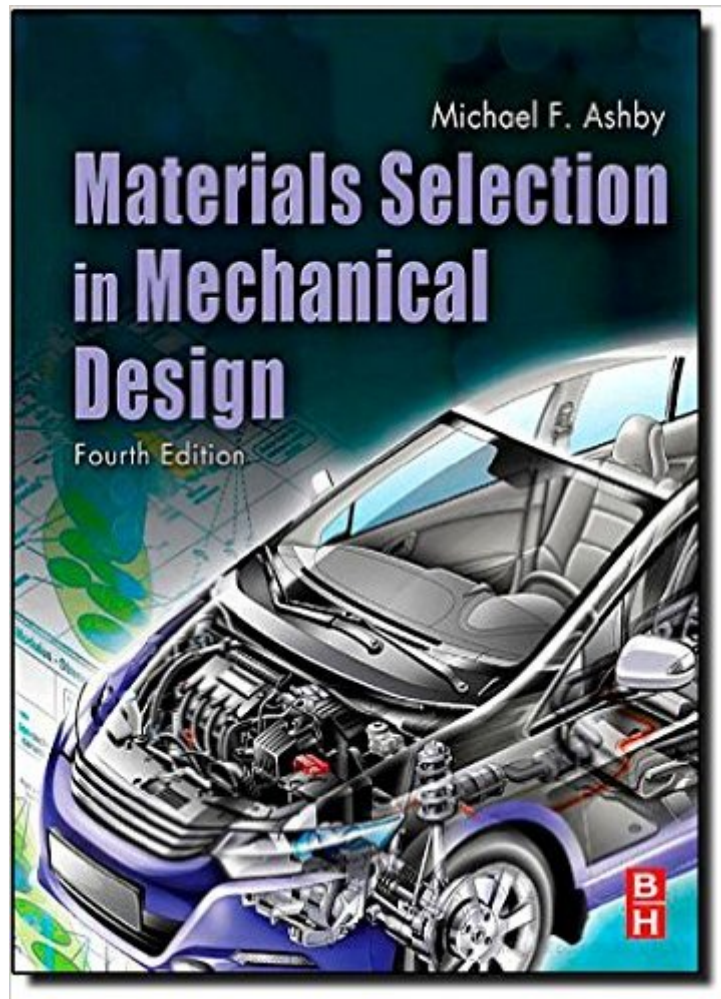


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# Materials Selection In Mechanical Design, Fourth Edition



## Synopsis

Understanding materials, their properties and behavior is fundamental to engineering design, and a key application of materials science. Written for all students of engineering, materials science and design, this book describes the procedures for material selection in mechanical design in order to ensure that the most suitable materials for a given application are identified from the full range of materials and section shapes available. Extensively revised for this fourth edition, *Materials Selection in Mechanical Design* is recognized as one of the leading materials selection texts, and provides a unique and genuinely innovative resource. Features new to this edition \* Material property charts now in full color throughout\* Significant revisions of chapters on engineering materials, processes and process selection, and selection of material and shape while retaining the book's hallmark structure and subject content\* Fully revised chapters on hybrid materials and materials and the environment\* Appendix on data and information for engineering materials fully updated\* Revised and expanded end-of-chapter exercises and additional worked examples

Materials are introduced through their properties; materials selection charts (also available on line) capture the important features of all materials, allowing rapid retrieval of information and application of selection techniques. Merit indices, combined with charts, allow optimization of the materials selection process. Sources of material property data are reviewed and approaches to their use are given. Material processing and its influence on the design are discussed. New chapters on environmental issues, industrial engineering and materials design are included, as are new worked examples, exercise materials and a separate, online Instructor's Manual. New case studies have been developed to further illustrate procedures and to add to the practical implementation of the text. \* The new edition of the leading materials selection text, now with full color material property charts\* Includes significant revisions of chapters on engineering materials, processes and process selection, and selection of material and shape while retaining the book's hallmark structure and subject content\* Fully revised chapters on hybrid materials and materials and the environment\* Appendix on data and information for engineering materials fully updated\* Revised and expanded end-of-chapter exercises and additional worked examples

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## Customer Reviews

This book would be useful for a two semester sequence, the first teaching materials selection, and the second teaching materials preparation. It is a nice improvement over the third edition with clearer introduction to the design process, color graphics for selection charts, and at least a passing note now given to selection for electrical design. This book still has mistakes in units and a certain level of sloppiness in formulations that have not been corrected since the second edition. Also, the presentation of methodologies that should be used to develop selection criteria (Chapter 4) lacks a pedagogical style that can make first-time studies difficult, especially for students who have little or no background in upper-level mechanical engineering coursework (ie, chemical engineers or materials scientists / engineers). The presentation of materials preparation in the second half of the book might benefit from a reference to fundamentals principles in materials preparation (the science of materials preparation to complement the engineering aspects). Finally, the beginning part of this book teaches how to use materials selection charts as a core part of its methodology. Only three methods exist for students to get access to these charts or equivalents. The first is to make copies from the textbook. The second is by having the instructor provide clean copies of the figures. The third is by having access to an additional software package. The first two methods essentially require students to draw selection lines by hand, and they limit students to only those charts in the textbook.

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