
BOOK REVIEW

Materials and Processes—Part A: Materials

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REFERENCE: James F. Young and Robert S. Shane, Eds., *Materials and Processes—Part A: Materials*, 3rd ed., Marcel Dekker, New York, ISBN: 0-8247-7197-4 (Part A), Hard Cover, \$145 (U.S. and Canada), \$147 (all other countries), sold only as a set, 855 pp. (Part A).

The editors/authors have greatly revised and expanded the new Third Edition of this classic 44-year-old text. The objective of the book/set is to familiarize product design engineers with the background necessary to work effectively with specialists in metallurgy, chemistry, and related sciences, and with specialists in the process fields. The book is not intended to make the designer a specialist in these applied fields; it is a starting reference with adequate text to explore and select material choices for specific design applications. The presentation does not emphasize theory, as in a textbook, nor does it primarily provide extensive data, as in a handbook. The intent, which is well served, is to present a broad overview of available information and to direct the reader to other, more detailed sources.

Part A: Materials contains 16 chapters and is written by a team of 34 experts. The excellent introductory chapter covers such topics as technology and society, cost, and reliability and is followed by chapters on structure of matter, mechanical properties and fracture mechanics, chemical properties and corrosion, magnetic materials, semiconductor materials, radiation effects, iron and steel, nonferrous metals and alloys, miscellaneous inorganic materials, plastics and elastomers, adhesives, electrical insulation, ceramics, advanced composite materials, and miscellaneous materials. The topics presented are balanced by current design practices. All chapters include an extensive list of references.

The book is intended for convenient reference and as a textbook. It is organized for classroom use (without problem sections) and will give the practicing engineer or designer many key details and a broad overview of materials engineering. The book is clearly written and contains useful tables and figures (taken from various scientific papers and reports) not found in college texts or handbooks.

This book is easy to use and is a complete basic text-reference guide for practicing design materials engineers. It has evolved nicely from earlier editions by keeping pace with newly developing materials and processes, and changing material resources and needs.