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Engineering Dimension: Technical Attributes

The Other Dimensions
Conclusions; Further Reading; Chapter 6: Form Follows Material; Materials and Architecture; Materials and Chairs; Identifying a Feature List; The Compressor: Design Language; Extreme Design; The Inverse Process: Product Archeology; Conclusions: What Influences Form?; Further Reading; Chapter 7: A Structure for Material Selection; Classification and Indexing; An Information Structure for Product Design; Material Selection for Product Design; Summary and Conclusions; Further Reading; Appendix: Selection by Analysis; Chapter 8: Case Studies in Materials and Design

The Structure
Office Furniture; CD Cases; Violin Bows; Ice Axes; Inline Skates; Conclusions; Chapter 9: New Materials - The Potential for Innovation; The Adoption of New Materials; Information about New Materials; Conclusions; Further Reading; Chapter 10: Conclusions; Appendices; Appendix: Exercises for the Eye and Mind; Appendix: Selected Material Maps; Chart 1 - Elastic Modulus, E , and Density, ρ ; Chart 2 - Strength, σ_f , and Density, ρ ; Chart 3 - Fracture Toughness, K_{IC} , and Elastic Modulus, E ; Chart 4 - Elastic Modulus, E , and Strength, σ_f

Chart 5 - Loss Coefficient, η , and Elastic Modulus, E ; Chart 6 - Thermal Expansion Coefficient, α , and Thermal Conductivity, λ ; A Practical Reference for Inspiration; Material Profiles; Material Evolution; Polymers; Polymer Composites; Metals; Ceramics; Glass; Further Reading; Polyethylene (PE); Polypropylene (PP); Polystyrene (PS); Acrylonitrile-butadiene-styrene (ABS); Polyamide (PA), Nylon; Polymethylmethacrylate (PMMA), Acrylic; Polycarbonate (PC); Polyoxymethylene (POM), Acetal; Polytetrafluoroethylene (PTFE); Ionomers; Celluloses (CA); Polyvinylchloride (PVC); Polyurethane (PU) Silicones

Sommario/riassunto

Materials are the stuff of design. From the very beginning of human history, materials have been taken from the natural world and shaped, modified, and adapted for everything from primitive tools to modern electronics. This renowned book by noted materials engineering author Mike Ashby and Industrial designer, Kara Johnson, explores the role of materials and materials processing in product design, with a particular emphasis on creating both desired aesthetics and functionality. The new edition will feature even more of the highly useful "materials profiles," that give critical design, proces
