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Structural Materials

Properties and Selection

- Specially conceived for graduate and undergraduate courses and for beginners in materials science
- Complemented with 117 exercises, problems and case-studies
- Presents the main structural materials and their utilization in different engineering applications

The book covers the most important materials (naturals, metals, ceramics, polymers and composites) to be used mainly as structural engineering materials. Their main applications based on the properties are described in the first chapters of the book: mechanical, physical and chemical. The second part of the book is dedicated to the conceptual design by properties for a certain structural application: stiffness, mechanical strength, toughness, fatigue resistance, creep, etc., taking into account the weight and the cost. One of the chapters of the second part of the book is focused on the heat treatments of steels in order to improve their resistance to fatigue. The book concludes with a critical comparison between materials considering their production, properties and cost, and the forecast about the utilization of the different fields of materials in structural applications.

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