

CHAPTER OVERVIEW

7: Metals and Alloys - Mechanical Properties

Learning Objectives

- Understand the structure of dislocations and grain boundaries and their role in controlling the mechanical properties of solids.
- Explain why the mechanical properties of bcc metals and alloys differ from those with close packed structures.
- Explain the effects of work hardening and annealing on structure and mechanical properties.
- Explain the mechanical properties of steel in terms of its phase behavior.
- Understand the structure and mechanical properties of amorphous metals.

How much do the mechanical properties of metals and alloys vary with processing? The answer is, a great deal.

[7.1: Defects in Metallic Crystals](#)

[7.2: Work Hardening, Alloying, and Annealing](#)

[7.3: Malleability of Metals and Alloys](#)

[7.4: Iron and Steel](#)

[7.5: Amorphous Alloys](#)

[7.6: Discussion Questions](#)

[7.7: Problems](#)

[7.8: References](#)

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