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Nota di contenuto	Intermetallics; Contents; List of Symbols and Abbreviations; 1 Introduction; 1.1 Definition of Intermetallics and Outline of This Report; 1.2 Historical Remarks; 2 General Considerations; 2.1 Bonding, Crystal Structure, and Phase Stability; 2.2 Bonding Strength and Basic Properties; 2.3 Criteria for Phase Selection; 3 Titanium Aluminides and Related Phases; 3.1 Ti ₃ Al; 3.1.1 Basic Properties and Phase Diagram; 3.1.2 Microstructure and Mechanical Behavior; 3.1.3 Environmental Effects; 3.1.4 Applications; 3.2 TiAl; 3.2.1 Basic Properties and Phase Diagram; 3.2.2 Microstructure and Mechanical Behavior; 3.2.3 Environmental Effects; 3.2.4 Applications; 3.3 Al ₃ Ti and Other D0 ₂₂ Phases; 3.3.1 Basic Properties and Phase Diagram; 3.3.2 Microstructure and Mechanical Behavior; 3.4 Trialuminides with the L1 ₂ Structure; 3.4.1 Basic Properties and Phase Diagrams; 3.4.2 Microstructure and Mechanical Behavior; 4 Nickel Aluminides and Related Phases; 4.1 Ni ₃ Al; 4.1.1 Basic Properties and Phase Diagram; 4.1.2 Microstructure and Mechanical Behavior; 4.1.3 Environmental Effects; 4.1.4 Applications; 4.2 Other L1 ₂ Phases; 4.2.1 General Remarks; 4.2.2 L1 ₂ Phases of Particular Interest; 4.3 NiAl; 4.3.1 Basic Properties;

4.3.2 Phase Diagram and Martensitic Transformation; 4.3.3 Microstructure and Mechanical Behavior; 4.3.4 Creep; 4.3.5 Environmental Effects; 4.3.6 Alloy Developments and Applications; 4.4 Other B2 Phases; 4.4.1 CoAl; 4.4.2 NiTi; 4.4.3 FeTi, CoTi, CoZr, and CoHf; 4.4.4 FeCo; 4.5 Heusler-Type Phases; 4.6 Nickel - Molybdenum Phases; 5 Iron Aluminides and Related Phases; 5.1 Fe₃Al; 5.2 Fe₃AlC_x and Related Phases; 5.3 FeAl; 6 Cu-Base Phases; 6.1 CuZn; 6.2 Cu-Zn-Al Shape Memory Alloys; 6.3 Cu-Al-Ni Shape Memory Alloys; 6.4 Cu-Au Phases; 6.5 Cu Amalgams; 7 A15 Phases; 7.1 Basic Properties; 7.2 V₃Si; 7.3 V₃Ga; 7.4 Nb₃Sn; 7.5 Nb₃Al; 7.6 Nb₃Si; 7.7 Cr₃Si; 8 Laves Phases; 8.1 Basic Properties; 8.2 Applications; 8.2.1 Superconducting Materials; 8.2.2 Magnetic Materials; 8.2.3 Hydrogen Storage Materials; 8.2.4 Structural Alloys; 9 Beryllides; 10 Rare-Earth Compounds; 10.1 Magnet Materials; 10.2 Hydrogen Storage Materials; 11 Silicides; 11.1 M₃Si Phases; 11.2 M₂Si Phases; 11.3 M₅Si₃ Phases; 11.4 MSi Phases; 11.5 Disilicides; 12 Prospects; Acknowledgements; References; Index

Sommario/riassunto

Derived from the highly acclaimed series Materials Science and Technology, this book covers the properties as well as the present and emerging applications of intermetallics. Mechanical characteristics, microstructure as well as the environmental influence on intermetallics are treated in depth. In addition, the prospects and risks inherent in materials development as well as typical applications of intermetallics are critically assessed. It is the author's aim to provide the basis for understanding the physical mechanisms, which influence the properties of the materials and ultimately
