Volume 1

Properties and Selection: Irons, Steels, and High Performance Alloys

1. **Cast Irons**
   - Classification and Basic Metallurgy of Cast Iron
   - Gray Iron
   - Ductile Iron
   - Compacted Graphite Iron
   - Malleable Iron
   - Alloy Cast Irons

2. **Carbon and Low-Alloy Steels**
   - Steel Processing Technology
   - Microstructures, Processing, and Properties of Steels
   - Classification and Designation of Carbon and Low-Alloy Steels
   - Physical Properties of Carbon and Low-Alloy Steels
   - Carbon and Low-Alloy Steel Sheet and Strip
   - Precoated Steel Sheet
   - Carbon and Low-Alloy Steel Plate
   - Hot-Rolled Steel Bars and Shapes
   - Cold-Finished Steel Bars
   - Steel Wire Rod
   - Steel Wire
   - Threaded Steel Fasteners
   - Steel Springs
   - Steel Tubular Products
   - Closed-Die Forgings
   - High-Strength Low-Alloy Steel Forgings
   - Steel Castings
   - Bearing Steels
   - High-Strength Structural and High-Strength Low-Alloy Steels
   - Dual-Phase Steels
   - Ultrahigh-Strength Steels

3. Harden ability of Carbon and Low-Alloy Steels
   - Harden able Carbon and Low-Alloy Steels
   - Harden ability of Carbon and Low-Alloy Steels
   - Harden ability Curves

4. Fabrication Characteristics of Carbon and Low-Alloy Steels

Sheet Formability of Steels
Bulk Formability of Steels
Machinability of Steels
Weld ability of Steels

5. Service Characteristics of Carbon and Low-Alloy

Elevated-Temperature Properties of Ferritic Steels
Effect of Neutron Irradiation on Properties of Steels
Low-Temperature Properties of Structural Steels
Fatigue Resistance of Steels
Embitterment of Steels
Notch Toughness of Steels

6. Specialty Steels and Heat-Resistant Alloys

Wrought Tool Steels
P/M Tool Steels
Maraging Steels
Ferrous Powder Metallurgy Materials
Austenitic Manganese Steels
Wrought Stainless Steels
Cast Stainless Steels
Elevated-Temperature Properties of Stainless Steels
Wrought and P/M Super alloys
Polycrystalline Cast Super alloys
Directionally Solidified and Single-Crystal Super alloys

7. Special Engineering Topics

Strategic Materials Availability and Supply
Recycling of Iron, Steel, and Super alloys