



Standard Specification for Castings, Iron-Nickel-Chromium and Nickel Alloys, Specially Controlled for Pressure Retaining Parts for Corrosive Service¹

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1. Scope

1.1 This specification covers iron-nickel-chromium and nickel alloy castings specially processed with restricted melt practices, weldability testing and nondestructive examination (NDE) requirements.

1.2 A number of grades of iron-nickel-chromium and nickel alloy castings are included in this specification. Since these grades possess varying degrees of suitability for service in corrosive environments, it is the responsibility of the purchaser to determine which grade shall be furnished. Selection will depend on design and service conditions, mechanical properties, and corrosion-resistant characteristics.

1.3 The values stated in either inch-pound units or SI units are to be regarded separately as the standard. Within the text, the SI units are shown in parentheses. The values stated in each system are not exact equivalents; therefore, each system must be used independently of the other. Combining values from the two systems may result in nonconformance with this specification.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

- A 351/A 351M Specification for Castings, Austenitic, Austenitic-Ferritic (Duplex), for Pressure-Containing Parts²
- A 370 Test Methods and Definitions for Mechanical Testing of Steel Products²
- A 488/A 488M Practice for Steel Castings, Welding, Qualification of Procedures and Personnel²

- A 494/A 494M Specification for Castings, Nickel and Nickel Alloy²
- A 703/A 703M Specification for Steel Castings, General Requirements, for Pressure-Containing Parts²
- A 743/A 743M Specification for Castings, Iron-Chromium, Iron-Chromium-Nickel, Corrosion Resistant, for General Application²
- A 744/A 744M Specification for Castings, Iron-Chromium-Nickel, Corrosion-Resistant, for Severe Service²
- A 802/A 802M Practice for Steel Castings, Surface Acceptance Standards, Visual Examination²
- A 903/A 903M Specification for Steel Castings, Surface Acceptance Standards, Magnetic Particle and Liquid Penetrant Inspection²
- A 919 Terminology Relating to Heat Treatment of Metals²
- E 94 Guide for Radiographic Testing³
- E 165 Test Method for Liquid Penetrant Examination³
- E 186 Reference Radiographs for Heavy-Walled (2 to 4½-in. (51 to 114-mm)) Steel Castings³
- E 272 Reference Radiographs for High-Strength Copper-Base and Nickel-Copper Alloy Castings³
- E 280 Reference Radiographs for Heavy-Walled (4½ to 12-in. (114 to 305-mm)) Steel Castings³
- E 446 Reference Radiographs for Steel Castings Up to 2 in. (51 mm) in Thickness³
- 2.2 AWS Standards:⁴
 - AWS A5.4, Specification for Stainless Steel Electrodes for Shielded Metal Arc Welding
 - AWS A5.9, Specification for Bare Stainless Steel Welding Electrodes and Rods
 - AWS A5.11, Specification for Nickel and Nickel Alloy Electrodes for Shielded Metal Arc Welding
 - AWS A5.14, Specification for Nickel and Nickel Alloy Bare Welding Electrodes and Rods
- 2.3 ASME/ANSI Standard:⁵

¹ This specification is under the jurisdiction of ASTM Committee A01 on Steel, Stainless Steel, and Related Alloys and is the direct responsibility of Subcommittee A01.18 on Castings.

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² Annual Book of ASTM Standards, Vol 01.02.

³ Annual Book of ASTM Standards, Vol 03.03.

⁴ Available from the American Welding Society, 2501 NW, 7th Street, Miami, FL 33125.

⁵ Available from the American Society of Mechanical Engineers, United Engineering Center, 345 East 47th Street, New York, NY 10017.