



Standard Specification for Steel Castings, Stainless, Precipitation Hardening¹

This standard is issued under the fixed designation A 747/A747M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification covers iron-chromium-nickel-copper corrosion-resistant steel castings, capable of being strengthened by precipitation hardening heat treatment.

1.2 These castings may be used in services requiring corrosion resistance and high strengths at temperatures up to 600°F [315°C]. They may be machined in the solution-annealed condition and subsequently precipitation hardened to the desired high-strength mechanical properties specified in Table S14.1 with little danger of cracking or distortion.

1.3 The material is not intended for use in the solution-annealed condition.

NOTE 1—If the service environment in which the material is to be used is considered conducive to stress-corrosion cracking, precipitation hardening should be performed at a temperature that will minimize the susceptibility of the material to this type of attack.

1.4 The values stated in either inch-pound units or SI units are to be regarded separately as standard. Within the text, the SI units are shown in brackets. 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 the specification.

2. Referenced Documents

2.1 ASTM Standards:

A 370 Test Methods and Definitions for Mechanical Testing of Steel Products²

A 732/A732M Specification for Castings, Investment, Carbon and Low Alloy Steel for General Application, and Cobalt Alloy for High Strength at Elevated Temperatures³

A 781/A781M Specification for Castings, Steel and Alloy, Common Requirements, for General Industrial Use³

E 38 Methods for Chemical Analysis of Nickel-Chromium and Nickel-Chromium-Iron Alloys⁴

E 353 Test Methods for Chemical Analysis of Stainless, Heat-Resisting, Maraging, and Other Similar Chromium-Nickel-Iron Alloys⁴

2.2 ASME Standard:

ASME Boiler and Pressure Vessel Code, Supplementary Requirements S6, S14, and S27⁵

3. General Conditions for Delivery

3.1 Material furnished to this specification shall conform to the requirements of Specification A 781/A 781M, including any supplementary requirements that are indicated in the purchase order. Failure to comply with the general requirements of Specification A 781/A 781M constitutes nonconformance with this specification. In case of conflict between the requirements of this specification and Specification A 781/A 781M, this specification shall prevail.

4. Ordering Information

4.1 Orders for material to this specification should include the following:

4.1.1 Specification number and grade (Table 1),

4.1.2 Heat treatment condition (SA, H900, etc.), Table 2,

4.1.3 Drawing or pattern,

4.1.4 Options in the specification, if any, in accordance with 5.2, 6.3, and Section 7, and

4.1.5 Supplementary requirements, if any, including the standards of acceptance.

4.1.6 Notice when the castings are to be used in equipment covered by the ASME Boiler and Pressure Vessel Code, Supplementary Requirements S6, S14, and S27 are mandatory and must be specified in the purchase order.

5. Materials and Manufacture

5.1 The steel shall be made by the electric furnace process with or without separate refining such as argon-oxygen decarburization (AOD).

5.2 *Heat Treatment*—Castings may be given a homogenization heat treatment in accordance with 5.2.1 at the producer's option or when specified by the purchaser (see S26) prior to solution heat treatment. All castings, whether homogenized or

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² *Annual Book of ASTM Standards*, Vol 01.03.

³ *Annual Book of ASTM Standards*, Vol 01.02.

⁴ *Annual Book of ASTM Standards*, Vol 03.05.

⁵ Available from American Society of Mechanical Engineers, 345 E. 47th St., New York, NY 10017.