
Standard Specification for Castings, Iron-Chromium-Nickel, Corrosion Resistant, for Severe Service

AASHTO Designation: M 285M/M 285-23

Technically Revised: 2023

Technical Subcommittee: 4f, Metals

ASTM Designation: A744/A744M-21a



American Association of State Highway and Transportation Officials
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1. SCOPE

- 1.1. This specification covers iron-chromium-nickel alloy, stainless steel castings intended for particularly severe corrosive applications.
- 1.2. This specification requires post-weld heat treatment of all weld repairs affecting surfaces intended to be wetted by the corrosive medium. For applications for which post-weld heat treatment is not considered mandatory for retention of acceptable corrosion resistance, refer to M 163M/M 163.
- Note 1**—For general corrosion-resistant alloy castings, reference should be made to M 163M/M 163. For general heat-resistant alloy castings, reference should be made to ASTM A297/A297M. For nickel-base alloy castings, refer to ASTM A494/A494M.
- 1.3. The values stated in either SI units or inch-pound units are to be regarded separately as standard. Within the text, the inch-pound units are shown in brackets. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in nonconformance with the standard. SI units are applicable for material ordered to M 285M and inch-pound units for material ordered to M 285.

2. REFERENCED DOCUMENTS

- 2.1. *AASHTO Standards:*
- < M 163M/M 163, Castings, Iron-Chromium, Iron-Chromium-Nickel, Corrosion Resistant, for General Application
- 2.2. *ASTM Standards:*
- < A262, Standard Practices for Detecting Susceptibility to Intergranular Attack in Austenitic Stainless Steels
 - < A297/A297M, Standard Specification for Steel Castings, Iron-Chromium and Iron-Chromium-Nickel, Heat Resistant, for General Application
 - < A494/A494M, Standard Specification for Castings, Nickel and Nickel Alloy
 - < A781/A781M, Standard Specification for Castings, Steel and Alloy, Common Requirements, for General Industrial Use
 - < A957/A957M, Standard Specification for Investment Castings, Steel and Alloy, Common Requirements, for General Industrial Use

- 2.3. *American Welding Society Standards:*
- < AWS A5.11, Specification for Nickel and Nickel-Alloy Welding Electrodes for Shielded Metal Arc Welding¹
 - < AWS A5.14, Specification for Nickel and Nickel-Alloy Bare Welding Electrodes and Rods¹

3. TERMINOLOGY

- 3.1. *Definition of Term Specific to This Standard:*
- 3.1.1. *wetted surface, n*—one that contacts a corrosive environment.

4. GENERAL CONDITIONS FOR DELIVERY

- 4.1. Except for investment castings, castings furnished to this specification shall conform to the requirements of ASTM A781/A781M, including any supplementary requirements that are indicated on the purchase order. Failure to comply with the general requirements of ASTM A781/A781M constitutes nonconformance with this specification. In case of conflict between the requirements of this specification and ASTM A781/A781M, this specification shall prevail.
- 4.2. Steel investment castings furnished to this specification shall conform to the requirements of ASTM A957/A957M, including any supplementary requirements that are indicated in the purchase order. Failure to comply with the general requirements of ASTM A957/A957M constitutes nonconformance with this specification. In case of conflict between the requirements of this specification and ASTM A957/A957M, this specification shall prevail.

5. ORDERING INFORMATION

- 5.1. *Orders for material to this specification should include the following, as required, to describe the material adequately:*
- 5.1.1. Description of the casting by pattern number or drawing (dimensional tolerances shall be included on the casting drawing),
- 5.1.2. Grade,
- 5.1.3. Heat treatment,
- 5.1.4. Identify wetted surface(s),
- 5.1.5. Options in the specification,
- 5.1.6. Whether castings are to be produced using the investment casting process, and
- 5.1.7. Supplementary requirements desired, including the standards of acceptance.

6. PROCESS

- 6.1. Alloys shall be melted by the electric furnace process with or without separate refining, such as argon-oxygen-decarburization (AOD).