

A511/A511M Specification for Seamless Stainless Steel Mechanical Tubing and Hollow Bar
 A739 Specification for Steel Bars, Alloy, Hot-Wrought, for Elevated Temperature or Pressure-Containing Parts, or Both
 A763 Practices for Detecting Susceptibility to Intergranular Attack in Ferritic Stainless Steels
 A788/A788M Specification for Steel Forgings, General Requirements
 A923 Test Methods for Detecting Detrimental Intermetallic Phase in Duplex Austenitic/Ferritic Stainless Steels
 A961/A961M Specification for Common Requirements for Steel Flanges, Forged Fittings, Valves, and Parts for Piping Applications
 A965/A965M Specification for Steel Forgings, Austenitic, for Pressure and High Temperature Parts
 A1049/A1049M Specification for Stainless Steel Forgings, Ferritic/Austenitic (Duplex), for Pressure Vessels and Related Components
 A1084 Test Method for Detecting Detrimental Phases in Lean Duplex Austenitic/Ferritic Stainless Steels
 E92 Test Methods for Vickers Hardness and Knoop Hardness of Metallic Materials
 E112 Test Methods for Determining Average Grain Size
 E165/E165M Practice for Liquid Penetrant Testing for General Industry
 E340 Practice for Macroetching Metals and Alloys
 2.3 *ASME Standards:*
 B16.11 Forged Steel Fittings, Socket Welding, and Threaded
 2.4 *ASME Boiler and Pressure Vessel Code:*
 Section IX
 2.5 *AWS Specifications*
 A5.4/A5.4M Specification for Stainless Steel Electrodes for Shielded Metal Arc Welding
 A5.5/A5.5M Specification for Low-Alloy Steel Electrodes for Shielded Metal Arc Welding
 A5.9/A5.9M Specification for Bare Stainless Steel Welding Electrodes and Rods
 A5.11/A5.11M Specification for Nickel and Nickel-Alloy Welding Electrodes for Shielded Metal Arc Welding
 A5.14/A5.14M Specification for Nickel and Nickel-Alloy Bare Welding Electrodes and Rods
 A5.23/A5.23M Specification for Low-Alloy Steel Electrodes and Fluxes for Submerged Arc Welding
 A5.28/A5.28M Specification for Low-Alloy Steel Electrodes for Gas Shielded Arc Welding
 A5.29/A5.29M Low-Alloy Steel Electrodes for Flux Cored Arc Welding

3. Terminology

3.1 *Definitions*—For definitions of terms used in this specification, refer to Specification A961/A961M.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *hardened condition, n*—for F 23, the metallurgical condition achieved after normalizing and cooling to room temperature but prior to tempering.

4. Ordering Information

4.1 It is the purchaser's responsibility to specify in the purchase order information necessary to purchase the needed material. In addition to the ordering information guidelines in Specification A961/A961M, orders should include the following information:

4.1.1 Additional requirements (see 7.2.1, Table 2 footnotes, 9.3, and 19.2), and

4.1.2 Requirement, if any, that manufacturer shall submit drawings for approval showing the shape of the rough forging before machining and the exact location of test specimen material (see 9.3.1).

5. General Requirements

5.1 Product furnished to this specification shall conform to the requirements of Specification A961/A961M, including any supplementary requirements that are indicated in the purchase order. Failure to comply with the general requirements of Specification A961/A961M constitutes nonconformance with this specification. In case of conflict between the requirements of this specification and Specification A961/A961M, this specification shall prevail.


6. Manufacture

6.1 The low-alloy ferritic steels shall be made by the open-hearth, electric-furnace, or basic-oxygen process with the option of separate degassing and refining processes in each case.

6.2 The stainless steels shall be melted by one of the following processes: (a) electric-furnace (with the option of separate degassing and refining processes); (b) vacuum-furnace; or (c) one of the former followed by vacuum or electroslag-consumable remelting. Grade F XM-27Cb may be produced by electron-beam melting.

6.3 A sufficient discard shall be made to secure freedom from injurious piping and undue segregation.

6.4 Except as permitted in 6.4.2 and 6.4.3, the material shall be forged as close as practicable to the specified shape and size.

6.4.1 Parts whose longitudinal axis is not parallel to the longitudinal axis of the bar (such as elbows, return bends, tees, and header tees), and flanges of any type shall be machined directly from ~~the~~ bar. 

6.4.2 Parts may be machined from hollow bar or forged or rolled solution-annealed austenitic stainless steel bar without additional hot working, provided the longitudinal axis of the part is parallel to the longitudinal axis of the bar.

6.4.3 Low alloy, martensitic stainless, ferritic stainless, and ferritic-austenitic stainless steel parts, NPS 4 [DN 100] and under, may be machined from hollow bar or forged or rolled bar, without additional hot working, provided the longitudinal axis of the part is parallel to the longitudinal axis of the bar.

6.5 Except as provided for in 6.4, the finished product shall be a forging as defined in the Terminology section of Specification A788/A788M.