Designation: A961/A961M – 25a

Standard Specification for Common Requirements for Steel Flanges, Forged Fittings, Valves, and Parts for Piping Applications[1]

This standard is issued under the fixed designation A961/A961M; 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 a group of common requirements that shall apply to steel flanges, forged fittings, valves, and parts for piping applications under any of the following individual product specifications:

Title of Specification	ASTM Designation
Forgings, Carbon Steel, for Piping Components	A105/A105M
Forgings, Carbon Steel, for General-Purpose Piping	A181/A181M
Forged or Rolled Alloy-Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High Temperature Service	A182/A182M
Forgings, Carbon and Low Alloy Steel, Requiring Notch Toughness Testing for Piping Components	A350/A350M
Forged or Rolled 8 and 9 % Nickel Alloy Steel Flanges, Fittings, Valves, and Parts for Low-Temperature Service	A522/A522M
Forgings, Carbon and Alloy Steel, for Pipe Flanges, Fittings, Valves, and Parts for High-Pressure Transmission Service	A694/A694M
Flanges, Forged, Carbon and Alloy Steel for Low Temperature Service	A707/A707M
Forgings, Carbon Steel, for Piping Components with Inherent Notch Toughness	A727/A727M
Forgings, Titanium-Stabilized Carbon Steel, for Glass-Lined Piping and Pressure Vessel Service	A836/A836M

1.2 In case of conflict between a requirement of the individual product specification and a requirement of this general requirement specification, the requirements of the individual product specification shall prevail over those of this specification.

1.3 By mutual agreement between the purchaser and the supplier, additional requirements may be specified (see Section 4.1.2). The acceptance of any such additional requirements shall be dependent on negotiations with the supplier and must be included in the order as agreed upon between the purchaser and supplier.

1.4 The values stated in either SI units or inch-pound units are to be regarded separately as standard. Within the text and the tables, the SI 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 non-conformance with the standard. The inch-pound units shall apply, unless the "M" designation (SI) of the product specification is specified in the order.

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

A105/A105M Specification for Carbon Steel Forgings for Piping Applications

A181/A181M Specification for Carbon Steel Forgings, for General-Purpose Piping

A182/A182M Specification for Forged or Rolled Alloy and Stainless Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service

A275/A275M Practice for Magnetic Particle Examination of Steel Forgings

A350/A350M Specification for Carbon and Low-Alloy Steel Forgings, Requiring Notch Toughness Testing for Piping Components

A370 Test Methods and Definitions for Mechanical Testing of Steel Products

A522/A522M Specification for Forged or Rolled 8 and 9% Nickel Alloy Steel Flanges, Fittings, Valves, and Parts for Low-Temperature Service

A694/A694M Specification for Carbon and Alloy Steel Forgings for Pipe Flanges, Fittings, Valves, and Parts for High-Pressure Transmission Service

A700 Guide for Packaging, Marking, and Loading Methods

[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 A01.22 on Steel Forgings and Wrought Fittings for Piping Applications and Bolting Materials for Piping and Special Purpose Applications.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at www.astm.org/contact. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

***A Summary of Changes section appears at the end of this standard**

for Steel Products for Shipment
A707/A707M Specification for Forged Carbon and Alloy Steel Flanges for Low-Temperature Service
A727/A727M Specification for Carbon Steel Forgings for Piping Components with Inherent Notch Toughness (Withdrawn 2024)[3]
A751 Test Methods and Practices for Chemical Analysis of Steel Products
A836/A836M Specification for Titanium-Stabilized Carbon Steel Forgings for Glass-Lined Piping and Pressure Vessel Service
A941 Terminology Relating to Steel, Stainless Steel, Related Alloys, and Ferroalloys
A967/A967M Specification for Chemical Passivation Treatments for Stainless Steel Parts
A991/A991M Test Method for Conducting Temperature Uniformity Surveys of Furnaces Used to Heat Treat Steel Products
A1058 Test Methods for Mechanical Testing of Steel Products—Metric
B880 Specification for General Requirements for Chemical Check Analysis Limits for Nickel, Nickel Alloys and Cobalt Alloys
E165/E165M Practice for Liquid Penetrant Testing for General Industry
E381 Method of Macroetch Testing Steel Bars, Billets, Blooms, and Forgings
E709 Guide for Magnetic Particle Testing
E1916 Guide for Identification of Mixed Lots of Metals

2.2 *ASME Standard:*[4]

ASME Boiler and Pressure Vessel Code–Section IX

2.3 *Manufacturer's Standardization Society Standard:*[5]

SP 25 Standard Marking System of Valves, Fittings, Flanges and Unions

2.4 *Other Standards:*

SAE AMS2750 Pyrometry[6]

3. Terminology

3.1 *Definitions*—For definitions of other terms used in this specification, refer to Terminology A941.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *bar, n*—a solid rolled or forged section that is long in relationship to its cross sectional dimensions, with a relatively constant cross section throughout its length and a wrought microstructure.

3.2.2 *certifying organization, n*—the company or association responsible for the conformance of, the marking of, and the certification of the product to the specification requirements.

3.2.3 *fitting, n*—a component for non-bolted joints in piping systems.

3.2.4 *flange, n*—a component for bolted joints used in piping systems.

3.2.5 *forging, n*—the product of a substantially compressive hot or cold plastic working operation that consolidates the material and produces the required shape.

3.2.5.1 *Discussion*—The plastic working must be performed by a forging machine, such as a hammer, press, or ring rolling machine, and must deform the material to produce a wrought structure throughout the material cross section.

3.2.6 *longitudinal axis, n*—an axis along the lengthwise direction of the part, bar, pipe or tubing parallel to the direction of the greatest extension of the steel during rolling, extruding or forging.

3.2.7 *seamless tubing, n*—a tubular product made without a welded seam.

3.2.7.1 *Discussion*—It is manufactured usually by hot working the material, and if necessary, by subsequently cold finishing the hot worked tubular product to produce the desired shape, dimensions and properties.

4. Ordering Information

4.1 It is the purchaser's responsibility to specify in the purchase order all ordering information necessary to purchase the needed material. Examples of such information include, but are not limited to, the following:

4.1.1 Quantity,

4.1.2 Size and pressure class or dimensions, (tolerances and surface finishes should be included),

4.1.3 Specification number with grade or class, or both, as applicable, and year/date,

4.1.4 Choice of testing track from the options listed in Test Methods A1058 when material is ordered to an M suffix (SI units) product standard. If the choice of test track is not specified in the order, then the default ASTM track shall be used as noted in Test Methods A1058,

4.1.5 Supplementary requirements, and

4.1.6 Additional requirements.

5. Melting Process

5.1 Unless otherwise specified in the individual Product Specification, the steel shall be fully killed.

5.2 If a specific type of melting is required by the purchaser, it shall be stated on the purchase order.

5.3 The primary melting may incorporate separate degassing or refining and may be followed by secondary melting, such as electroslag remelting or vacuum remelting. If secondary melting is employed, the heat shall be defined as all of the ingot remelted from a single primary heat.

5.4 Steel may be cast in ingots or may be strand cast. When steel of different grades is sequentially strand cast, identification of the resultant transition material is required. The steel manufacturer shall remove the transition material by an established procedure that positively separates the grades.

[3] The last approved version of this historical standard is referenced on www.astm.org.

[4] Available from American Society of Mechanical Engineers (ASME), ASME International Headquarters, Two Park Ave., New York, NY 10016-5990, http://www.asme.org.

[5] Available from Manufacturers Standardization Society of the Valve and Fittings Industry (MSS), 127 Park St., NE, Vienna, VA 22180-4602, http://www.mss-hq.com.

[6] Available from SAE International (SAE), 400 Commonwealth Dr., Warrendale, PA 15096, http://www.sae.org.