



Designation: **A484/A484M – 24**

Standard Specification for General Requirements for Stainless Steel Bars, Billets, Shapes, and Forgings¹

This standard is issued under the fixed designation A484/A484M; 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.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope*

1.1 This specification² covers general requirements that shall apply to wrought stainless steel bars, shapes, forgings, and billets or other semi-finished material (except wire) for forging, under each of the following specifications issued by ASTM: Specifications **A276/A276M**, **A314**, **A458**, **A477**, **A479/A479M**, **A564/A564M**, **A565/A565M**, **A582/A582M**, **A638/A638M**, **A705/A705M**, and **A831/A831M**.

1.2 In the case of conflict between a requirement of a product specification and a requirement of this specification, the product specification shall prevail. In the case of conflict between a requirement of the product specification or a requirement of this specification and a more stringent requirement of the purchase order, the purchase order shall prevail. The purchase order requirements shall not take precedence if they, in any way, violate the requirements of the product specification or this specification; for example, by waiving a test requirement or by making a test requirement less stringent.

1.3 The requirements for introduction of new materials in specifications referencing this specification are given in **Annex A1**.

1.4 General requirements for flat-rolled stainless steel products other than bar are covered in Specification **A480/A480M**.

1.5 General requirements for wire products in coils are covered in Specification **A555/A555M**.

1.6 This specification is expressed in both inch-pound units and in SI units; however, unless the purchase order or contract specifies the applicable M specification designation (SI units), the inch-pound units shall apply. 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.

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 **A01.17** on Flat-Rolled and Wrought Stainless Steel.

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² For ASME Boiler and Pressure Vessel Code Applications, see related Specification SA-484/SA-484M in Section II of that code.

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.

1.7 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:³

A6/A6M Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling

A262 Practices for Detecting Susceptibility to Intergranular Attack in Austenitic Stainless Steels

A276/A276M Specification for Stainless Steel Bars and Shapes

A314 Specification for Stainless Steel Billets and Bars for Forging

A370 Test Methods and Definitions for Mechanical Testing of Steel Products

A458 Specification for Hot-Worked, Hot-Cold-Worked, and Cold-Worked Alloy Steel Bars for High Strength at Elevated Temperatures (Withdrawn 1988)⁴

A477 Specification for Hot-Worked, Hot-Cold Worked and Cold-Worked Alloy Steel Forgings and Forging Billets for High Strength at Elevated Temperatures (Withdrawn 1988)⁴

A479/A479M Specification for Stainless Steel Bars and Shapes for Use in Boilers and Other Pressure Vessels

A480/A480M Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip

³ For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

⁴ The last approved version of this historical standard is referenced on www.astm.org.

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



- A555/A555M Specification for General Requirements for Stainless Steel Wire and Wire Rods
- A564/A564M Specification for Hot-Rolled and Cold-Finished Age-Hardening Stainless Steel Bars and Shapes
- A565/A565M Specification for Martensitic Stainless Steel Bars for High-Temperature Service
- A582/A582M Specification for Free-Machining Stainless Steel Bars
- A638/A638M Specification for Precipitation Hardening Iron Base Superalloy Bars, Forgings, and Forging Stock for High-Temperature Service
- A700 Guide for Packaging, Marking, and Loading Methods for Steel Products for Shipment
- A705/A705M Specification for Age-Hardening Stainless Steel Forgings
- A751 Test Methods and Practices for Chemical Analysis of Steel Products
- A831/A831M Specification for Austenitic and Martensitic Stainless Steel Bars, Billets, and Forgings for Liquid Metal Cooled Reactor Core Components (Withdrawn 2005)⁴
- A941 Terminology Relating to Steel, Stainless Steel, Related Alloys, and Ferroalloys
- A1069/A1069M Specification for Stainless Steel Laser and Laser Hybrid Welded Bars, Plates, Sharp-Cornered Profile (SCP), and Built-up Shapes
- E112 Test Methods for Determining Average Grain Size
- E139 Test Methods for Conducting Creep, Creep-Rupture, and Stress-Rupture Tests of Metallic Materials
- 2.2 *ANSI/AISC Standards:*⁵
- ANSI/AISC 370 Specification for Structural Stainless Steel Buildings
- 2.3 *AWS Standards:*⁶
- AWS D1.6/D1.6M Structural Welding Code – Stainless Steel
- 2.4 *Federal Standards:*⁷
- Fed Std. No. 123 Marking for Shipment (Civil Agencies)
- Fed Std. No. 183 Continuous Marking of Iron and Steel Products
- 2.5 *Other Standard:*⁸
- Primary Metals Bar Code Standard

3. Terminology

3.1 Definitions:

3.1.1 For definitions of terms pertaining to this standard, not otherwise listed in 3.2, reference should be made to Specification A6/A6M for shapes and Terminology A941.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *bars, n*—straight lengths that are produced by processing that includes hot deformation, such as rolling, forging, or

extrusion; the permitted cross-sections include round, rectangular, and complex shapes; shall include shapes with all dimensions under 8 in. [200 mm]; shall include hot-rolled flats with width of 10 in. [250 mm] or less, and with thickness 0.125 in. [3.00 mm] or greater; shall include flats with width of 10 in. [250 mm] or less, and with thickness 0.125 in. [3.00 mm] or greater, cut from strip or plate provided that the long direction of the cut bar is parallel to the final rolling direction of the strip or plate.

3.2.1.1 *Discussion*—All cold-reduced flat material with thickness less than 0.1875 in. [5.00 mm] and width 0.375 in. [9.50 mm] and over is classified as strip.

3.2.2 *billets, n*—semi-finished products, typically produced by rolling, forging, or continuous casting, that require subsequent hot working by rolling, forging, or extrusion; typically have a cross-section area of 36 in.² [230 cm²] or less and shape that is square or rectangular with width less than twice the thickness; rectangular cross sections with width equal to or greater than twice the thickness are classified as slabs or sheet bars.

3.2.3 *blooms, n*—semi-finished products, typically produced by rolling or continuous casting, that require subsequent hot working by rolling or forging; typically have a cross section area of greater than 36 in.² [230 cm²] and shape that is square or rectangular with width less than twice the thickness; rectangular cross sections with width equal to or greater than twice the thickness are classified as slabs or sheet bars.

3.2.4 *condition, n*—identification of the final step or steps thermomechanical processing as required to describe the metallurgical state of the material as delivered (examples include hot-worked; hot-worked and annealed; hot-worked, annealed, and cold-worked for increased mechanical properties; and hot-worked, quenched, and tempered).

3.2.5 *dead lengths or exact lengths, n*—bars, typically hot-sheared, hot-sawed, or machine-cut after machine-straightening, meeting the permitted variations in length as listed in the tolerance tables of this specification.

3.2.6 *finish, n*—description of the surface finish and applicable dimensional tolerances of the product as delivered, most typically by identification of the process applied to the product, and identification of the applicable category of product dimensional tolerances; examples of finishing operations include blasting, pickling, rough turning, machine straightening, centerless grinding, polishing, and light cold drawing for surface finish but not for increased mechanical properties; see also 8.1.1 for *hot-finished* bars and 8.1.3 for *cold-finished* bars.

3.2.7 *forgings, n*—parts, including bars, billets, semi-finished products, or complex shapes, produced by hot mechanical working using hammers, presses, or forging machines.

3.2.8 *multiple lengths, n*—lengths that are specified as containing a predetermined number of units of length associated with production of a particular part, commonly including an allowance of ¼ in. [6.5 mm] per unit for cutting to insure obtaining the required number of pieces.

⁵ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

⁶ Available from American Welding Society (AWS), 8669 NW 36 St., #130, Miami, FL 33166-6672, <http://www.aws.org>.

⁷ Available from Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094 or from <http://assist.daps.dla.mil>.

⁸ Available from Automotive Industry Action Group (AIAG), 4400 Town Center, Southfield, MI 48075-1104, <http://www.aiag.org>.