



Designation: A480/A480M – 23b

## Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip<sup>1</sup>

This standard is issued under the fixed designation A480/A480M; 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 reappraisal. A superscript epsilon (ε) indicates an editorial change since the last revision or reappraisal.

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

### 1. Scope\*

1.1 This specification<sup>2</sup> covers a group of general requirements that, unless otherwise specified in the purchase order or in an individual specification, shall apply to rolled steel plate, sheet, and strip, under each of the following specifications issued by ASTM: Specifications [A240/A240M](#), [A263](#), [A264](#), [A265](#), [A666](#), [A693](#), [A793](#), and [A895](#).

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 values stated in either SI units or inch-pound units are to be regarded separately as standard. The SI units are shown in brackets, except that when A480M is specified, [Annex A3](#) shall apply for the dimensional tolerances and not the bracketed SI values in [Annex A2](#). The values stated in each system are not necessarily exact equivalents; therefore, to ensure conformance with the standard, each system shall be used independently of the other, and values from the two systems shall not be combined.

1.4 This specification and the applicable material specifications are expressed in both inch-pound and SI units. However, unless the order specifies the applicable “M” specification designation [SI units], the material shall be furnished in inch-pound units.

<sup>1</sup> 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.

Current edition approved Nov. 1, 2023. Published November 2023. Originally approved in 1962. Last previous edition approved in 2023 as A480/A480M – 23a. DOI: 10.1520/A0480\_A0480M-23B.

<sup>2</sup> For ASME Boiler and Pressure Vessel Code applications see related Specification SA-480 in Section II of that Code.

*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:<sup>3</sup>

[A240/A240M](#) Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications

[A262](#) Practices for Detecting Susceptibility to Intergranular Attack in Austenitic Stainless Steels

[A263](#) Specification for Stainless Chromium Steel-Clad Plate

[A264](#) Specification for Stainless Chromium-Nickel Steel-Clad Plate

[A265](#) Specification for Nickel and Nickel-Base Alloy-Clad Steel Plate

[A342/A342M](#) Test Methods for Permeability of Weakly Magnetic Materials

[A370](#) Test Methods and Definitions for Mechanical Testing of Steel Products

[A666](#) Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar

[A693](#) Specification for Precipitation-Hardening Stainless and Heat-Resisting Steel Plate, Sheet, and Strip

[A700](#) Guide for Packaging, Marking, and Loading Methods for Steel Products for Shipment

[A751](#) Test Methods and Practices for Chemical Analysis of Steel Products

[A763](#) Practices for Detecting Susceptibility to Intergranular Attack in Ferritic Stainless Steels

[A793](#) Specification for Rolled Floor Plate, Stainless Steel (Withdrawn 2023)<sup>4</sup>

<sup>3</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

<sup>4</sup> The last approved version of this historical standard is referenced on [www.astm.org](http://www.astm.org).

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



**A895** Specification for Free-Machining Stainless Steel Plate, Sheet, and Strip

**A923** Test Methods for Detecting Detrimental Intermetallic Phase in Duplex Austenitic/Ferritic Stainless Steels

**A941** Terminology Relating to Steel, Stainless Steel, Related Alloys, and Ferroalloys

**A1084** Test Method for Detecting Detrimental Phases in Lean Duplex Austenitic/Ferritic Stainless Steels

**E140** Hardness Conversion Tables for Metals Relationship Among Brinell Hardness, Vickers Hardness, Rockwell Hardness, Superficial Hardness, Knoop Hardness, Scleroscope Hardness, and Leeb Hardness

2.2 *AIAG Standard*:<sup>5</sup>

**B-5** Primary Metals Identification Tag Application Standard

2.3 *ASME Document*:<sup>6</sup>

**ASME BPVC.IX** Boiler and Pressure Vessel Code, Section IX: Welding, Brazing, and Fusing Qualifications

2.4 *Federal Standard*:<sup>7</sup>

**Fed. Std. No. 123** Marking for Shipment (Civil Agencies)

### 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 Terminology **A941**.

#### 3.2 Definitions of Terms Specific to This Standard:

3.2.1 *cold work, n*—the changing of mechanical properties by work hardening.

3.2.2 *plate, n*—material  $\frac{3}{16}$  in. [5.00 mm] and over in thickness and over 10 in. [250 mm] in width; finishes for *plate* are shown in Section 13.

3.2.3 *sheet, n*—material under  $\frac{3}{16}$  in. [5.00 mm] in thickness and 24 in. [600 mm] and over in width; finishes for *sheet* are shown in Section 11.

3.2.4 *strip, n*—cold-rolled material under  $\frac{3}{16}$  in. [5.00 mm] in thickness and under 24 in. [600 mm] in width; finishes are detailed in Section 12 for *strip*, and strip edges in Section 14 for cold-rolled strip.

### 4. Ordering Information

4.1 It is the responsibility of the purchaser to specify all requirements that are necessary for material ordered under this specification. Such requirements may include, but are not limited to, the following:

4.1.1 Quantity (weight and number of pieces),

4.1.2 Name of material (stainless steel),

4.1.3 Condition (hot-rolled, cold-rolled, annealed, heat-treated),

4.1.4 Finish (see Section 11 for sheet, Section 12 for strip, and Section 13 for plates); in the case of polished finishes, specify whether one or both sides are to be polished,

4.1.5 Temper (if the applicable material specification requires this detail),

4.1.6 Form (plate, sheet, or strip),

4.1.7 Dimensions (thickness, width, and length),

4.1.7.1 Thickness shall be ordered to decimal or fractional thickness. The use of the gauge number is discouraged as being an archaic term of limited usefulness not having general agreement on meaning. The gauge number shall not be a basis for rejection.

4.1.7.2 Thickness, width, and length, when applicable, should be ordered in the same units, for example, 0.060 in. by 48 in. by 120 in. [1.52 mm by 1219 mm by 3048 mm].

4.1.8 Edge, strip only (see Section 14 for cold-rolled strip),

4.1.9 Type or UNS designation, refer to the applicable material specification,

4.1.10 Specification designation and date of issue,

4.1.11 Additions to specification or special requirements,

4.1.12 Restrictions (if desired) on methods for determining yield strength (see appropriate footnote to mechanical properties table of the basic material specification),

4.1.13 Marking requirements (see Section 25),

4.1.14 Preparation for delivery (see Section 25), and

4.1.15 Magnetic permeability test (when required). Refer to Section 19.

### 5. Process

5.1 The steel shall be manufactured/produced by the following or as specified in the applicable material specification.

5.1.1 The steel shall be made by electric-arc, electric-induction, or other suitable processes.

5.1.2 If a specific type of melting is required by the purchaser, it shall be so specified on the purchase order.

### 6. Heat Analysis

6.1 Methods and practices relating to chemical analysis shall be in accordance with Test Methods, Practices, and Terminology **A751**.

6.2 An analysis of each heat shall be made by the steel producer to determine the percentages of the elements specified in the applicable material specification. This analysis shall be made from a test sample taken during the pouring of the melt, or from the in-process product later in the manufacturing flow.

6.2.1 The heat analysis shall conform to the chemical requirements for each of the specified elements for the grade ordered, as listed in the applicable product specification.

6.2.2 All commercial metals contain small amounts of elements other than those which are specified. It is neither practical nor necessary to specify limits for unspecified elements that can be present. The producer is permitted to analyze for unspecified elements and is permitted to report such analyses. The presence of an unspecified element and the reporting of an analysis for that element shall not be a basis for rejection, unless the presence of that element causes the loss of a property typically expected for that metal, for the type and quality ordered.

6.2.3 The purchaser is permitted to require in the purchase order a maximum limit for an individual element not specified in the product specification. Such a requirement for an element

<sup>5</sup> Available from Automotive Industry Action Group (AIAG), 26200 Lahser Rd., Suite 200, Southfield, MI 48033-7156, <http://www.aiag.org>.

<sup>6</sup> Available from American Society of Mechanical Engineers (ASME), ASME International Headquarters, Two Park Ave., New York, NY 10016-5990, <http://www.asme.org>.

<sup>7</sup> Available from DLA Document Services, Building 4/D, 700 Robbins Ave., Philadelphia, PA 19111-5094, <http://quicksearch.dla.mil>.