



Designation: A1010/A1010M – 01(Reapproved 2009)

Standard Specification for Higher-Strength Martensitic Stainless Steel Plate, Sheet, and Strip¹

This standard is issued under the fixed designation A1010/A1010M; 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 martensitic stainless steels for various structural, architectural, pressure vessel, and heat-resisting applications. The mechanical properties of these steels are customarily, but not necessarily, developed by a suitable heat treatment generally referred to as tempering.

1.2 Steel products under this specification are available in two grades:

Grade	Yield Strength, min, ksi [MPa]
40 [275]	40 [275]
50 [350]	50 [350]

1.3 The maximum thickness of plates is limited only by the capacity of the composition to meet the specified mechanical property requirements; however, current practice normally limits the maximum thickness of plates furnished under this specification to 1 in. [25 mm].

1.4 The values stated in either SI units or inch-pound units are to be regarded separately as standard. 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.

2. Referenced Documents

2.1 *ASTM Standards*:²

[A480/A480M Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip](#)

[A673/A673M Specification for Sampling Procedure for Impact Testing of Structural Steel](#)

[E527 Practice for Numbering Metals and Alloys in the Unified Numbering System \(UNS\)](#)

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 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.

2.2 *Other Document*:

[SAE J1086 Recommended Practice for Numbering Metals and Alloys](#)³

3. General Requirements

3.1 The following requirements for orders for material furnished under this specification shall conform to the applicable requirements of the current edition of Specification [A480/A480M](#).

- 3.1.1 Terminology,
- 3.1.2 Ordering Information,
- 3.1.3 Process,
- 3.1.4 Heat Analysis,
- 3.1.5 Product Analysis,
- 3.1.6 Finish for Sheet,
- 3.1.7 Finish for Strip,
- 3.1.8 Finish for Plates,
- 3.1.9 Test Specimens,
- 3.1.10 Number of Tests,
- 3.1.11 Test Methods,
- 3.1.12 Retests and Retreatment,
- 3.1.13 Dimensions and Permissible Variations,
- 3.1.14 Workmanship,
- 3.1.15 Packaging, Marking, and Loading,
- 3.1.16 Inspection,
- 3.1.17 Rejection and Rehearing, and
- 3.1.18 Material Test Report and Certification.

4. Chemical Composition

4.1 The steel shall conform to the requirements as to chemical composition specified in [Table 1](#), and shall conform to applicable requirements specified in the current edition of Specification [A480/A480M](#).

5. Heat Treatment

5.1 The material shall be heat-treated by tempering to meet the requirements of this specification. The tempering temperature shall not exceed 1400°F [760°C]. Prior to tempering, the steel shall be in the as-rolled, normalized or quenched condition.

³ Available from Society of Automotive Engineers (SAE), 400 Commonwealth Dr., Warrendale, PA 15096-0001, <http://www.sae.org>.