Designation: A582/A582M – 12

Standard Specification for
Free-Machining Stainless Steel Bars

This standard is issued under the fixed designation A582/A582M; 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 (´) indicates an editorial change since the last revision or reapproval.

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

1. Scope

1.1 This specification covers hot-finished or cold-finished bars, except bars for forging (Note 1), suitable for machining processes. It includes rounds, squares, and hexagons in the more commonly used types of stainless free-machining steels designed especially for optimum machinability and for general corrosion and high-temperature service. Stainless steel bars other than the free-machining types are covered in a separate specification (Note 2).

1.2 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 (metric) units are to be regarded separately as standard: within the text and 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 nonconformance with the specification.

Note 1—For bars for reforging, see Specification A314.

Note 2—For non-free machining stainless bars, see Specification A276.

2. Referenced Documents

2.1 ASTM Standards:
A276 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
A484/A484M Specification for General Requirements for Stainless Steel Bars, Billets, and Forgings
A751 Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products
A959 Guide for Specifying Harmonized Standard Grade Compositions for Wrought Stainless Steels
E527 Practice for Numbering Metals and Alloys in the Unified Numbering System (UNS)

2.2 SAE Document:
SAE J 1086 Recommended Practice for Numbering Metals and Alloys

3. Ordering Information

3.1 It is the responsibility of the purchaser to specify all requirements that are necessary for product ordered under this specification. Such requirements to be considered include, but are not limited to, the following:

3.1.1 Quantity (weight or number of pieces),
3.1.2 Type (alloy) or UNS designation (Table 1),
3.1.3 Form (bars, angles, etc.),
3.1.4 Condition (Table 2),
3.1.5 Finish (5.1),
3.1.6 Applicable dimensions, including size, thickness, width, and length,
3.1.7 Cross section (round, square, etc.),
3.1.8 ASTM designation (Specification A582/A582M) and approval date,
3.1.9 Preparation for delivery, and
3.1.10 Marking requirements.

Note 3—A typical ordering description is as follows: 5000 lb [2000 kg] Type 416 bars, annealed and centerless ground, 1 1/2 in. [40 mm] round, 10 to 12 ft [3 to 4 m] in length, ASTM Specification A582/A582Mdated.

4. General Requirements

4.1 Product furnished to this specification shall conform to the requirements of Specification A484/A484M, including any supplementary requirements indicated in the purchase order or

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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.


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.

3 Available from Society of Automotive Engineers (SAE), 400 Commonwealth Dr., Warrendale, PA 15096-0001.
contract. Failure to comply with the general requirements of Specification A484/A484M constitutes nonconformance with this specification.

5. Materials and Manufacture

5.1 Bars may be furnished either hot finished or cold finished, suitable for machining processes, in one of the conditions listed in Table 2.

6. Chemical Requirements

6.1 The chemical composition shall conform to the requirements specified in Table 1.

6.2 Methods and practices relating to chemical analysis required by this specification shall be in accordance with Test Methods, Practices, and Terminology A751.

7. Hardness Requirement

7.1 The product shall conform to the hardness requirements listed in Table 3 for Brinell Hardness Number (HBW).

7.2 At least one hardness test shall be made midway between surface and center on each lot to determine that the material conforms to Table 3.

7.2.1 Hardness testing shall be performed in accordance with Test Methods and Definitions A370.
7.2.2 For sizes below 1 in. [25 mm] cross section, the hardness value may be determined by tensile test and conversion to hardness in accordance with Test Methods and Definitions A370.

8. Certification

8.1 Certificate of Compliance—When specified in the purchase order or contract, the producer or supplier shall furnish a certificate of compliance stating that the product was manufactured, sampled, tested, and inspected in accordance with this specification (including year date) and any other requirements designated in the purchase order or contract, and has been found to meet such requirements.

8.2 Test Reports—When specified in the purchase order or contract. A certified report of the test results shall be furnished at time of shipment. The report shall include the ASTM specification designation, year date, and revision, if any.

9. Keywords

9.1 austenitic stainless steel; ferritic stainless steel; free-machining stainless steel; martensitic stainless steel; stainless steel bars

APPENDIX

(Nonmandatory Information)

XI. CROSS REFERENCE

XI.1 This table is intended to assist the user when Specification A582/A 582M is referenced in a government procurement. It shows the types of steels in Specification A582/A 582M replacing the steels formerly specified in QQ-S-764B.

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^ Designation established in accordance with Practice E527 and SAE J 1086, Recommended Practice for Numbering Metals and Alloys (UNS).
SUMMARY OF CHANGES

Committee A01 has identified the location of selected changes to this standard since the last issue, A582/A582M – 05, that may impact the use of this standard. (Approved March 1, 2012.)

(1) The following sections were modified to conform to current form and style practices: Scope, Referenced Documents, Ordering Information, General Requirements, and Certification.
(2) Section 2 was revised to include references to Test Methods and Definitions A370 and Specification A484/A484M.
(3) Section 5, Materials and Manufacture, was updated to include a description of finishing processes.
(4) Section 7, Hardness Requirements, was updated to specify hardness and conversion factor requirements.

Committee A01 has identified the location of selected changes to this standard since the last issue, A582/A582M – 95b (2000)\textsuperscript{1}, that may impact the use of this standard. (Approved March 1, 2005.)

(1) The following sections were modified to conform with current form and style practices: Scope, Referenced Documents, Ordering Information, General Requirements, and Certification.
(2) Section 2 was revised to include references to Test Methods and Definitions A370 and Test Methods, Practices, and Terminology A751.
(3) Section 5, Materials and Manufacture, was updated to include a description of finishing processes.
(4) Section 7, Hardness Requirements, was updated to specify hardness and conversion factor requirements.
(5) Table 1 was revised for compliance with Guide A959 regarding the number of digits in the composition listed.

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