



Standard Specification for Steel Bars, Carbon, Hot-Wrought, Special Quality¹

This standard is issued under the fixed designation A576; 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 Department of Defense.

1. Scope

1.1 This specification covers hot-wrought special quality carbon steel bars. Special quality bar applications include forging, heat treating, cold drawing, machining, and many structural uses. A guide for the selection of steel bars is contained in Practice A400.

1.2 The bars shall be furnished in the grades specified in Table 1. Sections and sizes of bar steel available are covered in Specification A29/A29M. Hot-wrought special quality carbon steel bars are produced in cut lengths and coils; the manufacturer should be consulted regarding sections and sizes available in coils, produced to a chemical composition.

1.3 Merchant quality hot-wrought carbon steel bars are covered in Specification A575.

1.4 Some end uses may require superior surface quality, or special chemical restrictions, metallurgical characteristics, heat treatment, or surface finishes which the purchaser may obtain by designating one or more of the available Supplementary Requirements.

1.5 The values stated in inch-pound units are to be regarded as standard.

2. Referenced Documents

2.1 ASTM Standards:²

A29/A29M Specification for Steel Bars, Carbon and Alloy, Hot-Wrought, General Requirements for
A400 Practice for Steel Bars, Selection Guide, Composition, and Mechanical Properties
A575 Specification for Steel Bars, Carbon, Merchant Quality, M-Grades
E45 Test Methods for Determining the Inclusion Content of Steel

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 A01.15 on Bars.

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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.

E527 Practice for Numbering Metals and Alloys in the Unified Numbering System (UNS)

2.2 SAE Standard:

SAE J 1086 Recommended Practice for Numbering Metals and Alloys (UNS)³

3. Ordering Information

3.1 Orders under this specification should include the following, as required, to describe adequately the desired material:

- 3.1.1 Quantity (weight or number of bars),
- 3.1.2 Name of material (hot-wrought carbon steel bars),
- 3.1.3 Dimensions,
- 3.1.4 ASTM specification number and date of issue,
- 3.1.5 Deoxidation practice (see 4.2.1),
- 3.1.6 Grade designation or chemical composition limits (see 5.1 and Table 1),
- 3.1.7 Coarse or fine grain steel (4.2.2),
- 3.1.8 Test reports, if required (Section 7),
- 3.1.9 Additions to the specification and Supplementary Requirements, if required, and
- 3.1.10 End use.

NOTE 1—A typical ordering description is as follows: 10 000 lb, carbon steel bars, hot rolled 1 000 in. diameter by 10 ft, ASTM A576 dated ____, killed steel, Grade 1018, test reports required, coarse grain Supplementary Requirement S10, welded industrial fan hubs and shafts.

4. Materials and Manufacture

4.1 *Melting Practice*—The steel shall be made by one or more of the following primary processes: open-hearth, basic-oxygen, or electric-furnace. The primary melting may incorporate separate degassing or refining and may be followed by secondary melting using electroslag remelting or vacuum arc remelting. Where secondary melting is employed, the heat shall be defined as all of the ingots remelted from a single primary heat.

4.2 Deoxidation:

4.2.1 Unless otherwise specified, the steel shall be rimmed, capped, semi-killed, or killed at the manufacturer's option.

³ Available from Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096.