



Designation: A 331 – 95 (Reapproved 2000)

Standard Specification for Steel Bars, Alloy, Cold-Finished¹

This standard is issued under the fixed designation A 331; 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 cold-finished alloy steel bars of grades and cross sections regarded as generally suitable for heat treatment, for machining into components, or for use in the “as-finished” condition in constructional applications, or for other similar purposes. Grades of steel are identified by grade numbers or by chemical composition (see Specifications A 304 or A 322, or Practice A 400).

1.2 Some end uses may require material superior to standard requirements, involving one or more of the available designations shown in the supplementary requirements. These shall apply only when specified individually by the purchaser in the order.

2. Referenced Documents

2.1 ASTM Standards:

A 29/A 29M Specification for Steel Bars, Carbon and Alloy, Hot-Wrought and Cold-Finished, General Requirements for²

A 304 Specification for Carbon and Alloy Steel Bars Subject to End-Quench Hardenability Requirements²

A 322 Specification for Steel Bars, Alloy, Standard Grades²

A 400 Practice for Steel Bars, Selection Guide, Composition, and Mechanical Properties²

E 45 Test Methods for Determining the Inclusion Content of Steel³

E 112 Test Methods for Determining the Average Grain Size³

2.2 Other Documents:

SAE Handbook⁴

Fed. Std. No. 66, Steel: Chemical Composition and Hardenability⁵

AISI Steel Products Manual for Alloy Steel: Semifinished, Hot-Rolled and Cold-Finished Bars⁶

3. Ordering Information

3.1 Orders for material under the specification should include the following information:

3.1.1 Quantity (weight or number of pieces),

3.1.2 Cross-sectional shape,

3.1.3 Dimensions (size, length),

3.1.4 Name of material (bars, alloy steel, cold-finished),

3.1.5 ASTM designation and date of issue,

3.1.6 Grade or chemical composition,

3.1.7 Condition (4.4),

3.1.8 Heat treatment (4.5),

3.1.9 Supplementary requirements, if any,

3.1.10 Additional requirements, if any,

3.1.11 End use, and

3.1.12 Report of heat analysis, if required.

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 *Discard*—A sufficient discard shall be made to secure freedom from injurious piping and undue segregation.

4.3 *Material*—The bars shall be produced from hot-wrought alloy steel bars (Specification A 322), or from alloy steel bars subject to end-quenched hardenability requirements (Specification A 304).

4.4 *Condition*—The bars shall be furnished in one of the following surface finishes as specified by the purchaser:

4.4.1 Rounds:

4.4.1.1 Cold drawn.

4.4.1.2 Cold drawn, turned, and polished.

4.4.1.3 Cold drawn, ground, and polished.

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 *Annual Book of ASTM Standards*, Vol 01.05.

³ *Annual Book of ASTM Standards*, Vol 03.01.

⁴ Available from Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096.

⁵ Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

⁶ Available from the American Iron and Steel Institute, 150 E. 42nd St., New York, NY 10017.