



Standard Specification for Steel Bars, Microalloy, Hot-Wrought, Special Quality, Mechanical Properties¹

This standard is issued under the fixed designation A 920/A 920M; 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 hot-wrought, special quality microalloyed carbon steel bars intended for use in applications where as-rolled mechanical properties are desired. A typical end use is hydraulic cylinder shafts.

1.2 The bars shall be furnished to chemical composition and mechanical properties as provided herein. Chemical composition is based on standard carbon steel grades modified to include microalloying elements such as columbium (niobium), vanadium, or molybdenum. Four strength classes are available, designated 60, 75, 80, and 100, corresponding to the minimum yield strength in ksi.

1.3 Sections and sizes of bar steels available are covered in Specification A 29/A 29M.

1.4 Supplementary Requirements S1 to S5 are provided for use when additional controls or requirements are desired. These shall apply only when specified on the purchase order.

1.5 The values stated in either inch-pound units or SI units are to be regarded separately as standard. Within the text and tables, SI units are shown in brackets. The values stated in each system are not exact equivalents; therefore, each system must be used independently of the other. Combining values from the two systems may result in nonconformance with the specification.

1.6 Unless the order specifies the applicable “M” specification designation, the material shall be furnished to the inch-pound units.

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 370 Test Methods and Definitions for Mechanical Testing of Steel Products³

A 576 Specification for Steel Bars, Carbon, Hot-Wrought, Special Quality²

¹ This specification is under the jurisdiction of ASTM Committee A-1 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 01.03.

E 45 Practice for Determining the Inclusion Content of Steel⁴

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *microalloyed steels*—microalloyed steels are carbon steels to which small quantities of certain elements are added in order to enhance mechanical properties. This enhancement of mechanical properties results from control of the temperature and cooling rate during the hot-rolling process.

4. Ordering Information

4.1 Orders for material supplied to this specification should include the following, as required, to describe adequately the desired material:

4.1.1 Quantity (weight or number of bars),

4.1.2 Name of material (hot-rolled microalloyed steel bars),

4.1.3 Dimensions,

4.1.4 ASTM specification number and date of issue,

4.1.5 Grade designation or chemical composition limits (see Section 8),

4.1.6 Class,

4.1.7 Type (see 7.1) to designate grain refiner,

4.1.8 Additions to the specification and Supplementary Requirements, if required, and,

4.1.9 End use.

5. General Requirements

5.1 Material furnished under this specification shall conform to the applicable requirements of the current edition of Specification A 29/A 29M, unless otherwise provided herein.

6. Materials and Manufacture

6.1 *Melting Practice*—The steel shall be produced in accordance with the applicable methods for primary and secondary melting outlined in Specification A 576.

6.2 The steel shall be killed. Supplementary Requirements S1 through S5 may be invoked upon agreement between producer and purchaser.

6.3 The bars shall be special quality.

6.4 The bars shall be hot-wrought, as wrought, unless otherwise specified.

⁴ Annual Book of ASTM Standards, Vol 03.01.