



Designation: A193/A193M – 20

Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications¹

This standard is issued under the fixed designation A193/A193M; 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 U.S. Department of Defense.

1. Scope*

1.1 This specification² covers alloy and stainless steel bolting materials and bolting components for pressure vessels, valves, flanges, and fittings for high temperature or high pressure service, or other special purpose applications. See Specification [A962/A962M](#) for the definition of bolting. Bars and wire shall be hot-wrought and may be further processed by centerless grinding or by cold drawing. Austenitic stainless steel may be carbide solution treated or carbide solution treated and strain-hardened. When strain hardened austenitic stainless steel is ordered, the purchaser should take special care to ensure that [Appendix X1](#) is thoroughly understood.

1.2 Several grades are covered, including ferritic steels and austenitic stainless steels designated B5, B8, and so forth. Selection will depend upon design, service conditions, mechanical properties, and high temperature characteristics.

1.3 The following referenced general requirements are indispensable for application of this specification: Specification [A962/A962M](#).

NOTE 1—The committee formulating this specification has included several steel types that have been rather extensively used for the present purpose. Other compositions will be considered for inclusion by the committee from time to time as the need becomes apparent.

NOTE 2—For grades of alloy-steel bolting suitable for use at the lower range of high temperature applications, reference should be made to Specification [A354](#).

NOTE 3—For grades of alloy-steel bolting suitable for use in low temperature applications, reference should be made to Specification [A320/A320M](#).

1.4 Nuts for use with bolting are covered in Section [13](#).

1.5 Supplementary Requirements are provided for use at the option of the purchaser. The supplementary requirements shall apply only when specified in the purchase order or contract.

1.6 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.

1.7 The values stated in either SI units or inch-pound units are to be regarded separately as standard. Within the text, 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 non-conformance with the standard.

1.8 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:³

[A153/A153M](#) Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

[A194/A194M](#) Specification for Carbon Steel, Alloy Steel, and Stainless Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both

[A320/A320M](#) Specification for Alloy-Steel and Stainless Steel Bolting for Low-Temperature Service

[A354](#) Specification for Quenched and Tempered Alloy Steel Bolts, Studs, and Other Externally Threaded Fasteners

[A788/A788M](#) Specification for Steel Forgings, General Requirements

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 [A01.22](#) on Steel Forgings and Wrought Fittings for Piping Applications and Bolting Materials for Piping and Special Purpose Applications.

Current edition approved May 15, 2020. Published June 2020. Originally approved in 1936. Last previous edition approved in 2019 as A193/A193M – 19. DOI: 10.1520/A0193_A0193M-20.

² For ASME Boiler and Pressure Vessel Code applications, see related Specification SA-193 in Section II of that Code.

³ 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.

*A Summary of Changes section appears at the end of this standard