



Designation: ~~A437/A437M-06~~ Designation: A437/A437M - 10

## Standard Specification for Stainless and Alloy-Steel Turbine-Type Bolting Material Specially Heat Treated for High-Temperature Service<sup>1</sup>

This standard is issued under the fixed designation A437/A437M; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope\*

~~1.1 This specification<sup>2</sup> covers alloy-steel bolting material specially heat treated for high-temperature service, such as steam turbine, gas turbine, and similar uses. This material requires special processing and should not be used in general-purpose applications. The term "bolting material," as used in this specification, covers rolled or forged bars, bolts, nuts, screws, washers, studs, and stud bolts. The bars shall be hot wrought. The material may be further processed by centerless grinding or by cold drawing.~~

~~1.2 The high-temperature properties of the material covered by this specification are dependent upon special heat treatment, which is required. Although the high-temperature properties are not specified, they are implied by control of the chemistry, heat treatment, and room-temperature properties of the material.~~

~~NOTE 1—High-temperature tests shall not be required, unless made a matter of agreement between the manufacturer and the purchaser.~~

~~1.3 Three levels of bolting strength are covered, designated Grades B4B, B4C, and B4D. Selection will depend on the design and the stresses and service for which the product is to be used.~~

~~NOTE 2—When ordering material under this specification, or when incorporating this specification as a reference in any individual specification, the purchaser must designate the steel by identification symbol or analysis, or both, and definitely specify the minimum mechanical properties required as selected from Table 1 covers stainless and alloy-steel bolting specially heat treated for high-temperature service, such as steam turbine, gas turbine, and similar uses. See Specification A962/A962M for the definition of bolting. This material requires special processing and should not be used in general-purpose applications. Bolting furnished as bars shall be hot wrought and may be further processed by centerless grinding or by cold drawing.~~

~~1.2 The high-temperature properties of the bolting covered by this specification are dependent upon special heat treatment, which is required. Although the high-temperature properties are not specified, they are implied by control of the chemistry, heat treatment, and room-temperature properties of the material.~~

~~1.3 Three levels of bolting strength are covered, designated Grades B4B, B4C, and B4D.~~

~~1.4 The following referenced general requirements are indispensable for application of this specification: Specification A962/A962M,~~

~~1.45 Supplementary requirements of an optional nature are provided for use at the option of the purchaser. The supplementary requirements shall apply only when specified individually by the purchaser in the purchase order or contract.~~

~~1.5 This 1.6 This specification is expressed in both inch-pound units and in SI units. However, units; however, unless the purchase order or contract specifies the applicable "M<sup>2</sup>M" specification designation (SI units), the material—inch-pound units shall be furnished to inch-pound units—apply.~~

~~1.6 The 1.7 The values stated in either inch-pound SI units or SInch-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 are may not be exact equivalents; therefore, each system must shall be used independently of the other. Combining values from the two systems may result in non-conformance with the specification—standard.~~

### 2. Referenced Documents

#### 2.1 ASTM Standards:<sup>3</sup>

A962/A962M [Specification for Common Requirements for Bolting Intended for Use at Any Temperature from Cryogenic to the Creep Range](#)

<sup>1</sup> 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.

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<sup>2</sup> For ASME Boiler and Pressure Vessel Code applications see related Specification SA-437 in Section II of that code.

<sup>3</sup> 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.

### **3. Common Requirements**

~~3.1 Material and Fasteners supplied to this specification shall conform to the requirements of Specification A962/A962M. These requirements include test methods, finish, thread dimensions, marking, certification, optional supplementary requirements, and others. Failure to comply with the requirements of Specification A962/A962M constitutes nonconformance with this specification. In case of conflict between this specification and Specification A962/A962M, this specification shall prevail.~~

### **4. Ordering Information**

~~4.1 The inquiry and order should indicate the following:~~

~~4.1.1 Specification designation, grade and class, issue date and revision letter;~~

~~4.1.2 Quantity (weight or number of pieces);~~

~~4.1.3 Description (bars, bolts, nuts, etc.);~~

~~4.1.4 Dimensions;~~

~~4.1.5 Finish, and~~

~~4.1.6 Impact testing of nuts, if required (see Section~~

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

3.1.1 Specification designation, grade, issue date, and revision letter,

3.1.2 Quantity (weight or number of pieces),

3.1.3 Description (bars, bolts, nuts, etc.),

3.1.4 Dimensions,

3.1.5 Finish, and

3.1.6 Impact testing of nuts, if required (see Section 9).

### **4. Common Requirements**

4.1 Bolting supplied to this specification shall conform to the requirements of Specification A962/A962M. These requirements include test methods, finish, thread dimensions, macroetch (Grade B4D only), marking, certification, optional supplementary requirements, and others. Failure to comply with the requirements of Specification A962/A962M constitutes nonconformance with this specification. In case of conflict between this specification and Specification A962/A962M, this specification shall prevail.

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