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Designation: A 565 – 02

An American National Standard

Standard Specification for Martensitic Stainless Steel Bars, Forgings, and Forging Stock for High-Temperature Service[1]

This standard is issued under the fixed designation A 565; 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-finished and cold-finished martensitic chromium steel bars, forgings, and forging stock for high-temperature service. The mechanical properties are developed by suitable heat treatment, as indicated for each alloy.

1.2 Where strength at temperature is a factor, these steels are generally limited to a maximum service temperature of 1200°F (649°C). For oxidation (scaling) resistance and at low stresses, these steels are useful to 1450°F (788°C).

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

2. Referenced Documents

2.1 *ASTM Standards:*

A 370 Test Methods and Definitions for Mechanical Testing of Steel Products[2]

A 484/A 484M Specification for General Requirements for Stainless Steel Bars, Billets, and Forgings[3]

A 751 Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products[2]

E 527 Practice for Numbering Metals and Alloys (UNS)[4]

2.2 *Other Documents:*

SAE J1086 Recommended Practice for Numbering Metals and Alloys (UNS)[5]

3. Ordering Information

3.1 It is the responsibility of the purchaser to specify all requirements that are necessary for material ordered under this specification. Such requirements may include, but are not limited to, the following:

3.1.1 Quantity (weight or number of pieces);

3.1.2 Name of material (martensitic stainless steel);

3.1.3 Form (bar, forgings, billet, etc.);

3.1.4 Condition;

3.1.5 Finish;

3.1.6 Size, or applicable dimension including diameter, thickness, width, length, etc.;

3.1.7 Grade designation (Table 1); and

3.1.8 ASTM designation number and date of issue.

4. Manufacture

4.1 *Heat Treatment*:

4.1.1 The product forms covered in this specification may be furnished in one of the following conditions:

4.1.1.1 *Condition A*—Annealed,

4.1.1.2 *Condition T*—Heat treated (for machining),

4.1.1.3 *Condition HT*—Heat treated (for high-temperature service), or

4.1.1.4 *Condition H*—Heat treated.

4.1.2 Prior to shipment, blooms and billets of steel covered herein are commonly annealed to avoid the possibility of thermal cracking. These steels may also be furnished annealed, suitable for cold cutting, when specified on the purchase order.

4.2 *Condition and Finish*:

4.2.1 Bars may be furnished in one of the following hot-finished conditions:

4.2.1.1 Hot rolled or forged (not descaled),

4.2.1.2 Hot rolled or forged (descaled), or

4.2.1.3 Rough turned (rounds only).

4.2.2 Bars may be furnished in one of the following cold-finished conditions:

4.2.2.1 Cold drawn,

4.2.2.2 Centerless ground (rounds only), or

4.2.2.3 Polished (rounds only).

4.2.3 Billets or blooms ordered as forging stock shall be furnished with a ground, machined, or descaled surface. For forging stock, surface defects may be removed to a depth of 1/16 in. (1.59 mm)/in. of thickness, up to a maximum depth of 3/4 in. (19.05 mm), provided the width of the remaining depression is a minimum of four times greater than the depth and satisfactorily blended to the surface.

[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 A01.17 on Flat-Rolled and Wrought Stainless Steel.

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[2] *Annual Book of ASTM Standards*, Vol 01.03.

[3] *Annual Book of ASTM Standards*, Vol 01.05.

[4] *Annual Book of ASTM Standards*, Vol 01.01.

[5] Available from Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096.

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

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