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Standard Specification for Stainless Steel Billet, Bar, and Wire for Surgical Instruments[1]

This standard is issued under the fixed designation F 899; 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 the requirements for stainless steel billet, bar, and wire used for the manufacture of surgical instruments. Billet or bar intended for forging into special shapes may also be purchased in accordance with this specification.

2. Referenced Documents

2.1 *ASTM Standards:*

A 276 Specification for Stainless and Heat-Resisting Steel Bars and Shapes[2]

A 314 Specification for Stainless and Heat-Resisting Steel Billets and Bars for Forging[2]

A 484/A484M Specification for General Requirements for Stainless and Heat-Resisting Bars, Billets, and Forgings[2]

A 555/A555M Specification for General Requirements for Stainless and Heat-Resisting Steel Wire and Wire Rods[3]

A 564 Specification for Hot-Rolled and Cold-Finished Age-Hardening Stainless and Heat-Resisting Steel Bars and Shapes[2]

A 582 Specification for Free-Machining Stainless and Heat-Resisting Steel Bars, Hot-Rolled or Cold-Finished[2]

A 751 Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products[3]

2.2 *ISO Draft International Standard:*

ISO/DIS 7153/1 Instruments For Surgery—Metallic Materials—Part 1: Stainless Steel[4]

2.3 *American Society for Quality Control (ASQC) Standard:*

C1-1985 Specification of General Requirements for a Quality Program[5]

3. Classification and Type

3.1 *Classes*—Stainless steel material requirements for surgical instruments shall conform to one of the following classes, as specified:

3.1.1 *Class 3*—Austenitic Stainless Steel.

3.1.2 *Class 4*—Martensitic Stainless Steel.

3.1.3 *Class 5*—Precipitation Hardening Stainless Steel.

3.1.4 *Class 6*—Ferritic Stainless Steel.

3.2 *Type*—Where applicable, the commercially recognized type of stainless steel is included in Tables 1 and 2.

4. Ordering Information

4.1 Inquiries and orders for material under this specification shall include the following information:

4.1.1 Quantity (weight or number of pieces),

4.1.2 Classification, optional (see 3.1),

4.1.3 Type (see 3.2),

4.1.4 Form (billet, bar, wire),

4.1.5 Condition (see 5.1),

4.1.6 Finish (see 5.3),

4.1.7 Mechanical properties or hardness (see Section 8), and

4.1.8 Applicable dimensions including size, thickness, width, and length (exact, random, or multiples) or print number.

5. Manufacture

5.1 *Condition*—Billet, bar, and wire shall be furnished to the instrument manufacturer, as specified, in the hot finished, cold finished, annealed, solution treated, solution treated and aged, quench hardened, quench hardened and tempered, or as specified in the instrument manufacturer's purchase order.

Cautionary Note—Highly hardenable martensitic stainless billets and bars such as Types 420A, 420B, 420C, 420F, 420F Mod., 440A, 440B, and 440C intended for forging are commonly annealed prior to shipment and so specified in order to avoid the possibility of thermal cracking. Other hardenable martensitic grades such as Types 403, 410, 416, 416 Mod., and 431, which also may require annealing, depending on their composition and size, are furnished suitable for cold cutting when so specified on the purchase order.

5.2 *Conditioning*—Billet and bar intended for forging may be conditioned by chipping, grinding, or other suitable means

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

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

[4] Available from American National Standards Institute, 1430 Broadway, New York, NY 10018.

[5] Available from American Society for Quality Control, 161 West Wisconsin Avenue, Milwaukee, WI 53203.

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