Designation: F 688 – 00

Standard Specification for Wrought Cobalt-35 Nickel-20 Chromium-10 Molybdenum Alloy Plate, Sheet, and Foil for Surgical Implants (UNS R30035)[1]

This standard is issued under the fixed designation F 688; 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 the requirements for a wrought cobalt-35 nickel-20 chromium-10 molybdenum alloy plate, sheet, and foil used for the manufacture of surgical implants.

1.2 The values stated in inch-pound units are to be regarded as the standard. The SI units given in parentheses are for information only.

2. Referenced Documents

2.1 *ASTM Standards:*

A 480 Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip[2]

E 8 Methods for Tension Testing of Metallic Materials[3]

E 10 Test Method for Brinell Hardness of Metallic Materials[3]

E 18 Test Methods for Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials[3]

E 92 Test Method for Vickers Hardness of Metallic Materials[3]

E 112 Test Methods for Determining Average Grain Size[3]

E 140 Hardness Conversion Tables for Metals (Relationship Between Brinell Hardness, Vickers Hardness, Rockwell Hardness, Rockwell Superficial Hardness, and Knoop Hardness)[3]

E 345 Methods for Tension Testing of Metallic Foil[3]

E 384 Test Method for Microhardness of Materials[3]

F 562 Specification for Wrought Cobalt-Nickel-Chromium-Molybdenum Alloy for Surgical Implant Applications[4]

F 981 Practice for Assessment of Compatibility of Biomaterials for Surgical Implants with Respect to Effect of Materials on Muscle and Bone[4]

2.2 *Aerospace Materials Specification:*

AMS 2269 Chemical Check Analysis Limits—Wrought Nickel Alloys and Cobalt Alloys[5]

2.3 *American Society for Quality Standard:*

C 1 Specification of General Requirements for a Quality Program[6]

3. Terminology

3.1 *Descriptions of Terms Specific to This Standard:*

3.1.1 *foil*—material under 0.005 in. (0.127 mm) in thickness.

3.1.2 *plate*—as used in this specification, material 0.1875 in. (4.76 mm) and over in thickness.

3.1.3 *sheet*—as used in this specification, material 0.005 in. (0.127 mm) to under 0.1875 in. (4.76 mm) in thickness.

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 ASTM Designation,

4.1.3 Form (plate, sheet, foil),

4.1.4 Condition (see 5.1),

4.1.5 Mechanical properties (if applicable for special conditions),

4.1.6 Finish (see 5.2-5.4),

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

4.1.8 Special requirements.

5. Manufacture

5.1 *Condition*—Plate, sheet, and foil shall be furnished to the implant manufacturer as specified in the annealed or cold-worked condition.

5.2 *Finishes Available for Plate*:

5.2.1 Ground finish produced by surface grinding or continuous belt sanding.

[1] This specification is under the jurisdiction of ASTM Committee F04 on Medical and Surgical Materials and Devicesand is the direct responsibility of Subcommittee F04.12 on Metallurgical Materials.

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

[3] *Annual Book of ASTM Standards*, Vol 03.01.

[4] *Annual Book of ASTM Standards*, Vol 13.01.

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

[6] Available from the American Society for Quality, 161 West Wisconsin Ave., Milwaukee, WI 53203.

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