



Standard Specification for Wrought 40Cobalt-20Chromium-16Iron-15Nickel- 7Molybdenum Alloy Wire and Strip for Surgical Implant Applications (UNS R30003 and UNS R30008)¹

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1. Scope

1.1 This specification covers the requirements for two grades of wrought 40cobalt-20chromium-16iron-15nickel-7molybdenum alloy in the form of wire and strip 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 equivalents of the inch-pound units may be approximate.

2. Referenced Documents

2.1 ASTM Standards:

A 751 Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products²

E 8 Test Methods for Tension Testing of Metallic Materials³

E 18 Test Methods for Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials³

E 45 Test Methods for Determining the Inclusion Content of Steel³

E 92 Test Method for Vickers Hardness of Metallic Materials³

E 112 Test Methods for Determining the Average Grain Size³

E 140 Standard Hardness Conversion Tables for Metals³

E 354 Test Methods for Chemical Analysis of High Temperature, Electrical, Magnetic, and Other Similar Iron, Nickel, and Cobalt Alloys⁴

2.2 Aerospace Material Specifications:

AMS 2269 Chemical Check Analysis Limits Wrought Nickel and Alloys and Cobalt Alloys⁵

AMS 5833 Alloy Wire, Corrosion and Heat Resistant 20Cr-15Ni-40Co-7.0Mo-16Fe Solution Treated and Cold Drawn⁵

AMS 5834 Alloy Wire, Corrosion and Heat Resistant 20Cr-15Ni-40Co-7.0Mo-16Fe Solution Heat Treated, Cold Drawn, and Aged⁵

AMS 5875 Alloy Strip, Corrosion and Heat Resistant 20Cr-15Ni-40Co-7.0Mo-16Fe Solution Heat Treated, Cold Rolled, and Aged⁵

AMS 5876 Alloy Strip, Corrosion and Heat Resistant 20Cr-15Ni-40Co-7.0Mo-16Fe Solution Heat Treated and Cold Rolled⁵

2.3 American Society for Quality:

C1 Specification of General Requirements for a Quality Program⁶

2.4 ISO Standard:

ISO 5832-7 Implants for Surgery—Metallic Materials—Part 7 Forgeable and Cold Formed Co-Cr-Ni-Mo-Fe Alloy⁷

ISO 6892 Metallic Materials—Tensile Testing⁷

3. Ordering Information

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

3.1.1 Quantity (weight or number of pieces),

3.1.2 ASTM designation, grade, and date of issue,

3.1.3 Form (wire or strip),

3.1.4 Applicable dimensions, including size, thickness, width, and length (exact, random, multiples) and tolerances where critical, and drawing number,

3.1.5 Condition,

3.1.6 Finish,

3.1.7 Mechanical properties, if applicable, for special conditions,

3.1.8 Special tests (if any), and

3.1.9 Other requirements (if applicable).

4. Materials and Manufacture

4.1 *Condition*—Wire and strip shall be furnished to the purchaser in the annealed, cold worked, or cold worked and aged condition.

¹ This specification is under the jurisdiction of ASTM Committee F04 on Medical and Surgical Materials and Devices and is the direct responsibility of Subcommittee F4.12 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 03.05.

⁵ Available from Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

⁶ Available from American Society for Quality Control, 600 N. Plankinton Ave., Milwaukee, WI 53203.

⁷ Available from American National Standards Institute, 25 W. 43rd St., 4th Floor, New York, NY 10036.