



Designation: F 961 – 03

Standard Specification for 35Cobalt-35Nickel-20Chromium-10Molybdenum Alloy Forgings for Surgical Implants (UNS R30035)¹

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1. Scope

1.1 This specification covers the requirements for 35cobalt-35nickel-20chromium-10molybdenum alloy (UNS R30035) forgings for surgical implants.

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

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 10 Test Method for Brinell Hardness of Metallic Materials³

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

E 92 Test Method for Vickers Hardness of Metallic Materials³

E 112 Test Methods for Determining Average Grain Size³

E 140 Hardness Conversion Tables for Metals Relationship Among Brinell Hardness, Vickers Hardness, Rockwell Hardness, Superficial Hardness, Knoop Hardness, and Scleroscope Hardness³

F 562 Specification for Wrought 35Cobalt-35Nickel-20Chromium-10Molybdenum Alloy for Surgical Implant Applications (UNS R30035)⁴

F 601 Practice for Fluorescent Penetrant Inspection of Metallic Surgical Implants⁴

F 688 Specification for Wrought 35Cobalt-35Nickel-20Chromium-10Molybdenum Alloy Plate, Sheet, and Foil for Surgical Implants (UNS R30035)⁴

F 981 Practice for Assessment of Compatibility of Biomaterials for Surgical Implants with Respect to Effect of Materials on Muscle and Bone⁴

2.2 ISO Standard:

ISO 5832-6 Implants for Surgery—Metallic Materials—Part 6: Wrought Cobalt-Nickel-Chromium-Molybdenum Alloy⁵

2.3 American Society for Quality Control Standard:

ASQ C1 Specification of General Requirements for a Quality Program⁶

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 and date of issue,

3.1.3 Mechanical properties (if applicable, for other requirements),

3.1.4 Form,

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

3.1.6 Condition,

3.1.7 Finish,

3.1.8 Special tests (if any), and

3.1.9 Other requirements.^{3568a3055/astm-f961-03}

4. Materials and Manufacture

4.1 Material for forgings shall be bars, plate, sheet, or wire manufactured in accordance with Specification F 562 or Specification F 688. The material shall be generally in the solution-annealed condition with a finish suitable for forging.

4.2 The material shall be forged by hammering, pressing, rolling, extruding, or upsetting and shall be processed, if practicable, so as to cause metal flow to be in the most favorable direction for resisting stresses encountered in service, as may be indicated to the supplier by the purchaser.

4.3 Forgings shall be free of splits, scale, cracks, inequalities, flaws, and other imperfections not consistent with good commercial practice.

NOTE 1—Compliance to these requirements may be verified by Practice

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 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 American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

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