



Standard Specification for Wrought 35Cobalt-35Nickel-20Chromium-10Molybdenum Alloy for Surgical Implant Applications (UNS R30035)¹

This standard is issued under the fixed designation F562; 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 requirements of wrought 35cobalt-35nickel-20chromium-10molybdenum alloy (UNS R30035) in the form of bar and wire, used for the manufacture of surgical implants. This alloy depends on combinations of work strengthening and aging to attain a variety of combinations of strength and ductility.

1.2 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

2. Referenced Documents

2.1 ASTM Standards:²

- A751 Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products
- E8/E8M Test Methods for Tension Testing of Metallic Materials
- E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications
- E112 Test Methods for Determining Average Grain Size
- E354 Test Methods for Chemical Analysis of High-Temperature, Electrical, Magnetic, and Other Similar Iron, Nickel, and Cobalt Alloys
- F981 Practice for Assessment of Compatibility of Biomaterials for Surgical Implants with Respect to Effect of Materials on Muscle and Bone
- IEEE/ASTM SI 10 American National Standard for Metric 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 For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

2.2 ISO Standards:³

- ISO 5832/6 Implants for Surgery—Metallic Materials Part 6: Wrought cobalt-nickel-chromium-molybdenum Alloy
- ISO 6892 Metallic Materials—Tensile Testing at Ambient Temperature
- ISO 9001 Quality Management Systems

2.3 Aerospace Material Specifications:⁴

- AMS 2269 Chemical Check Analysis Limits—Wrought Nickel Alloys and Cobalt Alloys
- AMS 2630 Inspection, Ultrasonic Product over 0.5 inch (12.7 mm) Thick
- AMS 2632 Ultrasonic Inspection of Thin Materials

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

- 3.1.1 *bar*, *n*—rounds, flats, or other shapes from 0.1875 to 4.00 in. [4.76 to 101.60 mm] in diameter or thickness (other sizes and shapes by special order).
- 3.1.2 *fine wire*, *n*—rounds, flats, or other shapes less than 0.063 in. [1.60 mm] in diameter or thickness.
- 3.1.3 *forging bar*, *n*—bar as described in 3.1.1, used for the production of forgings; may be furnished in the hot-worked condition.
- 3.1.4 *lot*, *n*—the total number of mill products produced from the same melt heat under the same conditions at essentially the same time.
- 3.1.5 *wire*, *n*—round, flats, or other shapes less than 0.1875 in. [4.76 mm] in diameter or thickness.

4. Ordering Information

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

- 4.1.1 Quantity,
- 4.1.2 ASTM designation and date of issue,
- 4.1.3 Mechanical properties (Section 7),
- 4.1.4 Form (bar or wire),

³ Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

⁴ Available from Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096-0001.

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