



Standard Specification for Wrought Seamless and Welded and Drawn Cobalt Alloy Small Diameter Tubing for Surgical Implants (UNS R30003, UNS R30008, UNS R30035, UNS R30605, and UNS R31537)¹

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1. Scope*

1.1 This specification covers the requirements for wrought seamless and welded and drawn cobalt alloy small diameter tubing used for the manufacture of surgical implants. Material shall conform to the applicable requirements of Specifications **F90**, **F562**, **F688**, **F1058** or **F1537**, Alloy 1. This specification addresses those product variables that differentiate small diameter medical tubing from the bar, wire, sheet and strip product forms covered in these specifications.

1.2 This specification applies to straight length tubing with 6.3 mm [0.250 in.] and smaller nominal outside diameter (OD) and 0.76 mm [0.030 in.] and thinner nominal wall thickness.

1.3 The specifications in **2.1** are referred to as the ASTM material standard(s) in this specification.

1.4 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 Material Standards:²

F90 Specification for Wrought Cobalt-20Chromium-15Tungsten-10Nickel Alloy for Surgical Implant Applications (UNS R30605)

F562 Specification for Wrought 35Cobalt-35Nickel-20Chromium-10Molybdenum Alloy for Surgical Implant Applications (UNS R30035)

F688 Specification for Wrought Cobalt-35Nickel-20Chromium-10Molybdenum Alloy Plate, Sheet, and Foil for Surgical Implants (UNS R30035)

F1058 Specification for Wrought 40Cobalt-20Chromium-16Iron-15Nickel-7Molybdenum Alloy Wire and Strip for Surgical Implant Applications (UNS R30003 and UNS R30008)

F1537 Specification for Wrought Cobalt-28Chromium-6Molybdenum Alloys for Surgical Implants (UNS R31537, UNS R31538, and UNS R31539)

2.2 ASTM Standards:

A632 Specification for Seamless and Welded Austenitic Stainless Steel Tubing (Small-Diameter) for General Service

E8 Test Methods for Tension Testing of Metallic Materials

E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

E45 Test Methods for Determining the Inclusion Content of Steel

E112 Test Methods for Determining Average Grain Size

F2819 Test Methods for Measurement of Straightness of Bar, Rod, Tubing and Wire to be used for Medical Devices

SI 10 American National Standard for Use of the International System of Units (SI): The Modern Metric System

2.3 ISO Standards:³

ISO 5832- 5 Implants for Surgery—Metallic Materials Part 5: Wrought Cobalt, Chromium, Tungsten, Nickel Alloy

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

ISO 5832- 7 Implants for Surgery—Metallic Materials Part 7: Wrought Cobalt, Chromium, Molybdenum Alloy

ISO 5832- 8 Implants for Surgery—Metallic Materials Part 8: Wrought Cobalt, Nickel, Chromium, Molybdenum, Tungsten, Iron Alloy

ISO 5832- 12 Implants for Surgery—Metallic Materials Part 12: Wrought Cobalt, Chromium, Molybdenum Alloy

ISO 6892 Metallic Materials—Tensile Testing

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.

³ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.