



Standard Specification for Cobalt-28 Chromium-6 Molybdenum Alloy Castings and Casting Alloy for Surgical Implants (UNS R30075)¹

This standard is issued under the fixed designation F 75; 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 provides the requirements for cobalt-28 chromium-6 molybdenum alloy unfinished investment product castings for surgical implant applications and casting alloy in the form of shot, bar, or ingots to be used in the manufacture of surgical implants. This specification does not apply to completed surgical implants made from castings.

1.2 The values stated in inch-pound units are to be regarded as the standard. The SI equivalents of inch-pound units may be approximate.

2. Referenced Documents

2.1 ASTM Standards:

- E 3 Practice for Preparation of Metallographic Specimens²
- E 8 Test Methods for Tension Testing of Metallic Materials²
- E 18 Test Methods for Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials²
- E 165 Test Method for Liquid Penetrant Examination³
- E 407 Practice for Microetching Metals and Alloys²
- E 601 Practice for Fluorescent Penetrant Inspection of Metallic Surgical Implants⁴
- E 629 Practice for Radiography of Cast Metallic Surgical Implants⁵
- F 981 Practice for Assessment of Compatibility of Biomaterials for Surgical Implants with Respect to Effect of Materials on Muscle and Bone⁶

2.2 Aerospace Material Specification:⁷

- AMS 2248 Chemical Check Analysis Limits: Corrosion and Heat Resistant Steels and Alloys, Maraging and Other Highly-Alloyed Steels, and Iron Alloys
- AMS 2269 Chemical Check Analysis Limits: Nickel, Nickel Alloys and Cobalt Alloys

2.3 ISO Standards:⁸

- ISO 5832-4 Implants for Surgery—Metallic Materials—Part 4: Cobalt-Chromium-Molybdenum Casting Alloy
- ISO 6892 Metallic Materials Tensile Testing at Ambient Temperature

2.4 American Society for Quality Standard:⁹

- ASQ CI Specification of General Requirements for a Quality Program

3. Ordering Information

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

- 3.1.1 Quantity (number of product castings or weight of casting alloy),
- 3.1.2 ASTM designation and date of issue,
- 3.1.3 Form (product casting, shot, bar, ingot),
- 3.1.4 Applicable dimensions or drawing number,
- 3.1.5 Condition (as-cast, hot isostatically pressed (HIP), solution annealed, and so forth),
- 3.1.6 Special tests, if any, and
- 3.1.7 Other requirements.

4. Materials and Manufacturing Requirements for Product Castings

4.1 Final thermal processing for castings, if any, shall be specified by mutual agreement between the supplier and purchaser.

4.2 Castings shall be free of visible investment shell material and scale when examined without magnification.

4.3 Welding may be used to repair castings as agreed upon between supplier and purchaser.

4.3.1 Weld repair shall be performed in accordance with written procedures by individuals certified to perform those procedures.

4.3.2 Weld filler metal conforming to the chemistry of Table 1 shall be used when it is needed.

4.3.3 Weld repair, if any, shall be performed before final thermal processing.

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 03.01.

³ Annual Book of ASTM Standards, Vol 03.03.

⁴ Annual Book of ASTM Standards, Vol 14.03.

⁵ Discontinued; See 1996 Annual Book of ASTM Standards, Vol 11.05.

⁶ Annual Book of ASTM Standards, Vol 13.01.

⁷ Available from Society of Automotive Engineers, 400 Commonwealth Dr., Warrendale, PA 15096-0001.

⁸ Available from American National Standards Institute, 25 W. 43rd St., 4th Floor, New York, NY 10036.

⁹ Available from American Society for Quality, 600 N. Plankinton Ave., Milwaukee, WI 53203.

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