



Standard Specification for Alpha Plus Beta Titanium Alloy Forgings for Surgical Implants¹

This standard is issued under the fixed designation F 620; 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 the requirements for alpha plus beta titanium alloy forgings for surgical implants when the material forged conforms to Specifications **F 136** (UNS R56401), **F 1295** (UNS R56700), or **F 1472** (UNS R56400).

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:²

E 8 Test Methods for Tension Testing of Metallic Materials

E 10 Test Method for Brinell Hardness of Metallic Materials

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

E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

E 92 Test Method for Vickers Hardness of Metallic Materials

E 165 Test Method for Liquid Penetrant Examination

E 1409 Test Method for Determination of Oxygen and Nitrogen in Titanium and Titanium Alloys by the Inert Gas Fusion Technique

E 1447 Test Method for Determination of Hydrogen in Titanium and Titanium Alloys by the Inert Gas Fusion Thermal Conductivity/Infrared Detection Method

E 2371 Test Method for Analysis of Titanium and Titanium Alloys by Atomic Emission Plasma Spectrometry

F 67 Specification for Unalloyed Titanium, for Surgical Implant Applications (UNS R50250, UNS R50400, UNS R50550, UNS R50700),

F 136 Specification for Wrought Titanium-6Aluminum-4Vanadium ELI (Extra Low Interstitial) Alloy for Surgical

Implant Applications (UNS R56401)

F 601 Practice for Fluorescent Penetrant Inspection of Metallic Surgical Implants

F 1295 Specification for Wrought Titanium-6Aluminum-7Niobium Alloy for Surgical Implant Applications (UNS R56700)

F 1472 Specification for Wrought Titanium-6Aluminum-4Vanadium Alloy for Surgical Implant Applications (UNS R56400)

2.2 ASQC Standard:

CI Specifications of General Requirements for a Quality Program³

2.3 ISO Standard:

ISO 9001 Quality Management Systems⁴

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *lot*—the total number of forgings produced from the same heat under the same conditions at essentially the same time.

4. Ordering Information

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

4.1.1 Quantity, number of pieces,

4.1.2 ASTM designation and date of issue, material grade,

4.1.3 Condition,

4.1.4 Mechanical properties,

4.1.5 Finish,

4.1.6 Applicable dimensions or drawing number,

4.1.7 Special tests, if any, and

4.1.8 Other requirements.

5. Materials and Manufacture

5.1 Material for forgings shall be bars or wire fabricated in accordance with Specification **F 136**, **F 1295**, or **F 1472**.

5.2 The material shall be forged by hammering, pressing, extruding, or upsetting and shall be processed, if practicable, so

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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 Society for Quality (ASQ), 600 N. Plankinton Ave., Milwaukee, WI 53203.

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

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