



Designation: F 620 – 00

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 F136 (UNS R56401), F1295 (UNS R56700), or F1472 (UNS R56400).

1.2 The values stated in inch-pound units are to be regarded as the standard.

2. Referenced Documents

2.1 ASTM Standards:

E 8 Test Methods for Tension Testing of Metallic Materials²

E 10 Test Method for Brinell Hardness of Metallic Materials²

E 18 Test Methods for Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials²

E 92 Test Method for Vickers Hardness of Metallic Materials²

E 120 Test Methods for Chemical Analysis of Titanium and Titanium Alloys³

E 165 Test Method for Liquid Penetrant Examination⁴

E 1409 Test Method for Determination of Oxygen in Titanium and Titanium Alloys by the Inert Gas Fusion Technique³

E 1447 Test Method for Determination of Hydrogen in Titanium and Titanium Alloys by the Inert Gas Fusion Thermal Conductivity Method⁵

F 136 Specification for Wrought Titanium-6 Aluminum-4 Vanadium ELI (Extra Low Interstitial) Alloy (R56401) for Surgical Implant Applications⁶

F 601 Practice for Fluorescent Penetrant Inspection of Metallic Surgical Implants⁶

F 981 Practice for Assessment of Compatibility of Bioma-

terials for Surgical Implants with Respect to Effect of Materials on Muscle and Bone⁷

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

F 1472 Specification for Wrought Ti-6 Al-4V Alloy for Surgical Implant Applications⁶

2.2 ASQC Standard:

CI Specifications of General Requirements for a Quality Program⁷

3. Ordering Information

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

3.1.1 Quantity, number of pieces,

3.1.2 ASTM designation, material grade,

3.1.3 Condition,

3.1.4 Mechanical properties (other than those specified herein),

3.1.5 Finish,

3.1.6 Applicable dimensions or print number,

3.1.7 Special tests, if any, and

3.1.8 Special requirements, if any.

4. Materials and Manufacture

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

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

4.3 Forgings shall be free of splits, scale, cracks, flaws, and other imperfections not consistent with good commercial practice (see Note 1). Offset or mismatch allowance, dependent upon part size and configuration, shall be within standard forging tolerances.

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

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.

Current edition approved May 10, 2000. Published August 2000. Originally published as F 620 – 79. Last previous edition F 620 – 97.

² *Annual Book of ASTM Standards*, Vol 03.01.

³ *Annual Book of ASTM Standards*, Vol 03.05.

⁴ *Annual Book of ASTM Standards*, Vol 03.03.

⁵ *Annual Book of ASTM Standards*, Vol 03.06.

⁶ *Annual Book of ASTM Standards*, Vol 13.01.

⁷ Available from American Society for Quality Control, 161 W. Wisconsin Ave., Milwaukee, WI 53203.