



Designation: F 1472 – 99

Standard Specification for Wrought Titanium - 6Aluminum - 4Vanadium Alloy for Surgical Implant Applications (UNS R56400)¹

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1. Scope

1.1 This specification covers the chemical, mechanical, and metallurgical requirements for wrought annealed titanium - 6aluminum -4vanadium alloy (UNS R56400) standard grade titanium alloy to be used in the manufacture of surgical implants.

1.2 The values stated in inch-pound units are to be regarded as the standard. The metric equivalents in parentheses are provided for information only.

2. Referenced Documents

2.1 ASTM Standards:

F 136 Specification for Wrought Titanium 6Si-4V ELI Alloy for Surgical Implant Applications²

B 265 Specification for Titanium and Titanium Alloy Strip, Sheet and Plate³

B 348 Specification for Titanium and Titanium Alloy Billets³

B 381 Specification for Titanium and Titanium Alloy Forgings³

E 8 Test Methods of Tension Testing of Metallic Materials⁴

E 120 Test Methods for Chemical Analysis of Titanium and Titanium Alloys⁵

E 290 Test Method for Semi-Guided Bend Test for Ductility of Metallic Materials⁴

E 527 Practice for Numbering Metals and Alloys (UNS)⁶

E 1409 Test Method for Determination of Oxygen in Titanium and Titanium Alloys by the Inert Gas Fusion Technique⁵

E 1447 Test Method for Determination of Hydrogen in Titanium Alloys by the Inert Gas Fusion Thermal Conductivity Method⁷

2.2 Other Standards:

ASQC C1 Specifications of General Requirements for a

Quality Control Program⁸

2.3 Aerospace Material Specifications:

AMS 4928L Titanium Alloy Bars, Forgings and Rings 6Al-4V⁹

AMS 2249C Chemical Check Analysis Limits, Titanium and Titanium Alloys⁹

2.4 Society of Automotive Engineers Standard:

SAE J1086 Practice for Numbering Metals and Alloys (UNS)⁹

3. Product Classification

3.1 *strip*—any product under 0.1875 in. (4.76 mm in thickness and under 24 in. (610 mm) wide.

3.2 *sheet*—any product under 0.1875 in. (4.76 mm) in thickness and 24 in. (610 mm) or more in width.

3.3 *plate*—any product 0.1875 in. (4.76 mm) thick and over and 10 in. (254 mm) wide and over, with widths greater than five times thickness. Plate up to 4.00 in. (101.60 mm), thick inclusive is covered by this specification.

3.4 *bar*—rounds from 0.1875 in. (7.9 mm) to 4.00 in. (101.60 mm) in diameter. (Other sizes by special order.)

3.5 *forging bar*—bar as described in 3.4, used for production of forgings, may be furnished in the hot rolled condition.

3.6 *wire*—rounds less than 0.1875 in. (4.76 mm) in diameter.

4. Ordering Information

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

4.1.1 Quantity (weight or number of pieces),

4.1.2 Applicable ASTM designation,

4.1.3 Form (sheet, strip, plate, wire, bar, or forging),

4.1.4 Condition (see 5.1),

4.1.5 Mechanical properties (if applicable, for special conditions),

4.1.6 Finish (see 5.2),

4.1.7 Applicable dimensions including size, thickness, width, or print number,

4.1.8 Special tests, and

4.1.9 Special requirements

¹ This specification is under the jurisdiction of ASTM Committee F-4 on Medical and Surgical Materials and Devices and is the direct responsibility of Subcommittee F04.02 on Resources.

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² Annual Book of ASTM Standards, Vol 13.01.

³ Annual Book of ASTM Standards, Vol 02.04.

⁴ Annual Book of ASTM Standards, Vol 03.01.

⁵ Annual Book of ASTM Standards, Vol 03.05.

⁶ Annual Book of ASTM Standards, Vol 01.01.

⁷ Annual Book of ASTM Standards, Vol 03.06.

⁸ Available from American Society for Quality Control, 161 W. Wisconsin Ave., Milwaukee, WI 53203.

⁹ Available from the Society of Automotive Engineers, 3001 W. Big Beaver, Troy, MI 48084.