

AEROSPACE MATERIAL SPECIFICATION



AMS 4996B

Issued	MAR 1977
Noncurrent	OCT 1989
Reaffirmed	APR 1994
Cancelled	JUL 2002

Superseding AMS 4996A

Titanium Alloy Billets and Preforms
6Al - 4V
Premium Quality, Powder-Metallurgy Product

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Documents

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1. SCOPE:

1.1 Form:

This specification covers a premium-quality, titanium alloy powder-metallurgy product in the form of billets and preforms for forgings.

1.2 Application:

Primarily for highly-stressed parts, such as rotating parts in gas turbine engines, requiring high strength in the annealed condition.

2. APPLICABLE DOCUMENTS:

The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications (AMS) shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2249 Chemical Check Analysis Limits, Titanium and Titanium Alloys
AMS 2350 Standards and Test Methods
AMS 2631 Ultrasonic Inspection of Titanium Alloys
AMS 4998 Titanium Alloy Powder, 6Al - 4V, Premium Quality

2.2 ASTM Publications:

Available from ASTM, 1916 Race Street, Philadelphia, PA 19103.

ASTM B311 Density of Cemented Carbides
ASTM E8 Tension Testing of Metallic Materials
ASTM E112 Estimating the Average Grain Size of Metals
ASTM E120 Chemical Analysis of Titanium and Titanium-Base Alloys

2.3 U.S. Government Publications:

Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.3.1 Federal Standards:

Federal Test Method Standard No. 151 Metals; Test Methods

2.3.2 Military Standards:

MIL-STD-163 Steel Mill Products, Preparation for Shipment and Storage

2.4 ANSI Publications:

Available from American National Standards Institute, 1430 Broadway, New York, NY 10018.

ANSI B46.1 Surface Texture

3. TECHNICAL REQUIREMENTS:

3.1 Material:

Billets and preforms shall be produced by compaction of AMS 4998 powder by a suitable process to produce a product meeting the requirements of 3.2 through 3.6.

3.2 Composition:

Shall conform to the following percentages by weight, determined by wet chemical methods in accordance with ASTM E120, by spectrographic methods in accordance with Federal Test Method Standard No. 151, Method 112, or by other approved analytical methods, except that oxygen and hydrogen shall be determined by a vacuum fusion method:

	min	max
Aluminum	5.50	6.75
Vanadium	3.50	4.50
Oxygen	0.13	0.19
Iron	-	0.30
Carbon	-	0.10
Tin (3.2.1)	-	0.10
Molybdenum (3.2.1)	-	0.10
Copper (3.2.1)	-	0.10
Manganese (3.2.1)	-	0.10
Zirconium	-	0.10
Nitrogen	-	0.04 (400 ppm)
Hydrogen	-	0.0125 (125 ppm)
Yttrium	-	0.0010 (10 ppm)
Residual Elements, total (3.2.2)	-	0.20
Titanium	remainder	