

# 6AL-4V Eli Titanium

Alternate names: Grade 23 Titanium, 6-4 Eli Titanium

## Description:

6AL-4V Eli is an alloyed Grade of Titanium. It is strengthened by the inclusion of roughly 6% Aluminum and 4% Vanadium. Titanium 6AL-4V Eli (Extra-Low Interstitial) is considered a higher purity than 6AL-4V Grade 5 due to its lower inclusions of Iron, and the interstitial elements, Carbon and Oxygen. 6AL-4V Eli Grade 23 shows high strength, as well as good corrosion resistance. It is found in aerospace applications where fracture toughness and fatigue strength are important. As a biocompatible Grade of Titanium, it is also known for its applications in medical and dental industries. The density is 0.160 lbs/in<sup>3</sup>.

## Condition:

6AL-4V Eli typically comes in the annealed condition, but can be found in beta annealed condition as well.

## Weldability:

Good weldability.

## Machinability:

The American Iron and Steel Institute (AISI) determined a rating system of machinability of different materials. 160 Brinell B1112 steel was arbitrarily assigned a machinability rating of 100%. Using this as a comparable standard, ratings less than 100% are more challenging to machine, and ratings more than 100% are easier to machine. Titanium 6AL-4V Eli is rated at 22% of B1112. Low cutting speeds, heavy feed rates, sharp tools, and ample cutting fluid are prescribed.

## Common Specs:

AMS 4907	ASTM B265 (Grade 23)	AMS-T-9046 (AB-2 6AL-4V ELI)
AMS 4930	ASTM B348 (Grade 23)	AMS-T-9047 (6AL-4V ELI)
AMS 6932	ASTM F136	MIL-T-9046 (AB-2 6AL-4V ELI)
MIL-T-9047 (6AL-4V ELI)		

*\*\*The use of this information is strictly voluntary and should be used as a guideline only. This data contains generalizations and is in no way a substitute for your own research. This information is not intended as a warranty or fitness of any application. Should you require further information about Titanium 6AL-4V Eli Grade 23, please contact us and we will gladly refer you to additional sources.*



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PTG 6AL-4V Eli Data Sheet, created 9/20/18

Mechanical and Chemistry info for 6AL-4V ELI \*\*Based on specs AMS 4930 & AMS 4907

**Typical Composition Analysis**

Aluminum  
Vanadium  
Iron (Maximum)  
Oxygen (Maximum)  
Carbon (Maximum)  
Nitrogen (Maximum)  
Hydrogen (Maximum)  
Yttrium (Maximum)  
Other Elements (Each)  
Other Elements (Total)  
Titanium

	<u>AMS 4930 (Bars, Forgings)</u>	<u>AMS 4907 (Plate, Sheet)</u>
	5.5-6.5%	5.5-6.5%
	3.5-4.5 %	3.5-4.5%
	0.25%	0.25%
	0.13%	0.13%
	0.08%	0.08%
	0.05%	0.05%
	0.0125%	0.0125%
	0.005%	0.005%
	0.10%	0.10%
	0.30%	0.30%
	Balance	Balance

**Typical Tensile Properties (Minimums)\***

Tensile  
Yield  
Elongation  
Reduction of Area

	<u>AMS 4930</u>	<u>AMS 4907</u>
	120-125 ksi	125-130 ksi
	110-115 ksi	115-120 ksi
	8-10%	6-10%
	15-25%	-----

*\*Tensile property requirements vary based on orientation, section thickness/diameter, and cognizant engineering organization requirements.*

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To purchase AMS specs see: <http://standards.sae.org>

Please call 888.772.8984 or email [sales@performancetitanium.com](mailto:sales@performancetitanium.com) for a quote on 6AL-4V Eli Grade 23 Titanium.

Data compiled from Dynamet "Technical Datasheet Titanium Alloy Ti 6Al-4V Eli, Edition Date: 07/01/2000", Timet "TMC-0150" Data Sheet, ATI "Technical Data Sheet", RTI "Titanium Alloy Guide" and SAE specification & data sheets, "Titanium: A Technical Guide" by Matthew J Donachie, Jr. (p446) as well as "Materials Properties Handbook: Titanium Alloys" by Gerhard Welsch, Rodney Boyer, & E. W. Collings.



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