



# STAINLESS

High performance Alloys - Medical - Aerospace - Microtechnics - Motorsport - Industry

## Ti 6246 AMS 4981

### GENERALITIES

**Titanium alloy Ti6246** has even higher mechanical properties than Ti6242 and also creep resistance up to about 530°C. Its low density combined with its high level of mechanical strength also gives it an advantage in moving and high temperature applications.

Stainless has a number of qualified sources in stock and different diameters to suit your application needs. This product can also be custom made or cut into slugs by our service centres. Each material is delivered with its producer's certificate of origin in order to guarantee you total transparency and complete traceability.

### APPLICATIONS

Applications include turbine parts, disks and other hot-worked components in the aerospace, industrial and racing sectors.

### STANDARDS AND DESIGNATIONS

#### Numerical designations:

UNS R56260

#### Standards:

AMS 4981

Ti-6Al-2Sn-4Zr-6Mo

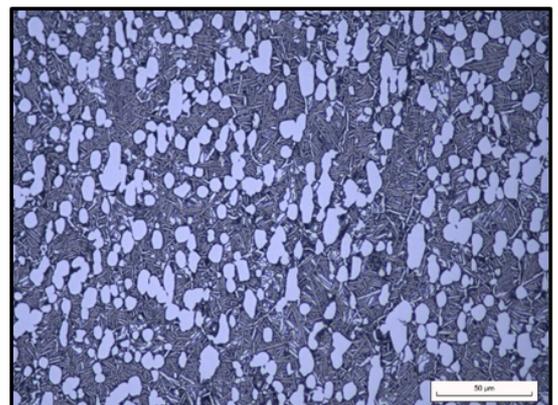
### TYPICAL CHEMICAL ANALYSIS (mass %)

	Aluminium	Pewter	Zirconium	Molybdenum	Carbon	Iron	Oxygen	Hydrogen	Yttrium	Nitrogen	Titanium
MIN	5.50	1.75	3.50	5.50	---	---	---	---	---	---	BALANCE
MAX	6.50	2.25	4.50	6.50	0.04	0.15	0.15	0.0125	0.005	0.04	

Other elements: each <0.10% - total <0.40%.

### METALLURGY

The grade can be produced with several VAR remeltings depending on the criticality of the applications; at least one VAR remelting is mandatory for this grade. The elaboration processes associated with the transformation processes make it possible to obtain a homogeneous alpha/beta type microstructure without a continuous alpha phase network at the grain boundaries. The micrograph below illustrates the typical microstructure:



Ti 6.2.4.6 - X500

## PHYSICAL PROPERTIES AT 20°C

Density.....	4.64 g.cm <sup>-3</sup>
Coefficient of thermal expansion (between 20 et 200°C).....	9.5 x 10 <sup>-6</sup> m/m.°C
Young's modulus.....	100-107 x 10 <sup>3</sup> MPa
Thermal conductivity.....	7.6 W.m <sup>-1</sup> K <sup>-1</sup>
Relative magnetic permeability.....	≤ 1.01

## MECHANICAL PROPERTIES OF THE BARS

The standard delivery treatment according to AMS is STA (Solution treated and aged) with a thermal cycle close to 885/2h/air + 595°C/6h/air which leads to the following typical characteristics

Temper	Diameter	UTS (MPa)	YS 0.2% (MPa)	E4d%
STA	Bar 12 - 76mm	>1138	>1069	>8
	Bar 76 - 101mm	>1103	>1034	>8

Typical values obtained after hot tensile tests (427°C) on STA condition:

Temper	Diameter	UTS (MPa)	YS0.2% (MPa)	E4d%	RA%
STA	Bar 12 - 101mm	>931	>724	>10	>30

## PROCESSIES

### Forgeability/Usinability

The grade can be hot forged, the beta transus is close to 940°C. Machining this grade requires sufficient watering to limit heating. The grade remains very difficult to weld.

### Heat treatments

The grade is offered as standard in a pre-treated STA temper (according to AMS 4981). An annealed condition can be offered on request and can be followed by an STA treatment to optimise the mechanical properties.

## CORROSION RESISTANCE

The grade is highly resistant to general corrosion and also to pitting. Chlorinated solvents should be avoided. Titanium is also susceptible to hydrogen embrittlement, so it is important to limit any hydrogen input during the processing.

## STANDARD SHAPE

- 3m round bars in STA - Surface ground or peeled
- Other format (consult us)

The information, data and photos presented in this document are given in good faith and for information purposes only. If you need more precise data, our technical department is at your disposal. Click on the link : [t.turpin@stainless.eu](mailto:t.turpin@stainless.eu)