DIRECT METAL LASER SINTERING

TITANIUM TI6AL4V

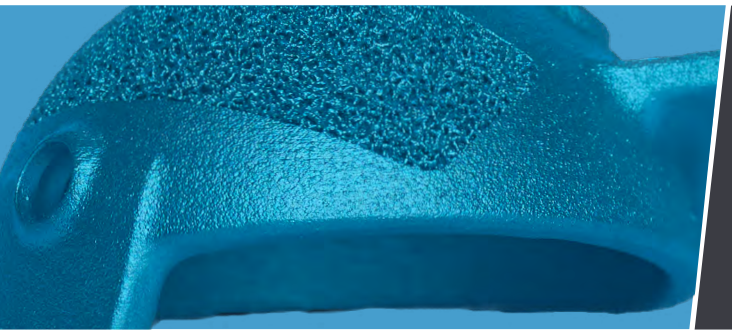
PRODUCT SPECIFICATIONS

PRODUCT DESCRIPTION:

This well-known light alloy is characterized by having excellent mechanical properties and corrosion resistance combined with low specific weight and biocompatibility. This material is ideal for many high-performance engineering applications, for example in medical and aero- space or motor racing.
Parts built in Titanium Ti6Al4V have a chemical composition corresponding to ISO 5832-3, ASTM F1472 and ASTM B348.

APPLICATIONS:

Ti6Al4V is an excellent choice for Applications where a non-corroding, high strength – low weight material is needed.



KEY PRODUCT BENEFITS

- Biocompatibility
- Light Weight
- High Strength
- Excellent Corrosion Resistance

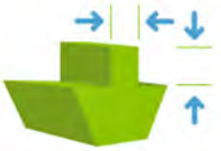
CHEMICAL COMPOSITION:

According ISO 5832-3; ASTM F1472 & ASTM B348

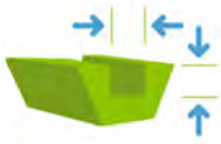
Ti (balance)
Al (5.5 - 6.75 wt.%)
V (3.5 - 4.5 wt.%)
O (<0.15 wt.%)
N (< 0.04 wt.%)
H (<0.012 wt.%)
Fe (<0.25 wt%)
C (<0.08 wt.%)
Y (<0.005 wt.%)

GEOMETRICAL LIMITS:

Min Wall thickness 1.00 mm - Min. Feature Size 1,00 mm



Min. embossed details 0.5mm high and wide and 0.8mm for readable text and clear images



Min. engraved details 0.5mm deep and 0.6mm wide; 1.0mm wide for readable text and clear images

PROPERTIES:

Heat Treatment	Tensile Strength MPa	Yield Strength 0,2% MPa	Elongation %	Hardness	Density
/	1200 MPa +/- 50 MPa	1050 MPa +/- +/- 50 MPa	8 +/- 2%	33 +/- 2 HBW	~ 99,95%
Heat Treatment	Tensile Strength MPa	Yield Strength 0,2% MPa	Elongation %	Hardness	Density
Heat Treated	>930 MPa	>860 MPa	> 10%	33 +/- 2 HBW	~ 99,95%

RESOLUTION:

	Layer Thickness	Build Envelope	Min. Feature Size
Fine Resolution	0,02 mm	Ø100 x 80 mm	0,5mm
High Resolution	0,03 mm	250x250x300mm	1,00mm
Normal Resolution	0,06 mm	250x250x300mm	1,00mm

SURFACE:

	0 °	45 ° bottom	45 ° top	90 °
Fine Resolution	Ra 2,5 µm Rz 16mm	Ra 4,9 µm Rz 28 µm	Ra 4,3 µm Rz 20 µm	Ra 2,5 µm Rz 16 µm
High Resolution	Ra 4,4 µm Rz 23 µm	Ra 11,7 µm Rz 62 µm	Ra 6,6 µm Rz 35 µm	Ra 4,9 µm Rz 26 µm
Normal Resolution	Ra 5,5 µm Rz 32µm	Ra 23 µm Rz 110 µm	Ra 12µm Rz 64 µm	Ra 6,8 µm Rz 35 µm

Fine Resolution 20 µm

High Resolution 30 µm

Normal Resolution 60 µm

STANDARD TOLERANCES:

Typically, for well-designed parts, with a designated build direction, tolerances of +/- 0.1 mm to +/- 0.2 mm + 0.005 mm/mm are expected and achieved.
Certain geometries may cause distortions due to internal stress which may lead to higher deviations.