Material Datasheet

Titanium 64

Material Group: Titanium Alloys

Ti-6Al-4V alloy, also known as Ti64, is an α + β titanium alloy with high strength, low density, high fracture toughness, excellent corrosion resistance and superior biocompatibility. Ti64 is recognized as the most popular titanium alloy.

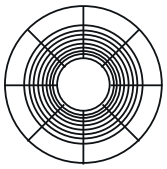
Nomenclature Standards

AWS A 5.16	ER Ti - 5
EN ISO 14343-A	S Ti 6402c
Material Nº	3.7165

Chemical Composition

Ti	Al	V	Fe	C	N	H	O
Base	5.5	3.5	0.4	0.08	0.05	0.015	0.2

Spool Specs



Diameter	1 mm
Weight	7.5 kg
Volume	1704 cm³
Density	4.4 g/cm³
Spool Type	BS300

Applications

Tools and prototypes

Aerospace industries

Marine industries

Chemical industries

Mechanical Properties

Results show Meltio's wire LMD 3D printed specimens to perform at the same level as conventional manufacturing methods, with low deviation across tested coupons.

		Tensile Strength (MPa)	Yield Strength (MPa)	Elongation (%)	Hardness (HV-30)	Relative Density (%)
Wrought Properties		930	860	>10	342	100
Cast Properties		860	758	>8		
Meltio Post Heat Stress Refief	**XY**	881 ± 27	786 ± 22	11 ± 0	311	99.993
	XZ	855 ± 12	760 ± 16	12 ± 1		99.995

Heat Treatment

Stress Relief HT

- Heat up to 730ºC in 2h
- Hold at 730ºC during 2h
- Cool down to Ambient Tª in 1h50

Printing Parameters Used

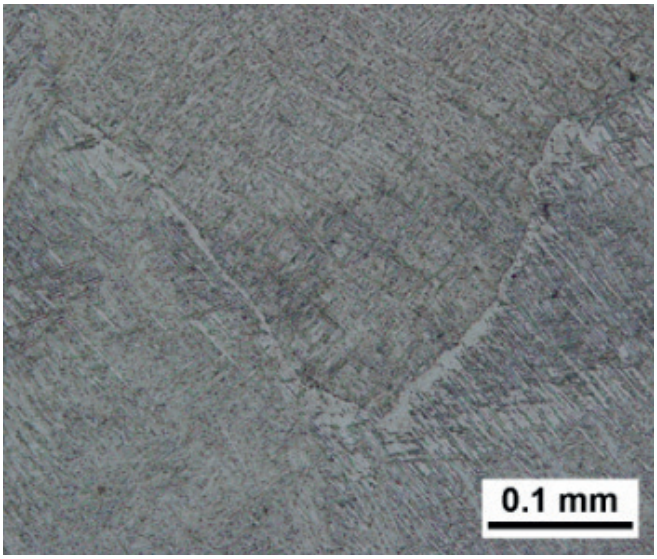
Print Speed	Deposition Width	Layer Height	Laser Power
450 mm/min	1 mm	1.2 mm	1100 W

Tomography

In this tomography we can observe the internal structure of the material and see its good density, absence of porosity or internal defects that put at risk the structure of the sample.
The resolution used for the CT inspection is 24 micrometros por pixel.

Metallography

Micrography after etching done at x200 of the Titanium Grade 5 at as build state in the XZ plane.



Shielding gas: Argon > 99.996% purity.
Machine Used: Meltio M450
Laser System: 6x200W Fiber coupled diode lasers. 976nm wavelength.

* Data represent tyical reference values from Worught and Cast material classification compared to Meltio (M450) horizontal (XY) and vertical (XZ) specimens extracted from 3D printed walls and tensile tested according to UNE EN ISO 6892-1