Titanium Alloy TC4-SLM

Description

Titanium is a versatile material widely used in medicine due to its bio-compatibility. Titanium 3D-printed parts can be made hollow and feature complex surface geometries, serving as connection points for bone and tissue growth. Additionally, its excellent strength-to-weight ratio and corrosion resistance make it a popular material in the aerospace industry.

Features

Features: Preferred for industrial use, high strength, and lightweight

Key parameters:

Maximum size	Default layer height	Optional layer height	Tolerance	Heat resistance
250*250*320 mm	0.1 mm	0.5 mm	0.2%*L	50-60

Suitable for: functional prototypes and final products, form and fit inspection, functional prototyping and testing

Not suitable for: large models, internal cavities in designs (unless escape holes are used)

Parameters

Mechanical Properties (As printed)	FS 316L Stainless Steel	FS 15-5PH Stainless Steel	FS 17-4PH Stainless Steel	FS 420 Stainless Steel	FS 18Ni300 Maraging Steel	FS CoCrMo Cobalt Chrome	FS CoCrMoW Cobalt Chrome
Density	≥ 7.9 g/cm³	≥ 7.7g/cm ³	≥ 7.75 g/cm ³	≥ 7.7 g/cm ³	≥ 8.0 g/cm ³	≥ 8.35 g/cm³	≥ 8.65 g/cm³
Tensile Strength (R_m) ASTM E8/E8M-13a	≥ 600 MPa	1150±100 MPa	950±100 MPa	≥ 1100 MPa	1100±100 MPa	≥ 1150 MPa	≥ 1100 MPa
Yield Strength ($R_{p0.2}$) ASTM E8/E8M-13a	550±50 MPa	1050+100 MPa	600±50 MPa	900±100 MPa	1050±100 MPa	n/a	n/a
Elongation after Fracture (A50mm) ASTM E8/E8M-13a	≥ 30%	16±4 %	30±5 %	≥2%	12±3%	≥ 10%	≥ 10%

Mechanical Properties (As printed)	FS AlSi10Mg Aluminum	FS Ti6Al4V Titanium	FS IN625 Inconel	FS IN718 Inconel	FS GH3536 Inconel	FS CuSn10 Bronze
Density	≥ 2.65 g/cm³	≥ 4.4 g/cm³	≥ 8.4 g/cm³	≥ 8.2 g/cm³	≥ 8.3 g/cm³	≥ 8.78 g/cm ³
Tensile Strength (R_m) ASTM E8/E8M-13a	430±30 MPa	≥ 1100 MPa	1000±100 MPa	1050±100 MPa	840±50 MPa	500±50 MPa
Yield Strength ($R_{p0.2}$) ASTM E8/E8M-13a	276±30 MPa	970±100 MPa	730±50 MPa	750±50 MPa	650±50 MPa	380±30 MPa
Elongation after Fracture (A50mm) ASTM E8/E8M-13a	3.0±1%	≥ 7.5%	35±5%	25±5%	30±5%	30±10%