BRODER Powder

BMG Ti6Al4V

Material Data Sheet

Material Description

Our metal powders have been specifically designed and optimized for use in Additive Manufacturing (AM) environments.

Our metal powders are successfully proven in AM and process well across the full spectrum of AM machines and technologies.

Ti6Al4V offers good corrosion resistance with high strength and low density and therefore is particularly useful in many applications.

Ti6Al4V also has excellent mechanical properties.

Powder SEM

Part Sample

Material Properties

High Strength to Weight Ratio
High Corrosion Resistance
Excellent Biocompatibility
Superior Weldability in Laser AM Processes

Typical Applications

Aircraft / Spacecraft Components
Automotive / Motorsport Components
Orthopedic / Dental Implants
Surgical Tools
Gas Turbine Parts

Relevant Sectors

Aerospace
Automotive / Motorsport
Energy
Medical

Powder Properties	
Part no.	Ti6Al4V
PSD	15-45 µm
Application	PBF

Chemical Composition	
Ti	Bal.
Al	5.50 to 6.50
V	3.50 to 4.50
Fe	≤0.25
O	≤0.13
C	≤0.08
N	≤0.05
H	≤0.012
Y	≤0.005
Residuals	≤0.10 each ≤0.40 total

Nominal WT%

Industry Powder Names	
Generic name	Ti6Al4V
GE Additive	Ti-6Al-4V
SLM Solutions	Al-Alloy Ti6Al4V
Renishaw	Titanium Ti6Al4V
EOS	EOS Titanium Ti64

Atomisation Process

Vacuum inert gas atomisation
Anti-satellite technology
Plasma atomised

Powder Quality

Highly Spherical
Very few satellities
Excellent flowability

Applicable Specification

ASTM B348
Chemical composition is complaint with IS05832-3, ASTM F1472, ASTM F2924 and ASTM F3302.

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Mechanical Properties		0.2% Yield Strength (MPa)	Tensile Strength (MPa)	Elongation In 4D (%)	E-modulus (GPa)	Hardness (HV)
As Built	Horizontal	1007±5	1089±7	16	129±7	368 HV0.5 ±10 HV0.5
	Vertical	985±23	1085±12	14	126±15	372 HV0.5 ±7 HV0.5

*typical values

Physical Properties

Generic Data – Wrought Material	
Density	4.42 g/cm³
Thermal Conductivity	6 W/mK to 8 W/mK
Melting Point	1635°C - 1665°C
Coefficient of thermal expansion	$8 \times 10^{-6} K^{-1}$ to $9 \times 10^{-6} K^{-1}$

*typical values

Heat Treatment

Heat treatment for Ti6Al4V is recommended to reduce internal stresses and increase ductility. Other traditional processing techniques can be deployed including general machining, grinding etc.

Further information can be provided by our technical experts by contacting sales@broder-powder.com

Contact

Broder Powder is committed to providing our global customers with world-beating customer service through direct support, metallurgy and our AM expertise.

Please contact Broder Powder for additional information and contact details.

Broder Powder offers a diverse range of metal powders and alloys for Additive Manufacturing (AM) and Hot Isostatic Pressing (PM-HIP), along with next generation alloy development maximising the potential benefits and solutions that AM and PM-HIP can deliver.

Our core range of metal powders include Steel, Stainless Steel, Nickel, Cobalt and Aluminium.

Other alloys are available upon request.

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