BRODER Powder

BMG 316L

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. The reason for this is our material has excellent melting and fusion properties in both PBF and EBM applications.

316L is an austenitic, low carbon stainless steel, and offers good corrosion resistance. This is particularly useful in medical applications. 316L also has excellent mechanical properties without requiring heat treatment.

Powder SEM

Part Sample

Material Properties

Good corrosion resistance
Good ductility
High impact toughness

Powder Properties	
Part no.	316L
PSD	15-45 µm
Application	PBF
Part no.	316L
PSD	20-53 µm
Application	PBF
Part no.	316L
PSD	45-150 µm
Application	DED
Part no.	316L
Application	45-106 µm
PSD	EBM
General Properties	
PSD	D10, D50, D90 reported
Apparent Density	Measured and Reported
Flow	Measured and Reported

Typical Applications

Surgical devices
Corrosion reistant components
Pumps
Tooling

Relevant Sectors

Medical
Marine
Aerospace
Industrial

Chemical Composition	
Fe	Bal.
Cr	16.0 – 18.0
Ni	10.0 – 14.0
Mo	2.0 – 3.0
Mn	≤2.0
Si	≤1.0
N	≤0.1
O	≤0.1
P	≤0.045
C	≤0.03
S	≤0.03

Nominal WT%

Industry Powder Names	
Generic name	316L
Generic name	1.4404
Generic name	SS316L
GE Additive	316L
SLM Solutions	1.4404 (316L)
Renishaw	SS316L-0407
EOS	316L

Atomisation Process

Vacuum inert gas atomisation
Anti-satellite technology
Argon gas atomised

Powder Quality

Highly Spherical
Excellent flowability

Applicable Specification

ASTM F3184
Other specifications: DIN 1.4404, ISO 5832-16, SAE J405 (316L), UNS S31600/S31603

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Mechanical Properties		0.2% Yield Strength (MPa)	Tensile Strength (MPa)	Elongation (%)	E-modulus (GPa)	Impact Toughness (J)	Hardness (HV)
As Built	Horizontal	547±3	676±2	43±2	197±4	150±28	198 HV0.5 ±8hv0.5
	Vertical	494±14	624±17	35±8	190±10	165±10	208 HV0.5 ±6HV0.5

*typical values

Physical Properties

Generic Data – Wrought Material	
Density	7.99 g/cm³
Thermal Conductivity	16.2 W/mK
Melting Point	1371°C - 1399°C
Coefficient of thermal expansion	16 10^{-6} K^{-1}

*typical values

Heat Treatment

Heat treatment for 316L is not applicable for strengthening. Other traditional processing techniques can be deployed including general machining, grinding etc.

Further information can by 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.

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 Stainless Steel, Nickel, Aluminium and Titanium.

Other alloys are available upon request.

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