

A-Powder 316L Stainless Steel

Gas-atomized austenitic stainless powder for laser powder bed fusion (LPBF)

A-Powder 316L is a low-carbon, non-magnetic austenitic stainless steel powder for LPBF. With added molybdenum it delivers excellent general and chloride/pitting corrosion resistance, high toughness and good ductility, plus reliable weldability — the default stainless for corrosion-critical and biocompatible parts. Gas-atomized for high sphericity and low oxygen; every lot ships with a Certificate of Analysis.

POWDER SPECIFICATION

Alloy / grade	316L austenitic stainless
Reference standard	ASTM F3184
Equivalents	UNS S31603 · 1.4404 · AISI 316L
Particle size (PSD)	15–53 µm (custom cuts available)
Production method	Nitrogen gas atomized · VIM
Morphology	Spherical, high sphericity, low O ₂
Process	LPBF (machine type F)
Packaging	10 kg bottle · 440 / 840 kg hopper

MECHANICAL PROPERTIES — AS-BUILT

Ultimate tensile strength	~ 640 MPa
Yield strength (Rp0.2)	~ 530 MPa
Elongation at break	~ 40 %
Hardness	~ 89 HRB (~ 220 HV)
Relative density	> 99 %

Indicative as-built values, process-dependent. Solution annealing is optional and can improve corrosion resistance. 316L cannot be precipitation hardened.

CHEMICAL COMPOSITION (WT %)

ELEMENT	CONTENT	ELEMENT	CONTENT
Iron (Fe)	Balance	Manganese (Mn)	≤ 2.00
Chromium (Cr)	16.0–18.0	Silicon (Si)	≤ 1.00
Nickel (Ni)	10.0–14.0	Nitrogen (N)	≤ 0.10
Molybdenum (Mo)	2.00–3.00	Carbon (C)	≤ 0.030
Phosphorus (P)	≤ 0.045	Sulfur (S)	≤ 0.030

MATERIAL COMPARISON

FEATURE	316L	304	17-4PH
Type	Austenitic (Mo)	Austenitic	Martensitic PH
Corrosion resistance	Excellent (chloride/pitting)	Good	Good
Strength & hardness	Moderate	Moderate	High
Heat treatable	No	No	Yes (aging)
Magnetic	No	No	Yes

TYPICAL APPLICATIONS

Medical implants & instrumentation

Valves, fittings & manifolds

Pumps & impellers

Marine & chemical processing

COMPATIBILITY & SUPPLY

LPBF systems	AO Metal A50 / A100 · open-parameter
Certification	Full COA per lot (PSD, chemistry, density, flow)
Dispatch	5–10 business days from Los Angeles