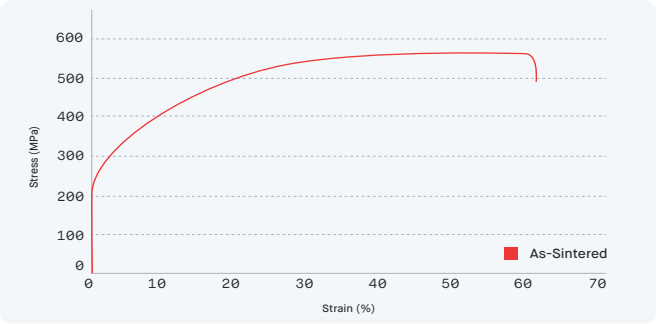
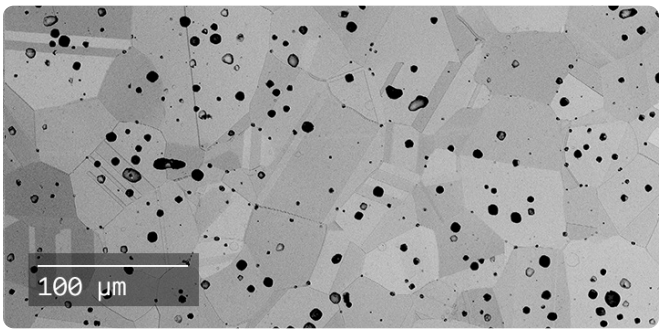
[Material Data Sheet]

316L v.2
Stainless Steel
PureSinter Furnace



COMPOSITION %

C	0.03 (max)
Cr	16.0 - 18.0
Ni	10.0 - 14.0
Mo	2.0 - 3.0
Mn	2.0 (max)
Si	1.0 (max)
Fe	Balance



MECHANICAL PROPERTIES IN DESKTOP METAL PURESINTER FURNACE

	Standard	Studio System™ 2 As-Sintered	MIM - MPIF 35 Min As-Sintered	Wrought For reference
Ultimate tensile strength (MPa)	ASTM E8M	**580 ± 5**	520	425
Yield strength (MPa)	ASTM E8M	**210 ± 12**	175	170
Elongation at break (%)	ASTM E8M	**72 ± 7**	50	40
Young's modulus	ASTM E111	**189**	190	
Hardness (HRB)	ASTM E18	**68 ± 2**	67	95 (max)
Un-notched charpy impact strength (J)	MPIF 59	**219 ± 10**	190	
Density (g/cm^3)		**7.78 ± 0.04**	7.6	

PERFORMANCE

	Standard	Studio System™ 2 As-Sintered
Boil test (corrosion)	ASTM F1089	**Pass**
Copper sulfate test (corrosion)	ASTM F1089	**Pass**
Sulfuric acid test (g/dm^2/day)(corrosion)	MPIF 62	**<0.001**

OTHER STANDARD DESIGNATIONS

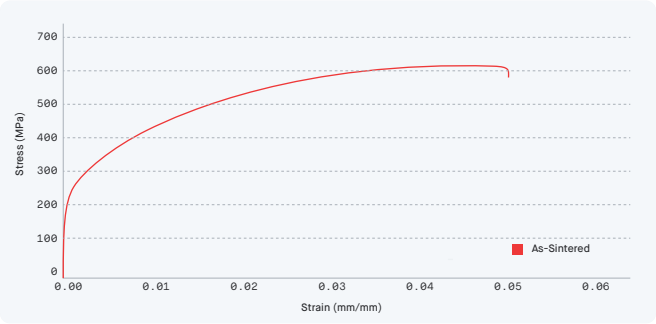
UNS S31603

EN 1.4404

1. Prior to corrosion resistance testing, all test samples were cleaned and passivated in accordance with ASTM A967.
2. Listed designations are for reference purposes only. Composition and mechanical properties may vary.
3. Per MPIF Standard 35, Materials Standards for Metal Injection Molded Parts (MPIF 35-MIM, 2018). End-use material performance is impacted (+/-) by certain factors including but not limited to part geometry and design, application and evaluation conditions, etc.
4. Wrought values based on ASTM A240 standards.

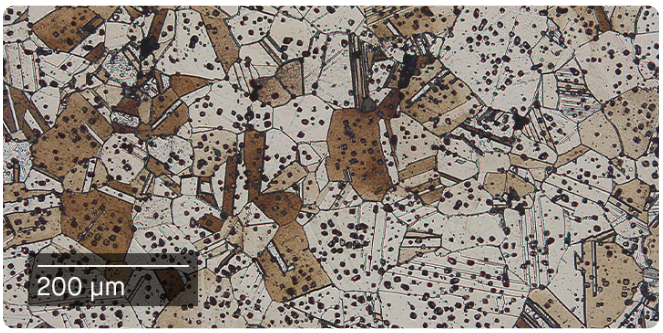
[Material Data Sheet]

316L v.2
Stainless Steel



COMPOSITION %

Fe	balance
Ni	10 - 14
Cr	16 - 18
Mo	2 - 3
Mn	2.0 (max)
Si	1.0 (max)
C	0.03 (max)



MECHANICAL PROPERTIES SINTERED IN THIRD-PARTY COMMERCIAL FURNACE

	Standard	Studio System™ 2 As-Sintered	MIM - MPIF 35 Min As-Sintered	Wrought For reference
Ultimate tensile strength (MPa)	ASTM E8M	**533**	450	425
Yield strength (MPa)	ASTM E8M	**169**	140	170
Elongation (%)	ASTM E8M	**66**	40	40
Hardness (HRB)	ASTM E18	**66**	67 (typ)	95 (max)
Density (relative)	ASTM B311	**97%**	95%	100%

PERFORMANCE

	Standard	Studio System™ 2 As-Sintered
Boil test (corrosion)	ASTM F1089	**Pass**
Copper sulfate test (corrosion)	ASTM F1089	**Pass**

OTHER STANDARD DESIGNATIONS

UNS S31603
EN 1.4404

1. Per MPIF Standard 35, Materials Standards for Metal Injection Molded Parts (MPIF 35-MIM, 2018).
2. Wrought values based on ASTM A240 standards.
3. Prior to corrosion resistance testing, all test samples were machined and passivated in accordance with ASTM F1089.
4. Listed designations are for reference purposes only. Composition and mechnicalproperties may vary.

End-use material performance is impacted (+/-) by certain factors including but not limited to part geometry and design, application and evaluation conditions, etc.
Tensile properties and density data reported are mean values minus 1 sigma.
Due to the material's high elongation, strain values were obtained from crosshead displacement. In conformance with ASTM E8M, total elongation was obtained from scribed marks on the gage length and yield strength was calculated from extensometer measurements.