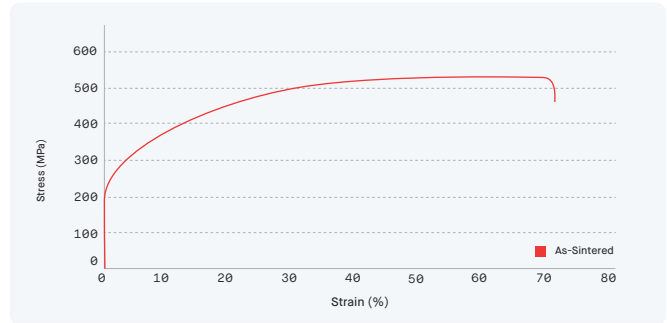


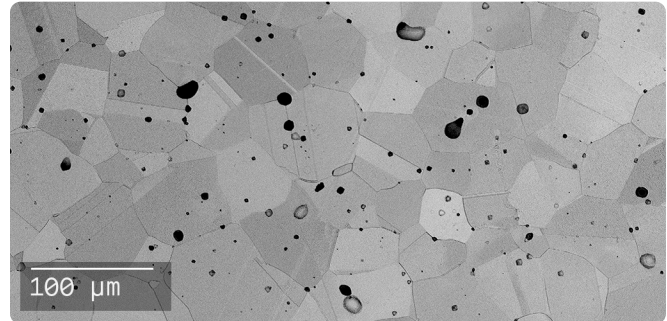
[Material Data Sheet]

316L 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	Shop System™		ASTM B883 / MPIF 35
	As-Sintered		As-Sintered
Ultimate tensile strength (MPa)	ASTM E8/E8M	540 ± 11	520
Yield strength (MPa)	ASTM E8/E8M	185 ± 11	175
Elongation at break (%)	ASTM E8/E8M	77.3 ± 5	50
Young's modulus (GPa)	ASTM E111	188	190
Hardness (HRB)	ASTM E18	64 ± 2	67
Un-notched Charpy impact energy (J)	MPIF 59	222 ± 5	190
Density (g/cc)		7.79 ± 0.09	7.6

PERFORMANCE

Boil test (corrosion)	ASTM F1089	Pass	Pass
Copper sulfate test (corrosion)	ASTM F1089	Pass	Pass
Sulfuric acid test (corrosion) (g/dm ² /day)	MPIF 62	<0.001	<0.005 g/dm ² /day

ATTRIBUTES & APPLICATIONS

- Corrosion resistant
- Low magnetic permeability
- Medical components for use in endoscopy & orthopedics
- Structural components (e.g. housings & frames)
- Jewelry & decorative items
- Fluid transfer components (e.g. manifolds)

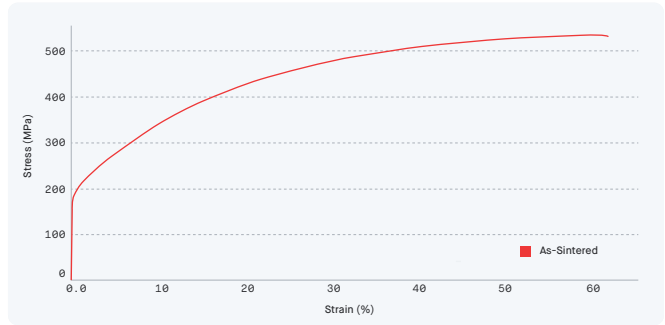
OTHER STANDARD DESIGNATIONS

- UNS S31673
- EN 1.4404

1. YS, UTS, Elongation, and Young's modulus properties noted represent X and Y orientations.
 2. Prior to corrosion resistance testing, all test samples were cleaned and passivated in accordance with ASTM A967.
 3. Listed designations are for reference purposes only. Composition and mechanical properties may vary.
 4. 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.

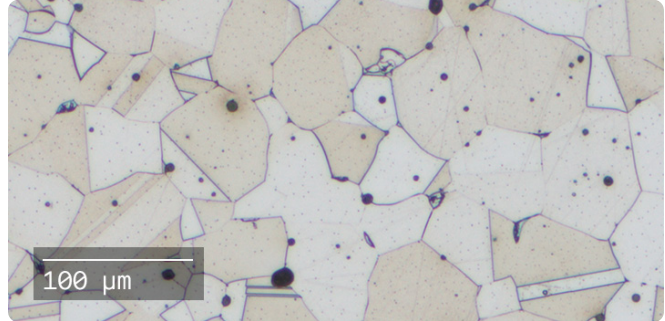
[Material Data Sheet]

316L Stainless Steel



COMPOSITION %

Fe	Balance
Cr	16-18
Ni	10-14
Mo	2-3
Mn	2 (max)
Si	1 (max)
C	0.045 (max)



MECHANICAL PROPERTIES SINTERED IN THIRD-PARTY COMMERCIAL FURNACE **

Standard	Shop System™		ASTM B883 / MPIF 35 **	
	As-Sintered		As-Sintered	
Ultimate tensile strength - xy (MPa)	ASTM E8M	521 ± 28	450-520	
Yield strength - xy (MPa)	ASTM E8M	181 ± 5	140-175	
Elongation - xy (%)	ASTM E8M	59 ± 20	40-50	
Young's modulus - xy (GPa)	ASTM E111	183 ± 14	190 (typ)	
Unnotched Charpy impact energy - xy (J)	MPIF 59	208 ± 16	190 (typ)	
Hardness (HRB)	ASTM E18	63 ± 2	67 (typ)	
Density (g/cc)	ASTM B311	7.72 ± 0.1	7.6	

PERFORMANCE ***

Standard	Shop System™	ASTM B883 / MPIF 35 **
Boil test (corrosion)	ASTM F1089	Pass
Copper sulfate test (corrosion)	ASTM F1089	Pass
Sulfuric acid test (corrosion)	MPIF 62	<0.005 g/dm ² /day

ATTRIBUTES & APPLICATIONS

- Corrosion resistant Medical components for use in endoscopy & orthopedics
- Structural components (e.g. housings & frames)
- Jewelry & decorative items
- Fluid transfer components (e.g. manifolds)
- High temperature applications

OTHER STANDARD DESIGNATIONS ****

- UNS S31673
- EN 1.4404

* Mechanical properties noted represent mean values +/- 1 standard deviation across Xy & Yz orientations for as-printed samples.
 ** Per ASTM B883 - 19, Standard Specification for Metal Injection Molded (MIM) Materials and MPIF Standard 35, Materials Standards for Metal Injection Molded Parts (MPIF 35-MIM, 2018)
 *** Prior to corrosion resistance testing, all test samples were hand ground to remove surface oxidation and passivated in accordance with ASTM A967
 **** Listed designations are for reference purposes only. Composition and mechanical properties 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.