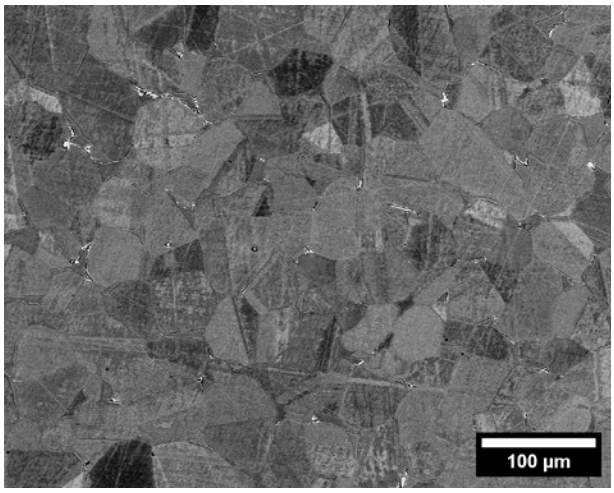
316L *Rapid Cycle* Stainless Steel

RAPIDIA

COMPOSITION

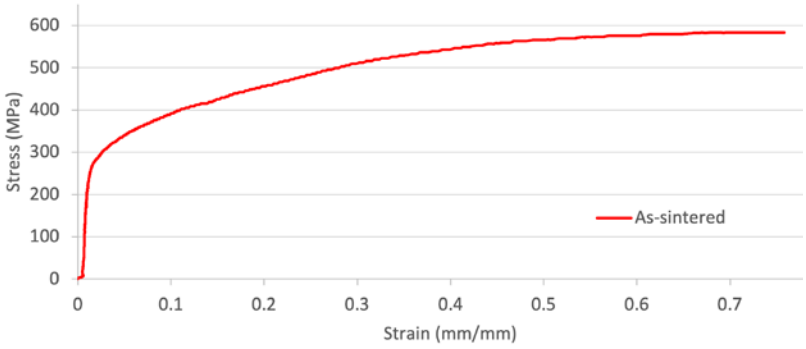
ELEMENT	AMOUNT (WT%)
Iron	Bal.
Nickel	10-14
Chromium	16-18
Molybdenum	2-3
Carbon	0.03 (max)
Manganese	2.0 (max)
Silicon	1.0 (max)



MECHANICAL PROPERTIES

	STANDARD	MIM - MPIF 35 min AS-SINTERED[1]	**RAPIDIA AS-SINTERED [XY][2]**
Ultimate Tensile Strength (MPa)	ASTM E8	450	**590**
Yield Strength (MPa)	ASTM E8	140	**240**
Elongation at Break (%)	ASTM E8	40	**62**
Hardness (HRB)	ASTM E18	67 (typ)	**84**
Corrosion Resistance[3]	ASTM F1089	Pass	**Pass**
Relative Density (%)[4]	ASTM B311	95	**98-99**

[1] Values taken from MPIF Standard 35, 2018 Edition.
[2] Print direction.
[3] Assessed by boil test and copper sulfate test.
[4] Based on a theoretical density of 7.75 g/cc.



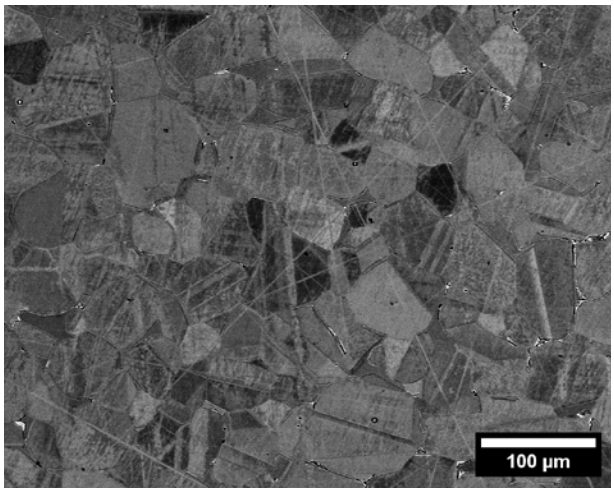
All data represents samples with ~15 mm printed and ~13 mm sintered thickness, sintered in less than 14 hours using Rapidia's F2 Vacuum Furnace. This rapid sintering cycle has been approved to meet the material specs listed above, but it may not be suitable for larger parts (consult a Rapidia expert for details). All characterization was performed in-house at Rapidia. Values for samples printed along the Z-axis can be lower depending on print quality. Note that material performance is influenced by numerous factors such as print quality, furnace loading, and part thickness and geometry.

316L *Extended Cycle* Stainless Steel

RAPIDIA

COMPOSITION

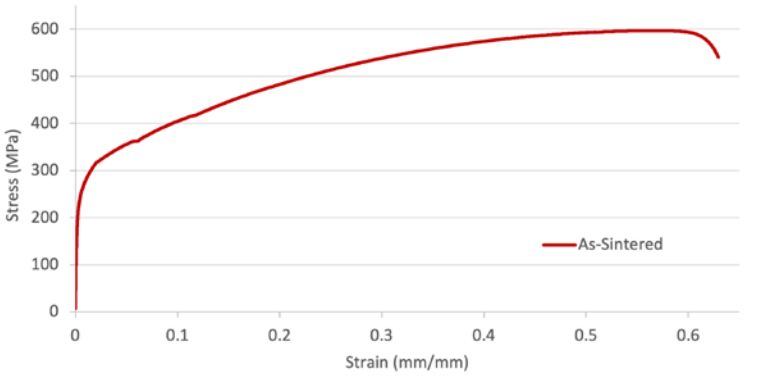
ELEMENT	AMOUNT (WT%)
Iron	Bal.
Nickel	10-14
Chromium	16-18
Molybdenum	2-3
Carbon	0.03 (max)
Manganese	2.0 (max)
Silicon	1.0 (max)



MECHANICAL PROPERTIES

	STANDARD	MIM - MPIF 35 min AS-SINTERED[1]	**RAPIDIA AS-SINTERED [XY][2]**	**RAPIDIA AS-SINTERED [Z][2]**
Ultimate Tensile Strength (MPa)	ASTM E8	450	**600**	**590**
Yield Strength (MPa)	ASTM E8	140	**230**	**240**
Elongation at Break (%)	ASTM E8	40	**61**	**50**
Hardness (HRB)	ASTM E18	67 (typ)	**77**	**-**
Corrosion Resistance[3]	ASTM F1089	Pass	**Pass**	**-**
Relative Density (%)[4]	ASTM B311	95	**97-99**	**97-99**

[1] Values taken from MPIF Standard 35, 2018 Edition.
[2] Print direction.
[3] Assessed by boil test and copper sulfate test.
[4] Based on a theoretical density of 8.00 g/cc.



All data represents samples with 15 mm printed and 13 mm sintered thickness, sintered using a standard cycle in Rapidia's F2 Vacuum Furnace. Tensile testing and hardness and density measurements were performed at an accredited third party laboratory. Corrosion resistance and metallography were studied in-house at Rapidia. Note that material performance is influenced by numerous factors such as print quality, furnace loading, and part thickness and geometry.