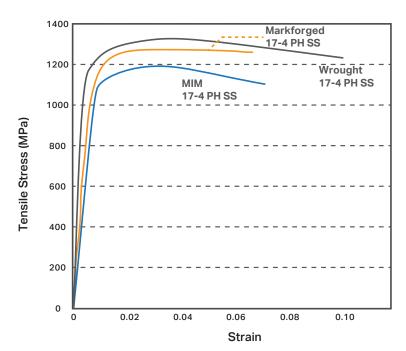


# 17-4 PH Stainless Steel

Composition	Amount		
Chromium	15-17.5%		
Nickel	3-5%		
Copper	3-5%		
Silicon	1% max		
Manganese	1% max		
Niobium	0.15-0.45%		
Carbon	0.07% max		
Phosphorous	0.04% max		
Sulfur	0.03% max		
Iron	bal		



#### Markforged H900 Heat Treated

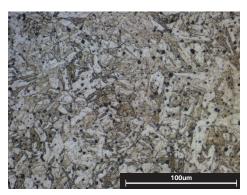
17-4 PH stainless steel processed with the Markforged Metal X system heat treated to H900 specification.

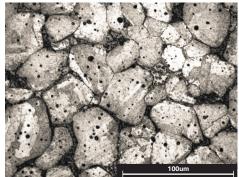
### MIM H900 Heat Treated

17-4 PH MIM standard stainless steel heat treated to H900 specification.

### ASTM A564 H900 Heat Treated

ASTM A564 17-4 PH stainless steel heat treated to H900 specification.







Typical Mechanical Properties	Standard	Markforged H900	MIM H900	ASTM A564 H900
Ultimate Tensile Strength	ASTM E8	1250 MPa	1190 MPa	1310 MPa
0.2% Yield Strength	ASTM E8	1100 MPa	1090 MPa	1170 MPa
Elongation at Break	ASTM E8	6%	6%	10%
Tensile Modulus	ASTM E8	170 GPa	190 GPa	190 GPa
Hardness	ASTM E18	36 HRC	33 HRC	40 HRC
Corrosion	ASTM F1089	Pass	Pass	Pass
Relative Density	_	≥ 96%	95.5%	100%

All data and graphs on front page reflect values of H900 heat treated 17-4 PH SS. Markforged represent typical tested values values, while MIM H900 and Wrought H900 represent typical reference values from MPIF Standard 35. For values of Markforged printed 17-4 PH SS as-sintered and with H1150 heat treatment, please see the reverse side. All composition and "As-Sintered" data verified by a third party test facility. All microstructure images etched and photographed at Markforged.



# 17-4 PH Stainless Steel

Values listed below compare Markforged samples processed in three different ways: As-Sintered, heat treated to H900 standard, and heat treated to H1150 standard.

<b>Typical Mechanical Properties</b>	Standard	As Sintered	H900	H1150
Ultimate Tensile Strength	ASTM E8	1050 MPa	1250 MPa	950 MPa
0.2% Yield Strength	ASTM E8	800 MPa	1100 MPa	880 MPa
Elongation at Break	ASTM E8	5%	6%	10%
Tensile Modulus	ASTM E8	140 GPa	170 GPa	170 GPa
Hardness	ASTM E18	30 HRC	36 HRC	32 HRC
Corrosion	ASTM F1089	Pass	Pass	Pass
Relative Density	<u> </u>	≥ 96%	≥ 96%	≥ 96%

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