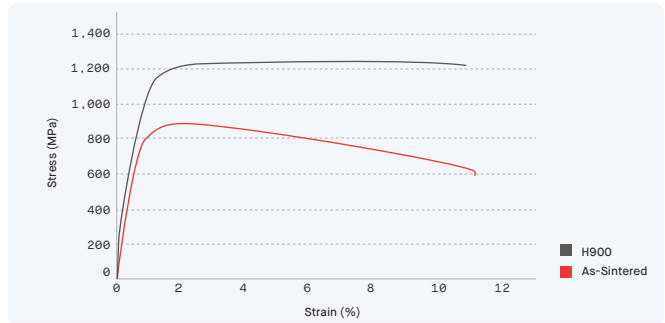


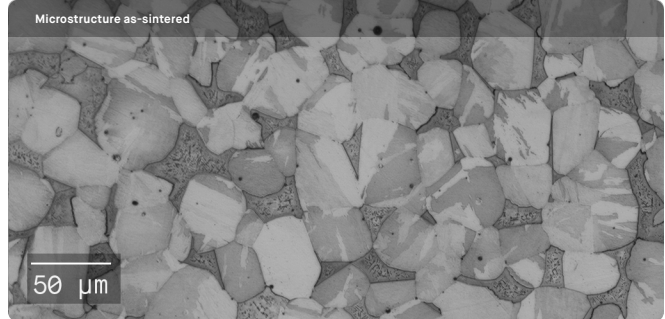
[Material Data Sheet]

# 17-4 PH Stainless Steel PureSinter Furnace



**COMPOSITION %**

C	0.07 (max)
Cr	15.5 - 17.5
Ni	3.0 - 5.0
Cu	3.0 - 5.0
Nb + Ta	0.15 - 0.45
Mn	1.0 (max)
Si	1.0 (max)
Fe	Balance



**MECHANICAL PROPERTIES IN DESKTOP METAL PURESINTER FURNACE**

	Standard	X-Series™ As-Sintered	MIM - MPIF 35 min As-Sintered	X-Series™ H900 Heat Treat	MIM - MPIF 35 min H900 Heat Treat
Ultimate tensile strength (MPa)	ASTM E8/E8M	<b>890 ± 20</b>	790 - 900	<b>1,210 ± 11</b>	1,070 - 1,190
Yield strength (MPa)	ASTM E8/E8M	<b>765 ± 19</b>	650 - 730	<b>1,055 ± 41</b>	970 - 1,090
Elongation at break (%)	ASTM E8/E8M	<b>11.3 ± 1</b>	4 - 6	<b>8 ± 2.9</b>	4 - 6
Young's modulus (GPa)	ASTM E111	<b>190</b>	190	<b>200</b>	190
Hardness (HRC)	ASTM E18	<b>28.2 ± 0.8</b>	27	<b>41.2 ± 0.8</b>	35
Density (g/cc)		<b>7.70 ± 0.01</b>	7.5	<b>7.70 ± 0.01</b>	7.5
Un-notched Charpy impact energy (J)	MPIF 59	<b>165 ± 5</b>	140	<b>175 ± 15</b>	140

**ATTRIBUTES & APPLICATIONS**

- Acid & corrosion resistant
- High strength, hardness, & elongation
- Heat treatable to a range of strength and hardness levels
- Surgical tooling / end-of-arm components (e.g. grippers, cutters)
- Mechanical components (static & dynamically loaded)
- Impact components (e.g. golf iron heads)

**OTHER STANDARD DESIGNATIONS**

- UNS S17400
- EN 1.4542
- ISO 4542-174-00-1

1. YS, UTS, Elongation, and Young's modulus properties noted represent **Xy orientation**  
 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.

[Material Data Sheet]

# 17-4 PH

## Stainless Steel

**COMPOSITION %**

Fe	Balance
C	0.07 (max)
Cr	15.5 - 17.5
Cu	3 - 5
Mn	1.0 (max)
Nb + Ta	0.15 - 0.45
Ni	15.5 - 17.5
Si	1.0 (max)

**MECHANICAL PROPERTIES SINTERED IN THIRD-PARTY COMMERCIAL FURNACE**

	Standard	X-Series™ H900 Heat Treat	MIM - MPIF 35 min * H900 Heat Treat
Ultimate tensile strength (MPa)	ASTM E8/E8M	765 ±	970
Yield strength (MPa)	ASTM E8	970 - 1030 ( x & y) 970 - 1020 (z)	1070
Elongation at break (%)	ASTM E8	4 - 12 ( x & y) 4 - 11 (z)	4
Young's modulus (GPa)	ASTM E8	180 - 190	190
Hardness (HRC)	ASTM E18	35 - 41	35
Unnotched Charpy impact strength (J)			
Poisson's ratio		0.28 - 0.30	
Relative Density (%)		96 - 99	
Density (g/cc)		7.5 - 7.7	7.5
Surface roughness (µm Ra)		3 - 12	

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