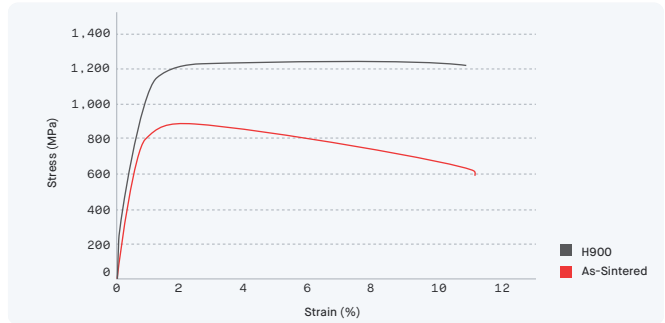


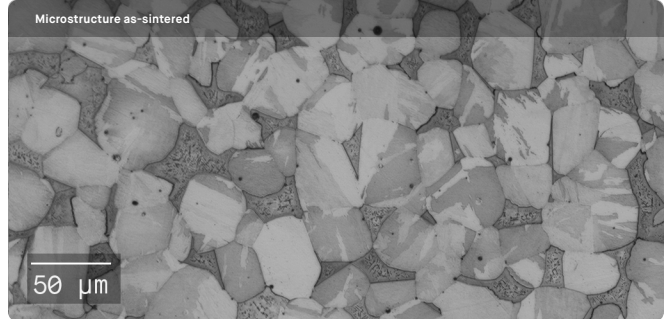
[Material Data Sheet]

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	890 ± 20	790 - 900	1,210 ± 11	1,070 - 1,190
Yield strength (MPa)	ASTM E8/E8M	765 ± 19	650 - 730	1,055 ± 41	970 - 1,090
Elongation at break (%)	ASTM E8/E8M	11.3 ± 1	4 - 6	8 ± 2.9	4 - 6
Young's modulus (GPa)	ASTM E111	190	190	200	190
Hardness (HRC)	ASTM E18	28.2 ± 0.8	27	41.2 ± 0.8	35
Density (g/cc)		7.70 ± 0.01	7.5	7.70 ± 0.01	7.5
Un-notched Charpy impact energy (J)	MPIF 59	165 ± 5	140	175 ± 15	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	1070 - 1310	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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