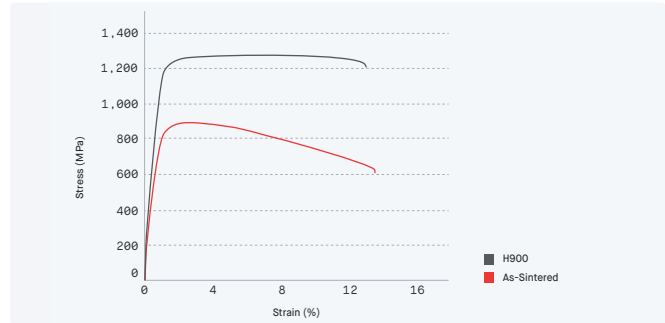


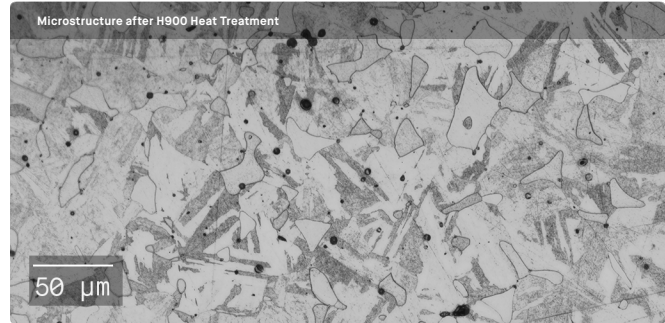
[Material Data Sheet]

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	Production System™ As-Sintered	ASTM B883 / MPIF 35 min As-Sintered	Production System™ H900 Heat Treated / ASTM A564	ASTM B883 / MPIF 35 H900 Heat Treated / ASTM A564
Ultimate tensile strength ¹ (MPa)	ASTM E8M	880 ± 11	790-900	1,275 ± 21	1,070-1,190
Yield strength ¹ (MPa)	ASTM E8M	745 ± 19	650-730	1,110 ± 33	970-1,090
Elongation at break (%)	ASTM E8M	10.7 ± 1	4-6	11.8 ± 3.2	4-6
Young's modulus ² (GPa)	ASTM E111	192	190	202	190
Hardness (HRC)	ASTM E18	27.2 ± 0.6	27	43.7 ± 0.7	35
Un-notched charpy impact energy (J)	MPIF 59	153 ± 5	140	182 ± 12	140
Density (g/cm ³)		7.7 ± 0.005	7.5		7.5

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)

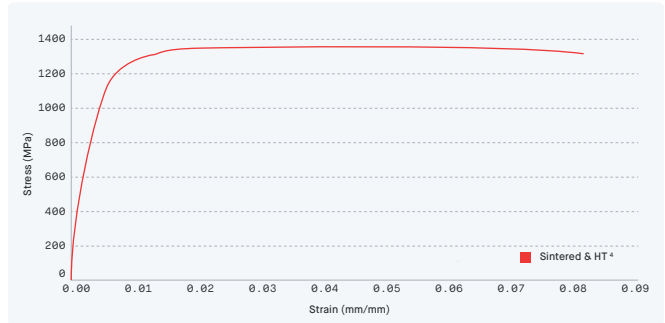
OTHER STANDARD DESIGNATIONS

- 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.

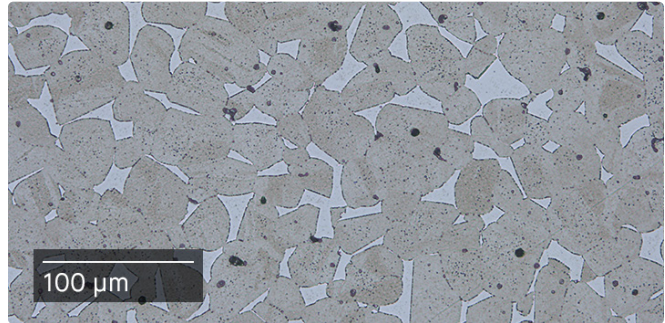
[Material Data Sheet]

17-4 PH Stainless Steel



COMPOSITION %

Fe	Balance
C	0.07 (max)
Cr	15.5 - 17.5
Ni	3.0 - 5.0
Cu	3.0 - 5.0
Mn	1.0 (max)
Nb + Ta	0.15 - 0.45
Si	1.0 (max)
S	0.03 (max)



MECHANICAL PROPERTIES SINTERED IN THIRD-PARTY COMMERCIAL FURNACE

	Standard	Production System™ As-Sintered	ASTM B883 / MPIF 35 min As-Sintered	Production System™ H900 Heat Treated / ASTM A564	ASTM B883 / MPIF 35 H900 Heat Treated / ASTM A564
Ultimate tensile strength ¹ (MPa)	ASTM E8/E8M	900 ± 20	790-900	1,315 ± 45	1,070-1,190
Yield strength ¹ (MPa)	ASTM E8/E8M	655 ± 26	650-730	1,130 ± 42	970-1,090
Elongation at break (%)	ASTM E8/E8M	10.9 ± 0.9	4-6	8.4 ± 2.4	6
Young's modulus ² (GPa)	ASTM E111	-	180-190	-	-
Hardness (HRC)	ASTM E18	29.5 ± 1.5	27	42.5 ± 0.4	35
Density	g/cm ³	7.7	7.5	7.7	7.5
Surface roughness ³ (µm Ra)	ISO 4287	3-8	-	3-8	-

ATTRIBUTES & APPLICATIONS

Acid & corrosion resistant

High strength, hardness & elongation

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

1. YS & UTS properties noted represent mean values across Xy & Yx orientations.
 2. Modulus available upon request.
 3. Surface roughness measured in Z direction after sintering & sand blasting.
 4. Stress strain curve reported in X print orientations after H900 heat treatment.