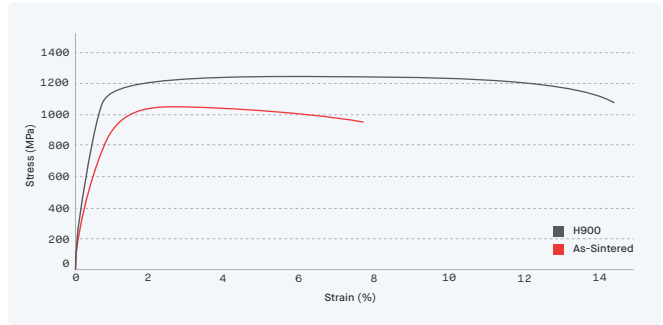


[Material Data Sheet]

17-4PH

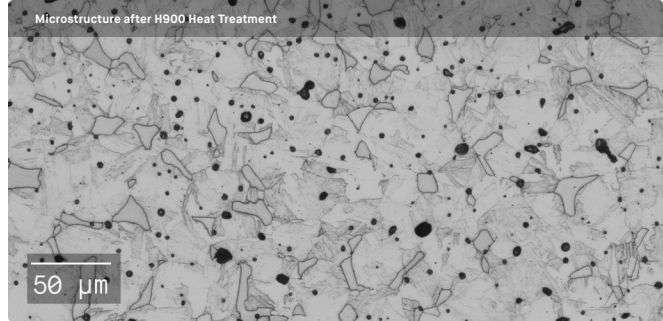
Stainless Steel

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	Studio System 2 As-Sintered	MIM - MPIF 35 min ¹ As-Sintered	Studio System 2 H900 Heat Treated	MIM - MPIF 35 min ² H900 Heat Treated
Ultimate tensile strength (MPa)	ASTM E8M	1,065 ± 24	790 - 900	1,275 ± 18	1,070 - 1,190
Yield strength (MPa)	ASTM E8M	885 ± 33	650 - 730	1,130 ± 41	970 - 1,1090
Elongation at break (%)	ASTM E8M	6.2 ± 2	4 - 6	10.7 ± 3	4 - 6
Young's modulus (GPa)	ASTM E8M	197	190	207	190
Hardness (HRC)	ASTM E18	31.4 ± 1.2	27	41.9 ± 1	35
Un-notched charpy impact energy (J)	MPIF 40	145 ± 25	140	126 ± 5	140
Density (g/cm ³)		7.6 ± 0.03	7.5	7.6 ± 0.03	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)

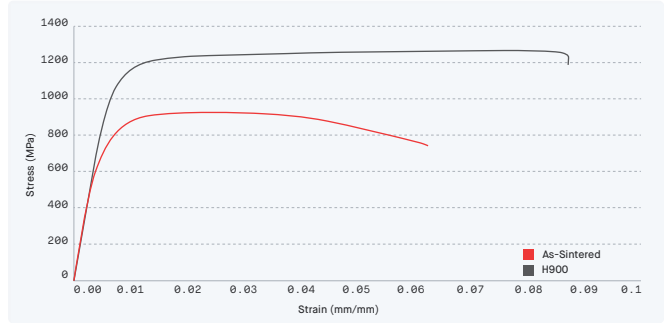
OTHER STANDARD DESIGNATIONS

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

1. Listed designations are for reference purposes only. Composition and mechanical properties may vary.
 2. 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.

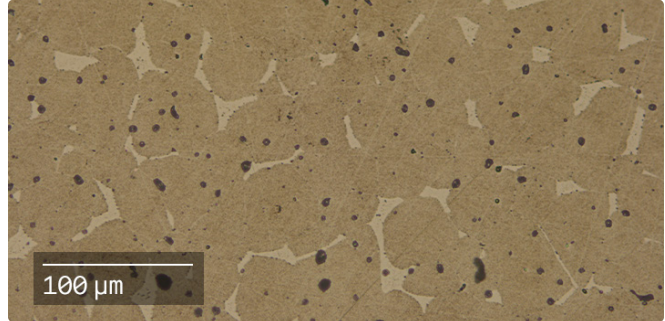
[Material Data Sheet]

17-4PH Stainless Steel



COMPOSITION % (AISI/SAE 17-4 PH)

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



MECHANICAL PROPERTIES SINTERED IN THIRD-PARTY COMMERCIAL FURNACE

	Standard	Studio System 2	MIM - MPIF 35 min**	Studio System 2	MIM - MPIF 35 min**
		As-Sintered	As-Sintered	H900 Heat Treated	H900 Heat Treated
Yield strength – xy (MPa)	ASTM E8M	695	650	1,110	970
Ultimate tensile strength – xy (MPa)	ASTM E8M	925	790	1,275	1070
Elongation at break (%)	ASTM E8M	5.3%	4%	8.1%	4%
Hardness (HRC)	ASTM E18	26	27 (typ)	39	33 (typ)
Density (g/cc)	ASTM B311	7.56	7.5	7.56	7.5

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
- ISO 4542-174-00-I

*Listed designations are for reference purposes only. Composition and mechanical properties may vary.

**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.

Tensile properties and density data reported are mean values minus 1 sigma.