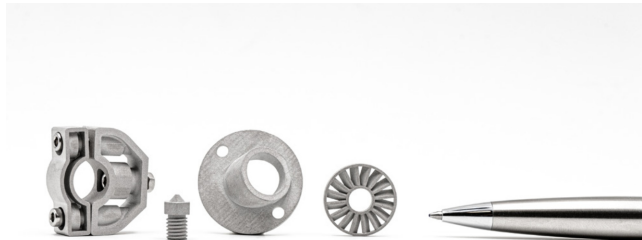


Material Data Sheet Stainless Steel 17 - 4PH – 1.4542



Martensitic microstructure with high chromium, moderate nickel and copper content and a low level of carbon and niobium providing excellent corrosion resistance, high strength and hardness as well as superior wear resistance. Widely used in the medical sector, the petrochemical industry, for food processing, and aerospace applications.

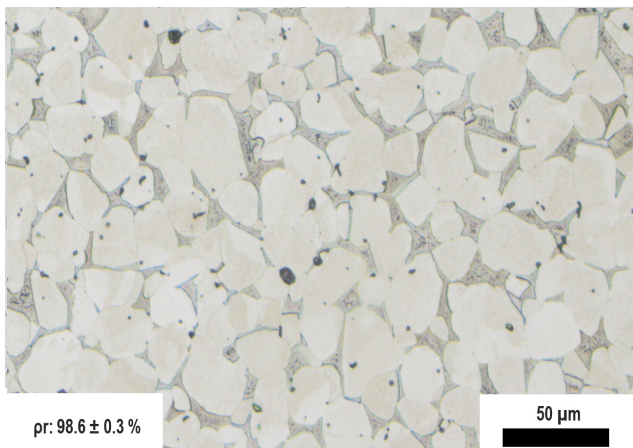
Material properties

High strength and wear resistance
Superior hardness
High corrosion resistance

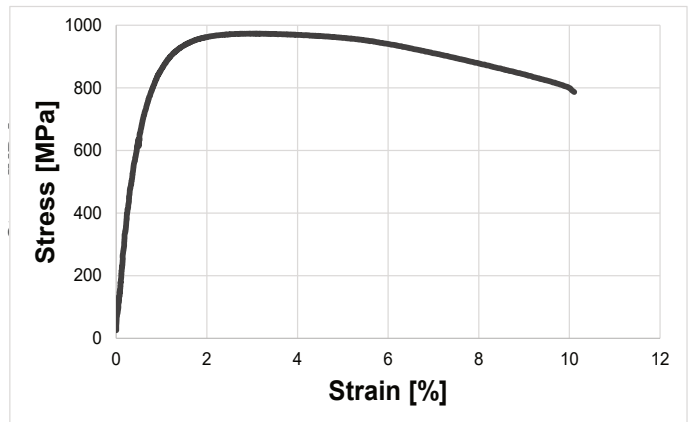
Composition ¹

Element	Fe	C	Cr	Ni	Cu	Mo	Si	Mn	Nb	S	P
Fraction [%]	Balance	≤0.07	16-17	4-5	3.5-4.5	≤0.3	≤1	≤1	≤0.15-0.45	≤0.03	≤0.035

Microstructure and porosity ²



Microstructure of etched testing sample



Typical stress-strain curve of sintered sample

Mechanical properties ³

Value	Standard	Lithography-based Metal Manufacturing (LMM)	Metal Injection Molding (MIM) minimum ⁴	MIM typical ⁴
Yield strength [MPa]	ISO 6892	749	640	730
Ultimate strength [MPa]	ISO 6892	963	790	900
Elongation [%]	ISO 6892	9.8	4	6
Young's Modulus [GPa]	ISO 6892	196	—	190
HV 30	ISO 6507	318	—	—
HRC ⁵	ASTM E140	33	—	27
Density ⁶ [%]	—	98.6	—	95

¹ Nominal values provided by the powder supplier.

² Typical values achieved with Incus process parameters.

³ Tensile samples type B according to ISO 2740.

⁴ As-sintered. Per MPIF Standard 35, Materials Standards for Metal Injection Molded Parts (MPIF 35-MIM, 2018).

⁵ Converted from HV.

⁶ With respect to a powder density of 7,76g/cm³ (Manufacturer information).