

StainlessSteel PHI: Hardenable stainless steel

for engineering and medical applications

StainlessSteel PHI is a stainless steel. The chemical composition conforms to the compositions of 15-5 PH, DIN 1.4540 and UNS S15500. This kind of steel is characterized by having excellent mechanical properties, especially in the precipitation hardened state. This type of steel is widely used in a variety of medical, aerospace and other engineering applications requiring high hardness and strength. This material is ideal for many part-building applications such as functional metal prototypes, small series products, individualised products or spare parts.

Properties and Applications

- Very high strength; easily hardenable up to approx. 45 HRC
- Engineering applications including functional prototypes, small series products, individualised products or spare parts; parts requiring particularly high strength and hardness



Mechanical properties

	As built	After heat treatment
Ultimate tensile strength	1050 ± 50 MPa 153 ± 7 ksi	1450 ± 100 MPa 211 ± 14 ksi
Yield strength (Rp 0.2 %)	1000 ± 50 MPa 145 ± 7 ksi	1300 ± 100 MPa 189 ± 14 ksi
Elongation at break	17 ± 4 %	12 ± 2 %
Hardness	30 - 35 HRC	40 - 45 HRC

Physical properties

	As built	After heat treatment
Relative density	approx. 100 %	approx. 100 %
Density	7.8 g/cm ³ 0.28 lb/in ³	7.8 g/cm ³ 0.28 lb/in ³
Thermal conductivity	13.8 ± 0.8 W/m°C 96 ± 5 Btu/(h ft ² °F/in)	15.7 ± 0.8 W/m°C 109 ± 5 Btu/(h ft ² °F/in)
Specific heat capacity	460 ± 20 J/kg °C 0.110 ± 0.005 Btu/(lb °F)	470 ± 20 J/kg °C 0.113 ± 0.005 Btu/(lb °F)

NOTE: EOS GmbH e-Manufacturing Solutions

Detailed specifications may be found at <http://www.eos.info/en/products/materials.html>

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