



Material Data Sheet: EOS Stainless Steel 17-4

Properties: has very good corrosion resistance and mechanical properties, especially excellent ductility in laser processed state, and is widely used in a variety of engineering application

Typical applications:

- Engineering applications including functional prototypes, small series products, individualized products or spare parts.
- Parts requiring high corrosion resistance, sterilisability, etc
- Parts requiring particularly high toughness and ductility.

PHYSICAL PROPERTIES

Material Composition	Steel including alloying elements Cr (15-17.5 wt-%) Ni (3-5 wt-%) Cu (3-5 wt-%) Mn (max. 1 wt-%) Si (max. 1 wt-%) Mo (max. 0.5 wt-%) Nb (.15-0.45wt-%) C (max. 0.07 wt-%)
Relative Density with Standard Parameters	Approx. 100%
Density with Standard Parameters	7.8 g/cm ³ 0.28 lb/in ³

MECHANICAL PROPERTIES

Ultimate Tensile Strength -in horizontal direction(modified MPIF 10) -in vertical direction (modified MPIF 10) -after stress relieving at 650 °C(1170 °F) for 1 hour	1050 ±50 MPa 152 ± 7 ksi 980 ± 50 MPa 142 ± 7 ksi Approx. 1200 MPa Approx 174 ksi
Yield strength (Rp 0.2 %) (MPIF 10) -in horizontal direction (MPIF 10) - in vertical direction (modified MPIF 10)	540 ± 50 MPa 78 ± 7 ksi 500 ± 50 MPa 73 ± 7 ksi

Elongation at break (MPIF 10)	25 + 5%
Young's modulus (MPIF 10) - after stress relieving at 650 °C(1170°F) for 1 hour	170 ± 20 GPa 25 ± 3 msi Approx. 195 GPa Approx. 29 msi
Hardness [5] -as built -ground and polished [6]	Approx. 230 ± 20 HV1 Approx. 250 – 400 HV1

[5] Vickers hardness measurement (HV) according to DIN EN ISO 6507-1. Note that depending on the measurement method used, the measured hardness value can be dependent on the surface roughness and can be lower than the real hardness. To avoid inaccurate results, hardness should be measured on a polished surface.

[6] Due to work-hardening effect

THERMAL PROPERTIES

Coefficient of thermal expansion - over 20 – 600 °C (68 - 1080°F)	14 x 10 ⁻⁶ m/m °C 7.8 x 10 ⁻⁶ in/in °F
Thermal conductivity - at 20 – 600 °C (68 °F) - at 100 °C (212 °F) - at 200 °C (392 °F) - at 300 °C (572 °F)	13 W/m °C 90 Btu/(h ft ² °F/in) 14 W/m °C 97 Btu/(h ft ² °F/in) 15 W/m °C 104 Btu/(h ft ² °F/in) 16 W/m °C 111 Btu/(h ft ² °F/in)
Maximum operating temperature	550 °C 1022 °F

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