

StainlessSteel AISI316L

StainlessSteel AISI316L is a **corrosion resistant iron based alloy**. The parts built from StainlessSteel 316L have chemical composition corresponding to ASTM F138 "Standard Specification for Wrought 18Cr-14Ni-2.5Mo Stainless Steel Bar and Wire for Surgical Implants (UNS S31673)". This kind of stainless steel is characterized having a **good corrosion resistance** and evidence that there are no leachable substances in cytotoxic concentrations.

This material is ideal in: - **Lifestyle/Consumer** (watches, other jewellery, spectacle frames, decorations, functional elements in electronic housing and accessories) - **Automotive/Industrial** (non-corroding common material, food and chemical plants) - **Aerospace/Turbine industry** (entry-level material for Laser Sintering Technology, mounting parts, brackets, heat exchangers). Parts built from StainlessSteel 316L **can be machined, shot-peened and polished** in as-built or stress relieved (AMS2759) states if required. Solution annealing is not necessary because the mechanical properties of as-built state are showing desired values (ASTM A403). Parts are not ideal in temperature range 427°C-816°C where precipitation of chromium carbides occurs.

Mechanical Properties

	Test Method	As Built	Heat Treated
Tensile Strength	ISO 6892-1:2009(B) Annex D	587 ± 26 MPa	529 ± 8 MPa
Yield Strength (Rp 0.2%)	ISO 6892-1:2009(B) Annex D	464 ± 26 MPa	330 ± 8 MPa
Elongation at Break	ISO 6892-1:2009(B) Annex D	40 ± 5%	63 ± 5%
Young's Modulus	-----	167 ± 26 GPa	200 GPa
Hardness	DIN EN ISO 6508-1	20 HRC	20 HRC

Thermal Properties

Thermal conductivity	ASTM E1461-13	15 ± 2 W/m°C	15 ± 2 W/m°C
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Chemical Composition

Fe	Balance
Cr	17 - 19%
Ni	13 - 15%
Mo	2,25 - 3%
C	≤ 0,03%
Mn	≤ 2%
Cu	≤ 0,5%
P	≤ 0,025%
S	≤ 0,01%
Si	≤ 0,75%
N	≤ 0,1%

Heat Treatment

Stress Relief		
Temperature	Time	Atmosphere
RT - 550°C	3h	Inert
550°C	6h	Inert
550°C - RT	-----	Inert

Physical Properties

Relative Density	Approx. 99,99 %
Density	7,90 g/cm ³