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Stainless Steel Alloy 316L

Metal Alloys

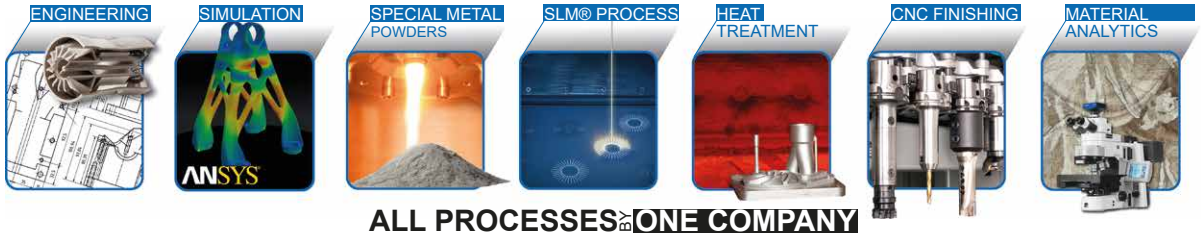
for Additive Manufacturing

ALTERNATIVE NAMES:

X2CrNiMo17-12-2
1.4404
ASTM A276

Properties	Unit	As built [1]	Heat-treated [2]
Tensile Strength R_m	MPa	650 ±30	580 ±30
Yield Strength $R_{p0,2}$	MPa	550 ±30	350 ±30
Elongation at Break A_5	%	45 ±5	55 ±5
Young's Modulus E	GPa	185 ±5	190 ±5
Charpy Notch Toughness A_v	J	48 ±3	80 ±5
Hardness	HV	210 ±5	175 ±5

Rosswag Engineering offers a holistic and fully integrated process chain for Additive Manufacturing services. Our portfolio ranges from manufacturing of your prototypes, tools and small serial products to an individual consulting and engineering process for the choice of material, parameters and process chain.



ALL PROCESSES IN ONE COMPANY

Rosswag GmbH · August-Roßwag-Str. 1 · D-76327 Pfinztal · Germany · Phone +49 7240/9410-131 · Fax +49 72409410-80
info@rosswag-engineering.de · www.rosswag-engineering.de

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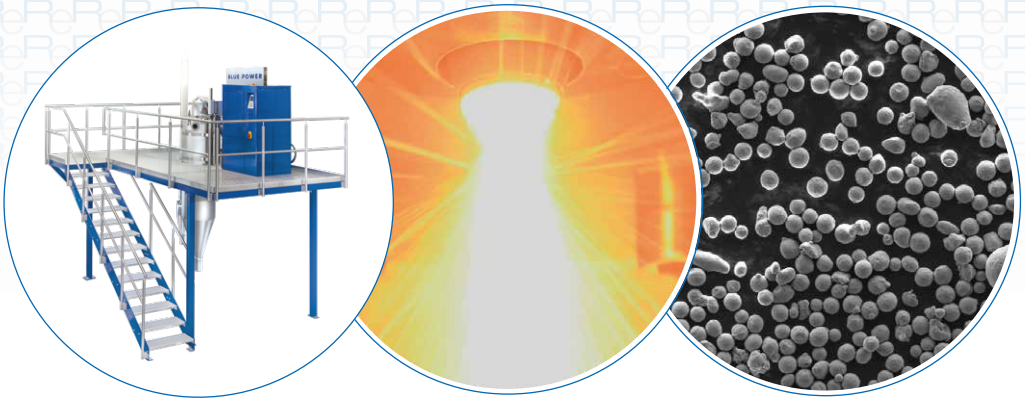


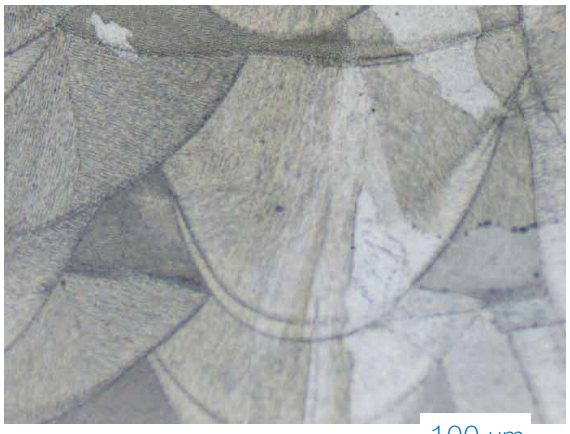
Material
characteristics

The stainless austenitic steel 316L has a good resistant to corrosion. It can be used for temperatures up to 550 °C. Due to its resistance to intergranular corrosion at temperatures below 300 °C, this material is frequently used in chemical, pharmaceutical and food industry applications. The good weldability of 316L leads to an excellent processability in Laser Powder Bed Fusion and a wide applicability.

CHEMICAL COMPOSITION

Element	Mass Fraction [%]
Ni	10.0 - 14.0
Cr	16.0 - 18.0
N	≤ 0.1
Mo	2.0 - 3.0
C	≤ 0.03
Si	≤ 1.0
Mn	≤ 2.0
P	≤ 0.045
S	≤ 0.03
Fe	Balance

MICROSECTION



1) The specified material properties were determined at room temperature. They are multi-dimensionally dependent on many different machine and process parameters. Without further investigation, the material properties do not constitute a sufficient basis for component dimensioning.

2) Specific heat treatment processes lead to optimized mechanical-technological properties to meet the component requirements.

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