



MATERIALS FOR 3D PRINTING

STAINLESS STEEL



**DANISH
TECHNOLOGICAL
INSTITUTE**

316L

Stainless steel alloy



Good hardness, high ductility, and corrosion resistance are the key characteristics of this stainless steel alloy. It can also be used at high temperatures and is suitable for tools and components with significant wear. When we print with 316L at the Danish Technological Institute, the material also meets the requirements for food contact.

We print stainless steel using Laser Powder Bed Fusion technology, which works with powder and uses a laser to weld the powder layers together. This technology requires a support structure to attach the part to the build platform. The support is mechanically removed after printing.

The technology can produce parts that comply with ISO 2768-m 1; however, the tolerances depend significantly on the geometry of the part. At the Danish Technological Institute, our 3D printing production is also ISO 9001 certified.

MATERIAL PROPERTIES

TENSILE STRENGTH [Rm]	629 ±11 MPa
YIELD STRENGTH [Rp0,2]	480 ±17 MPa
ELONGATION AT BREAK [A]	32 ±4 %
VICKERS HARDNESS [HV10]	212 ±6
PART DENSITY	>99,6 %
MATERIAL MASS DENSITY	7,9 g/cm ³

SURFACE TEXTURE

Media blasted

Deburred

Processed

Average roughness [Ra]	8 ±2	3 ±1	0,8
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Danish Technological Institute - Industrial 3D-printing

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Technology:

- Laser Powder Bed Fusion

Printer:

- SLM Solutions - SLM280

Build volume:

- 280 x 280 x 365 mm

Application:

- Industrial use

Possible post-processing:

- De-stressing
- Heat treatment
- Deburring
- Media blasting
- Conventional processing

Customization:

Contact us if you have specific requests for surface roughness and material properties.

Design features:

- Minimum feature size 0,6 mm
- Minimum channel size Ø2 mm
- Minimum wall thickness 1 mm
- Support for overhangs less than 45°
- Hole for emptying powder Ø5 mm

Examples of use

- Heat exchangers for the energy sector
- Implants, surgical solutions, and medical equipment
- Hygienic nozzles, valves, and manifolds for food applications



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