

EOS StainlessSteel 316L  
Material Data Sheet

# EOS StainlessSteel 316L

EOS StainlessSteel 316L is a high performance marine-grade austenitic stainless steel that is molybdenum alloyed for enhanced corrosion resistance in chloride environments. 316L is a standard material for numerous applications in process, energy, paper, transportation and other industries.

## Main Characteristics:

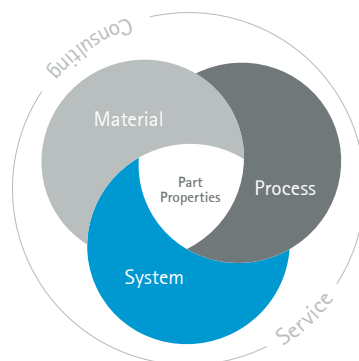
- High ductility and toughness
- High strength
- High corrosion resistance

## Typical Applications:

- Chemical industry
- Food processing
- Medical devices

## The EOS Quality Triangle

EOS uses an approach that is unique in the AM industry, taking each of the three central technical elements of the production process into account: the system, the material and the process – together simply described as the Quality Triangle. EOS focuses on delivering reproducible part properties for the customer.



All of the data stated in this material data sheet is produced according to EOS Quality Management System and international standards.

## Powder Properties

The chemical composition of EOS StainlessSteel 316L corresponds to ASTM F138 material standard for Surgical Implants (UNS S31673).

### Powder chemical composition (wt.-%)

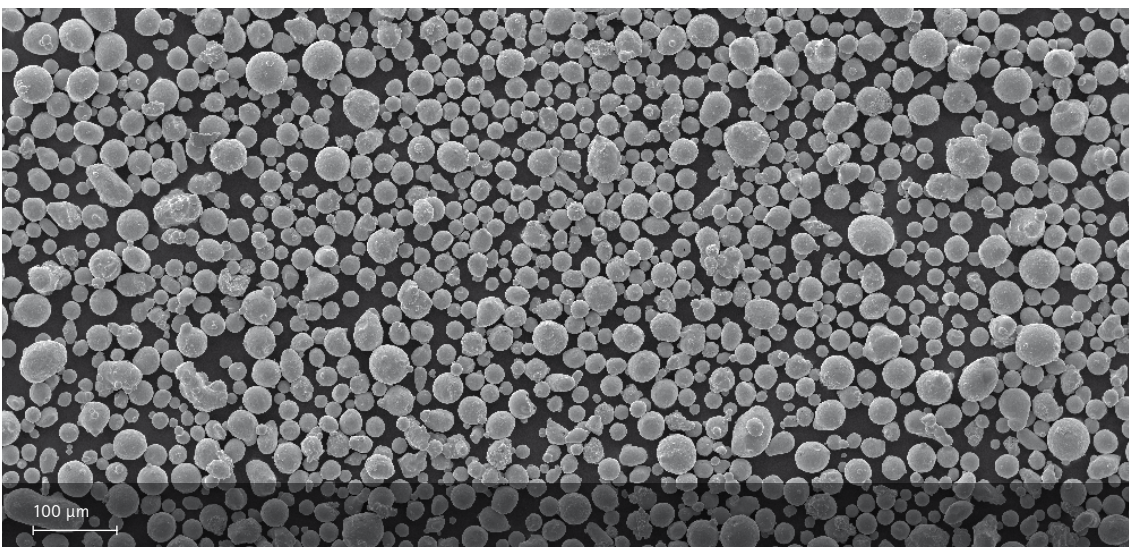
Element	Min.	Max.
Fe	Balance	
Cr	17.00	19.00
Ni	13.00	15.00
Mo	2.25	3.00
C	-	0.03
N	-	0.10

### Powder particle size

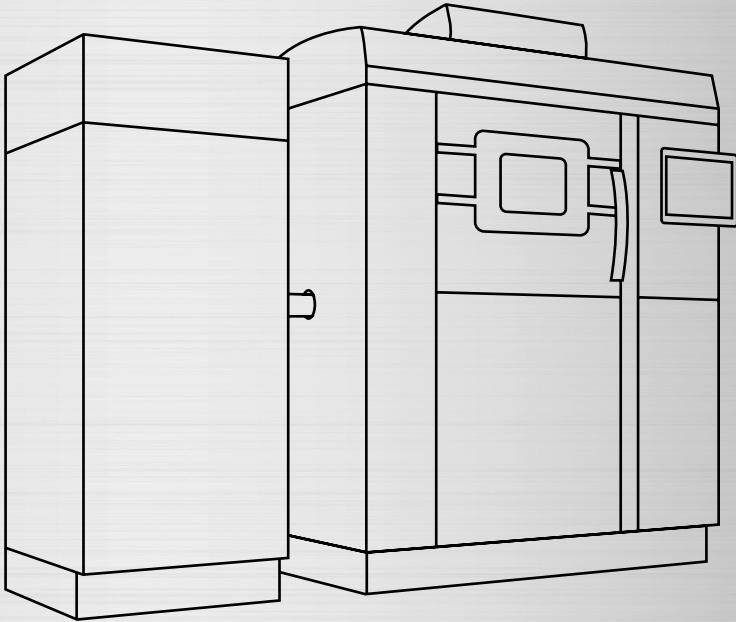
Generic particle size distribution

20 – 65  $\mu\text{m}$

*SEM picture of EOS StainlessSteel 316L powder.*







## EOS StainlessSteel 316L for EOS M 290 | 20 $\mu\text{m}$

Process Information

Chemical and Physical Part Properties

Heat Treatment

Mechanical Properties

Additional Data

## EOS StainlessSteel 316L for EOS M 290 | 20 µm

### Process Information

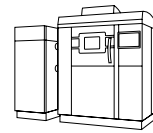
This process product is optimized for robustly building parts with EOS M 290 system using EOS StainlessSteel 316L. The mechanical properties have been validated to TRL8 level.

System set-up	EOS M 290
EOS ParameterSet	316L 20µm Surface M290/400W
EOSPAR name	316L_Surface_1.X
Software requirements	EOSPRINT 2.7 or newer EOSYSTEM 2.11 or newer
Powder part no.	9011-0032
Recoater blade	EOS HSS blade
Nozzle	Standard nozzle
Inert gas	Argon
Sieve	63 µm

#### Additional information

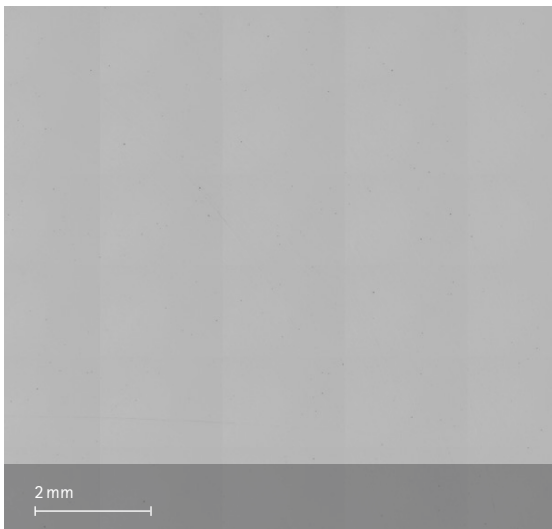
Layer thickness	20 µm
Min. wall thickness	0.3 - 0.4 mm
Typical dimensional change after HT	+0.02 %
Volume rate	2.0 mm <sup>3</sup> /s

## Chemical and Physical Properties of Parts



Chemical composition of built parts is compliant to EOS StainlessSteel 316L powder chemical composition.

Micrograph of polished surface



Microstructure solution annealed  
Etched with etchant Kallings 2



Defects	Result	Number of samples
Average defect percentage	0.018 %	45
Density, ISO3369	Result	Number of samples
Average density	≥7.97 g/cm <sup>3</sup>	45

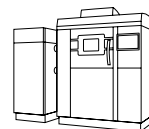
## Heat Treatment

Heat treatment according to AMS 2759 is optional.

Stress relief: Hold temperature 900 °C, hold time minimum 2 h when thoroughly heated, water quenching

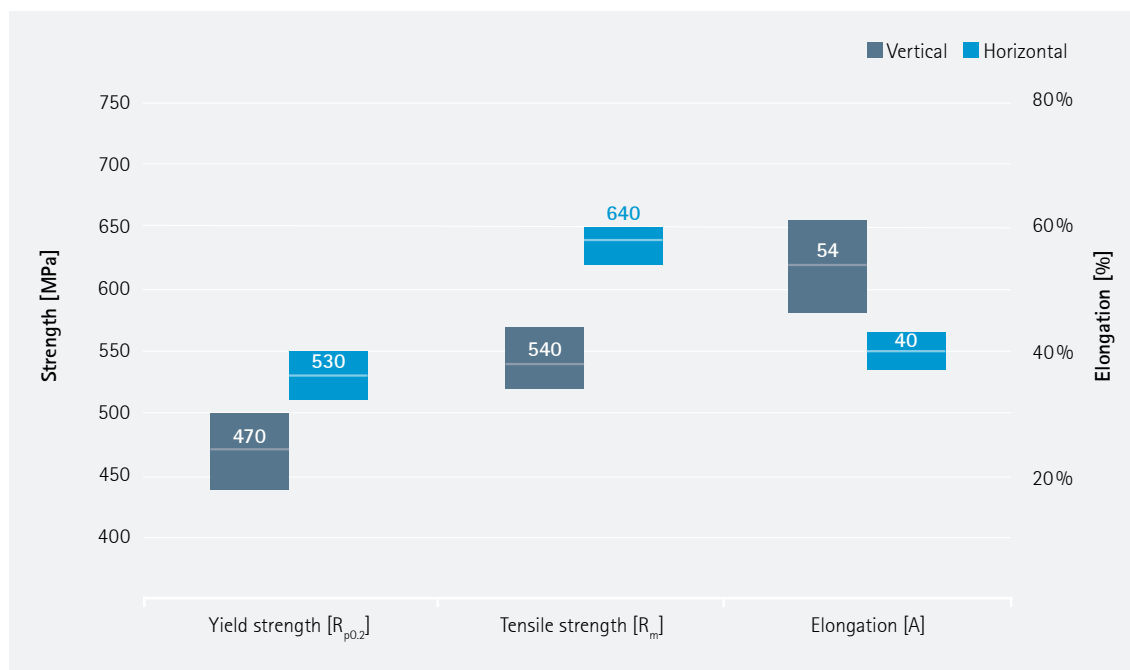
Solution annealing: Hold temperature 1 150 °C, hold time minimum 1.5 h when thoroughly heated, water quenching

# Mechanical Properties as manufactured

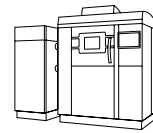


Mechanical properties ISO6892-1

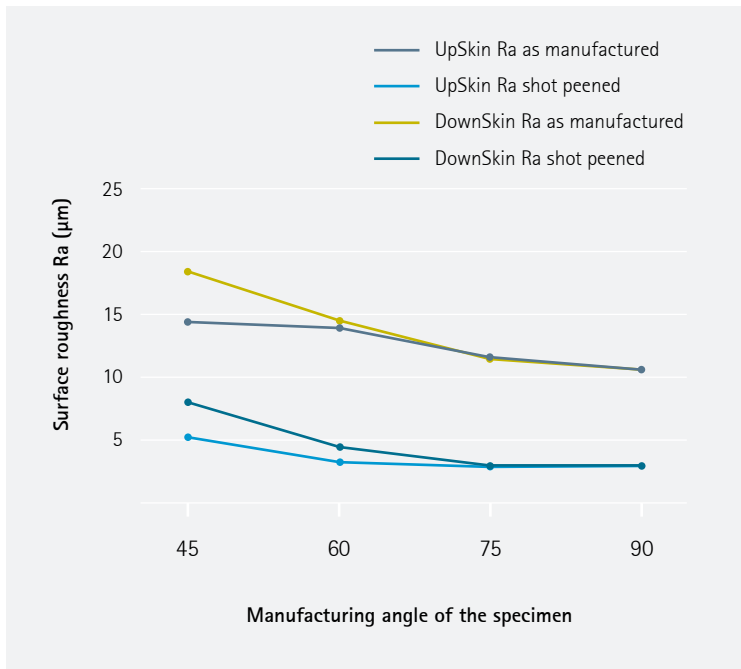
	Yield strength $R_{p0.2}$ [MPa]	Tensile strength $R_m$ [MPa]	Elongation at break A [%]	Number of samples
Vertical	470	540	54	189
Horizontal	530	640	40	162



## Additional Data



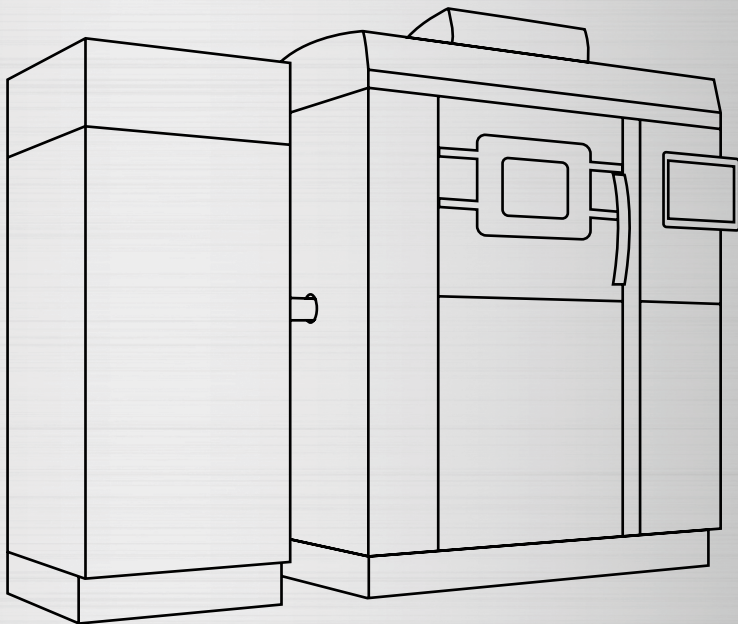
### Surface Roughness



### Coefficient of Thermal Expansion ASTM E228

Temperature	25-100 °C	25-200 °C	25-300 °C	25-400 °C
CTE	15.72 *10 <sup>-6</sup> /K	16.75 *10 <sup>-6</sup> /K	17.27 *10 <sup>-6</sup> /K	17.70 *10 <sup>-6</sup> /K





## EOS StainlessSteel 316L for EOS M 290 | 40 $\mu\text{m}$

Process Information

Chemical and Physical Part Properties

Heat Treatment

Mechanical Properties

Additional Data

## EOS StainlessSteel 316L for EOS M 290 | 40 µm

### Process Information

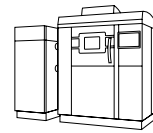
This process product is optimized for building high quality parts with EOS M 290 system reliably using EOS StainlessSteel 316L. Mechanical properties have been validated to TRL7 level.

System set-up	EOS M 290
EOS ParameterSet	316L 40µm FlexLine
EOSPAR name	316L_040_FlexM291_1.X
Software requirements	EOSPRINT 2.7 or newer EOSYSTEM 2.11 or newer
Powder part no.	9011-0032
Recoater blade	EOS HSS blade
Nozzle	EOS grid nozzle
Inert gas	Argon
Sieve	63 µm

#### Additional information

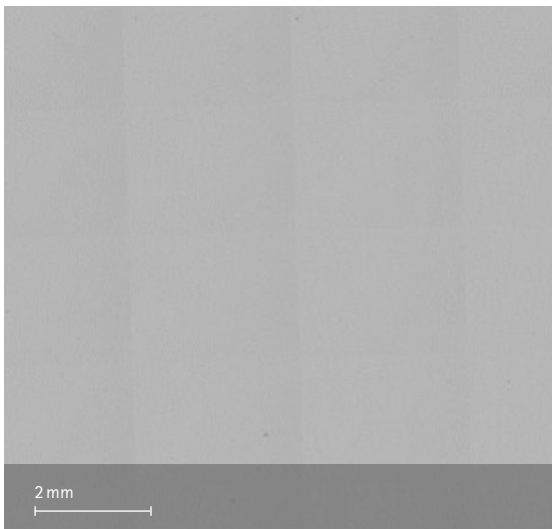
Layer thickness	40 µm
Min. wall thickness	0.1 mm
Typical dimensional change after HT	+0.2 %
Volume rate	3.7 mm <sup>3</sup> /s

## Chemical and Physical Properties of Parts



Chemical composition of built parts is compliant to EOS StainlessSteel 316L powder chemical composition.

Micrograph of polished surface



Microstructure solution annealed  
Etched with etchant Kallings 2



Defects	Result	Number of samples
Average defect percentage	0.015 %	20
Density, ISO3369	Result	Number of samples
Average density	$\geq 7.97 \text{ g/cm}^3$	20

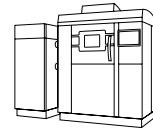
## Heat Treatment

Heat treatment according to AMS 2759 is optional.

Stress relief: Hold temperature 900 °C, hold time minimum 2 h when thoroughly heated, water quenching

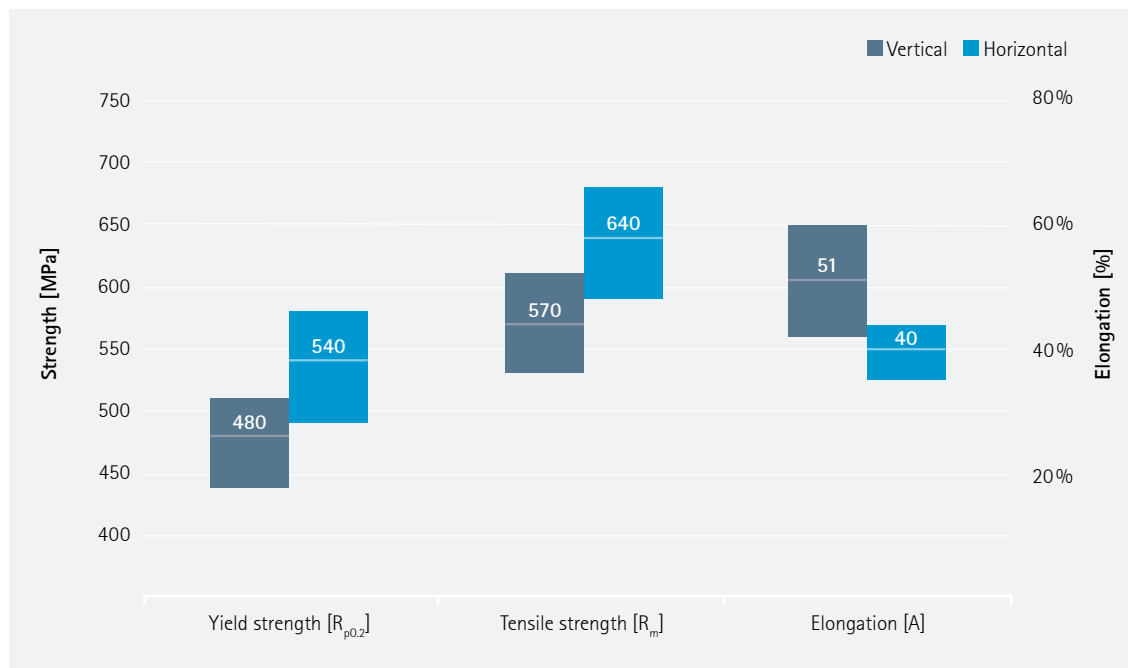
Solution annealing: Hold temperature 1 150 °C, hold time minimum 1.5 h when thoroughly heated, water quenching

## Mechanical Properties as manufactured

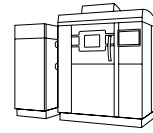


### Mechanical properties ISO6892-1

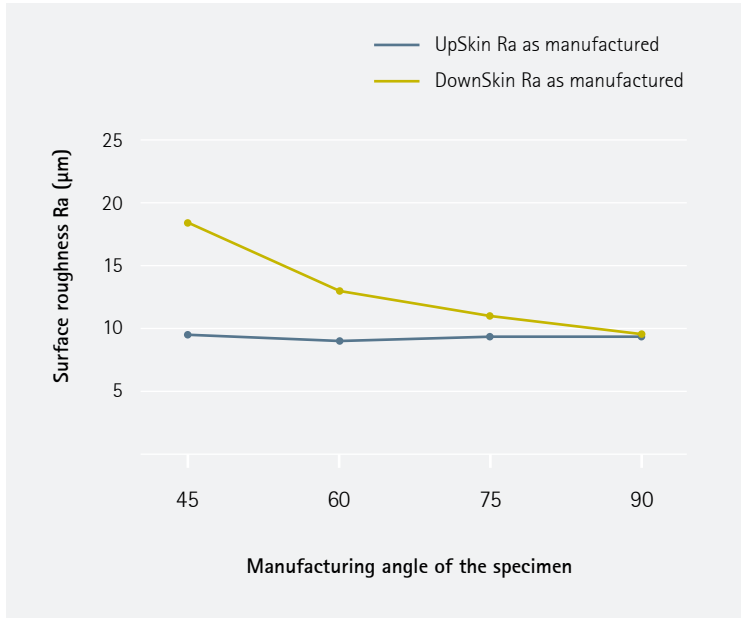
	Yield strength $R_{p0.2}$ [MPa]	Tensile strength $R_m$ [MPa]	Elongation at break A [%]	Number of samples
Vertical	480	570	51	105
Horizontal	540	640	40	90



## Additional Data



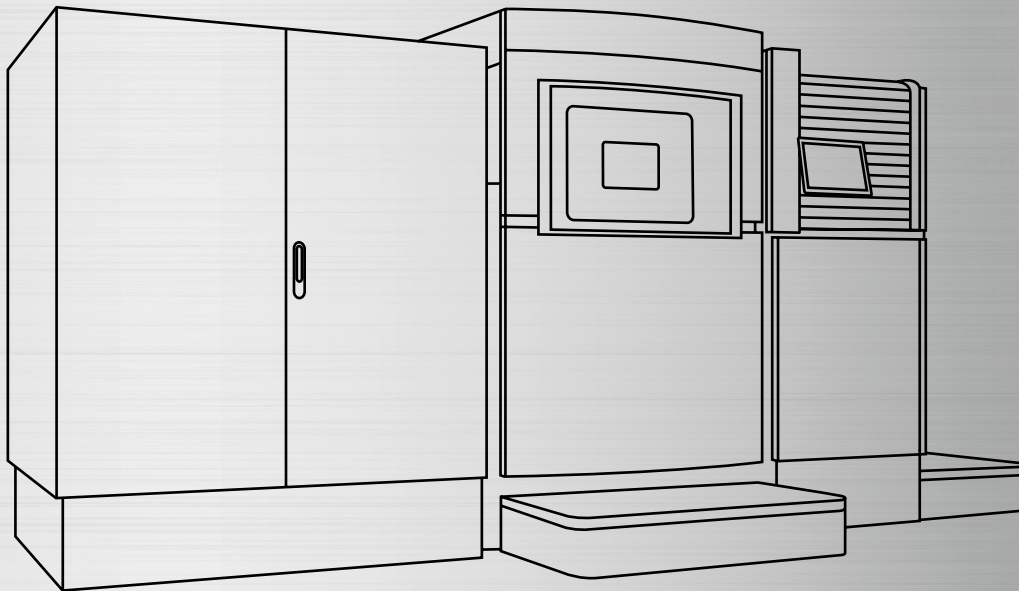
### Surface Roughness



### Coefficient of Thermal Expansion ASTM E228

Temperature	25-100 °C	25-200 °C	25-300 °C	25-400 °C
CTE	15.72 *10 <sup>-6</sup> /K	16.75 *10 <sup>-6</sup> /K	17.27 *10 <sup>-6</sup> /K	17.70 *10 <sup>-6</sup> /K





## EOS StainlessSteel 316L for EOS M 400-4 | 40 $\mu\text{m}$

Process Information

Chemical and Physical Part Properties

Heat Treatment

Mechanical Properties

Additional Data

## EOS StainlessSteel 316L for EOS M 400-4 | 40 µm

### Process Information

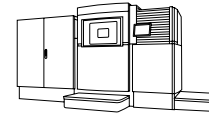
This process product is optimized for building high quality parts with EOS M400-4 system using EOS StainlessSteel.

System set-up	EOS M 400-4
EOS ParameterSet	316L 40µm Flex M 400-4
EOSPAR name	316L_040_FlexM404_1.X
Software requirements	EOSPRINT 2.7 or newer EOSYSTEM 2.11 or newer
Powder part no.	9011-0032
Recoater blade	EOS HSS blade
Inert gas	Argon
Sieve	63 µm

#### Additional information

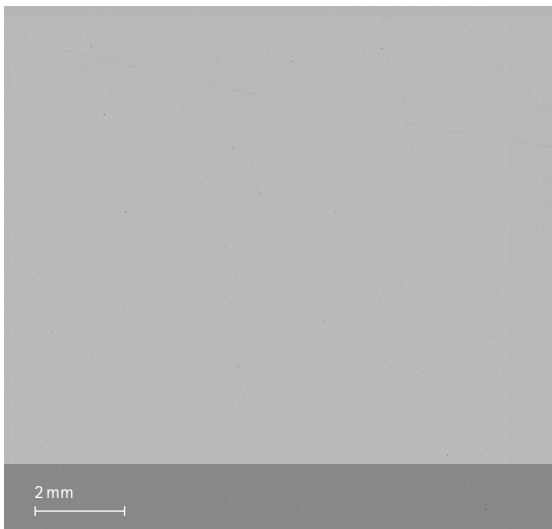
Layer thickness	40 µm
Volume rate	14.8 mm <sup>3</sup> /s

## Chemical and Physical Properties of Parts



Chemical composition of built parts is compliant to EOS StainlessSteel 316L powder chemical composition.

Micrograph of polished surface



Microstructure solution annealed  
Etched with etchant Kallings 2



Defects	Result	Number of samples
Average defect percentage	0.015 %	40

Density, ISO3369	Result	Number of samples
Average density	≥ 7.9 g/cm <sup>3</sup>	40

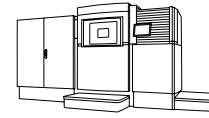
## Heat Treatment

Heat treatment according to AMS 2759 is optional.

Stress relief: Hold temperature 900 °C, hold time minimum 2 h when thoroughly heated, water quenching

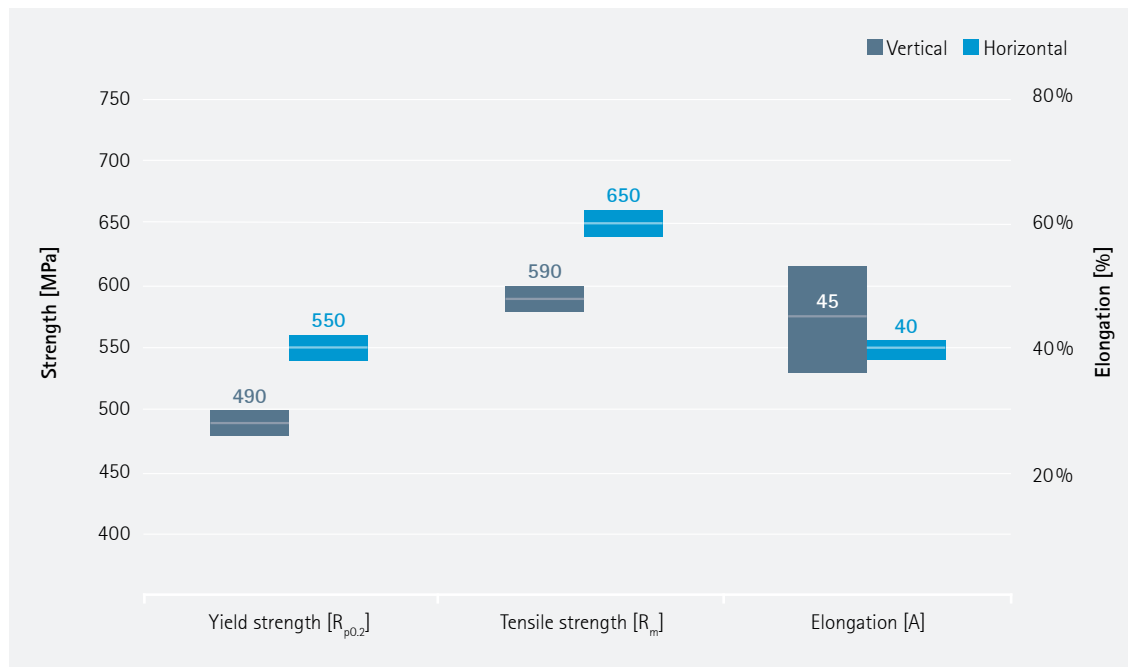
Solution annealing: Hold temperature 1 150 °C, hold time minimum 1.5 h when thoroughly heated, water quenching

## Mechanical Properties as manufactured



### Mechanical properties ISO6892-1

	Yield strength $R_{p0.2}$ [MPa]	Tensile strength $R_m$ [MPa]	Elongation at break A [%]	Number of samples
Vertical	490	590	45	120
Horizontal	550	650	40	96

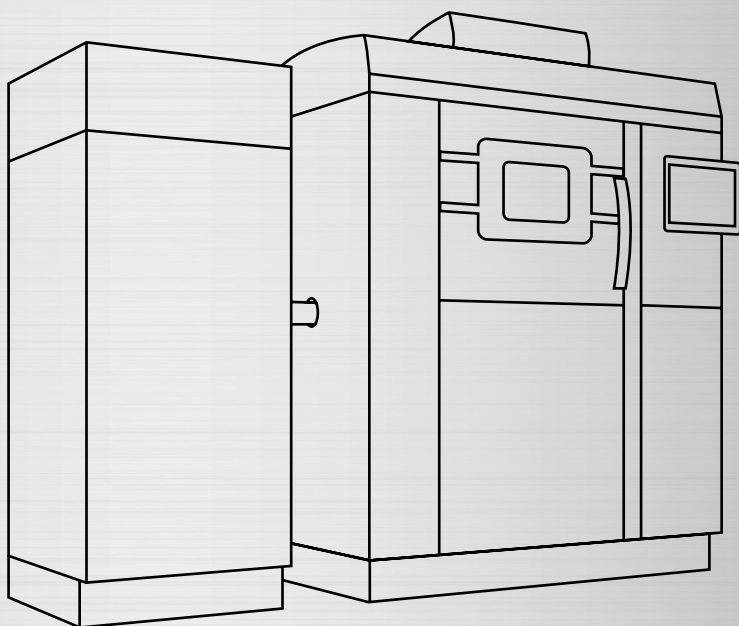


## Additional Data

### Coefficient of Thermal Expansion ASTM E228

Temperature	25-100 °C	25-200 °C	25-300 °C	25-400 °C
CTE	$15.72 \cdot 10^{-6}/K$	$16.75 \cdot 10^{-6}/K$	$17.27 \cdot 10^{-6}/K$	$17.70 \cdot 10^{-6}/K$





## EOS StainlessSteel 316L for EOS M 290 | 40/80 $\mu\text{m}$

Process Information

Chemical and Physical Part Properties

Heat Treatment

Mechanical Properties

Additional Data



## EOS StainlessSteel 316L for EOS M 290 | 40/80 µm Process Information

This process product is optimized for flexible and fast production of 316L parts with the EOS M 290 system. The parameter set has three different layer thickness options that can all be utilized within the same build: 40 µm, 80 µm and 40/80 µm Skin.

The 40µm parameter set is ideal for parts needing great detail resolution and more dense structure. The 80 µm parameter set offers a build rate that is more than double that of the long established 40 µm parameter set.

With the 40/80 µm Skin parameter set, the total build time can be reduced with the same surface quality. The parameter sets are assigned to different sections in the same build job depending on the requirements.

### Main characteristics:

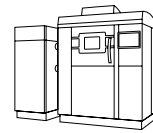
- Parameter set for fast and cost efficient production of 316L parts in small series or serial production
- With 80 µm parameter 100 % increase in productivity compared to the 40 µm FlexLine parameter set
- Faster production without compromising the part quality

System set-up	EOS M 290
EOS ParameterSet	316L 40µm+80µm Core M290/400W
EOSPAR name	316L_040_080_Core M291 1.X
Software requirements	EOSPRINT 2.7 or newer EOSYSTEM 2.11 or newer
Powder part no.	9011-0032
Recoater blade	EOS HSS blade
Nozzle	EOS grid nozzle
Inert gas	Argon
Sieve	63 µm

### Additional information

Layer thickness	40 µm, 80 µm & 40/80 µm Skin
Volume rate*	3.7 mm <sup>3</sup> /s (40 µm), 8.4 mm <sup>3</sup> /s (80 µm), 3.7 - 8.4 (40/80 µm Skin)

\* Volume rate depends on the part dimensions and skin thickness.



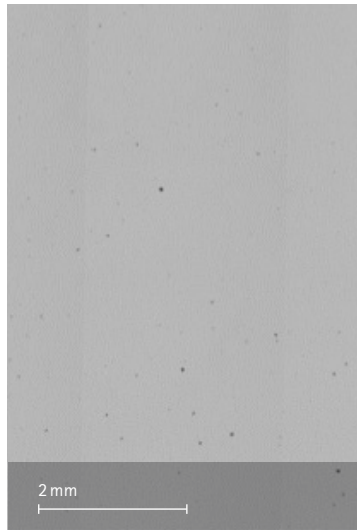
## Chemical and Physical Properties of Parts

Chemical composition of built parts is compliant to EOS StainlessSteel 316L powder chemical composition.

Micrograph of polished surface (40  $\mu\text{m}$ )



Micrograph of polished surface (80  $\mu\text{m}$ )



Microstructure solution annealed Etched with etchant Kallings 2



Defects	Result
Average defect percentage	0.1 %* (40 $\mu\text{m}$ ), < 0.2 %* (80 $\mu\text{m}$ )

\* Defect% varies with platform position.

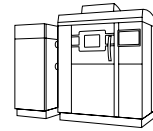
## Heat Treatment

Heat treatment according to AMS 2759 is optional.

Stress relief: Hold temperature 900  $^{\circ}\text{C}$ , hold time minimum 2 h when thoroughly heated, water quenching

Solution annealing: Hold temperature 1150  $^{\circ}\text{C}$ , hold time minimum 1.5 h when thoroughly heated, water quenching

## Mechanical Properties as manufactured



### Typical properties as manufactured ISO 6892-1

	Yield strength $R_{p0.2}$ [MPa]	Tensile strength $R_m$ [MPa]	Elongation at break A [%]
40 $\mu\text{m}$ horizontal	500	600	35
40 $\mu\text{m}$ vertical	450	550	50
80 $\mu\text{m}$ horizontal	500	600	35
80 $\mu\text{m}$ vertical	450	550	45

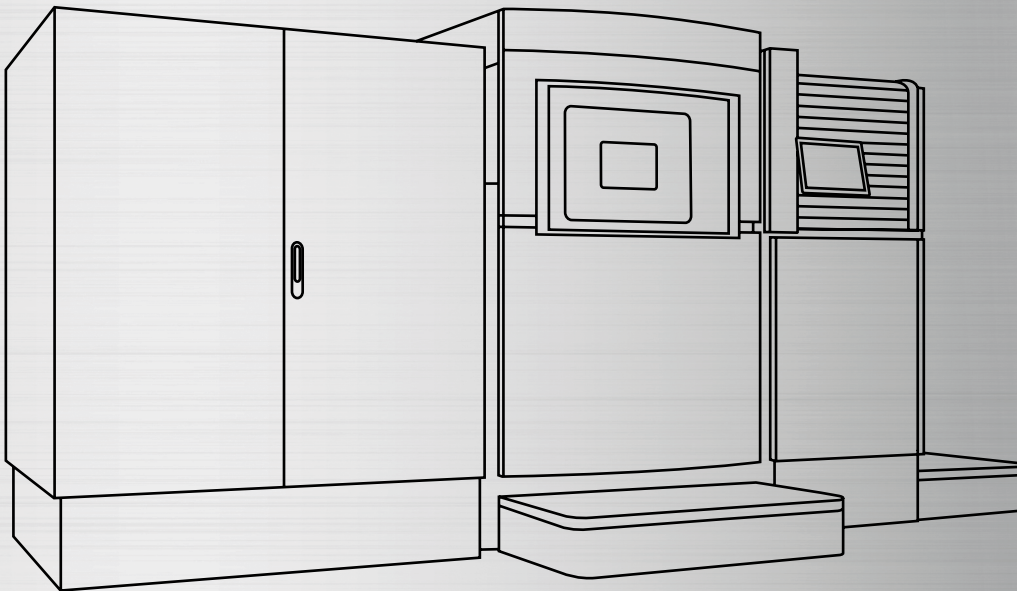
## Additional Data

### Surface Roughness

Surface roughness	9 - 15 Ra
Surface roughness shot-peened	<5 Ra

### Coefficient of Thermal Expansion ASTM E228

Temperature	25-100 °C	25-200 °C	25-300 °C	25-400 °C
CTE	$15.72 \cdot 10^{-6}/\text{K}$	$16.75 \cdot 10^{-6}/\text{K}$	$17.27 \cdot 10^{-6}/\text{K}$	$17.70 \cdot 10^{-6}/\text{K}$



## EOS StainlessSteel 316L for EOS M 400-4 | 40/80 $\mu\text{m}$

Process Information

Chemical and Physical Part Properties

Heat Treatment

Mechanical Properties

Additional Data

## EOS StainlessSteel 316L for EOS M 400-4 | 40/80 µm Process Information

This process product is optimized for flexible and fast production of 316L parts with the EOS M 400-4 system. The parameter set has three different layer thickness options that can all be utilized within the same build: 40 µm, 80 µm and 40/80 µm Skin.

The 40 µm parameter set is ideal for parts needing great detail resolution and more dense structure. The 80 µm parameter set offers a build rate that is more than double that of the long established 40µm parameter set.

With the 40/80 µm Skin parameter set, the total build time can be reduced with the same surface quality. The parameter sets are assigned to different sections in the same build job depending on the requirements.

### Main Characteristics:

- Parameter set for fast and cost efficient production of 316L parts in small series or serial production
- With 80 µm parameter 100 % increase in productivity compared to the 40 µm FlexLine parameter set
- Faster production without compromising the part quality

System set-up	EOS M 400-4
EOS ParameterSet	316L 40µm+80µm Core M400-4
EOSPAR name	316L_040_080_Core M404 1.X
Software requirements	EOSPRINT 2.7 or newer EOSYSTEM 2.11 or newer
Powder part no.	9011-0032
Recoater blade	EOS HSS blade
Inert gas	Argon
Sieve	63 µm

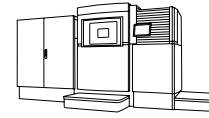
### Additional information

Layer thickness	40 µm, 80 µm & 40/80 µm Skin
Volume rate*	14.8 mm <sup>3</sup> /s (40µm), 33.6 mm <sup>3</sup> /s (80µm) and 14.8 – 33.6 mm <sup>3</sup> /s (40/80 µm Skin)

\* Volume rate depends on the part dimensions and skin thickness.



## Chemical and Physical Properties of Parts

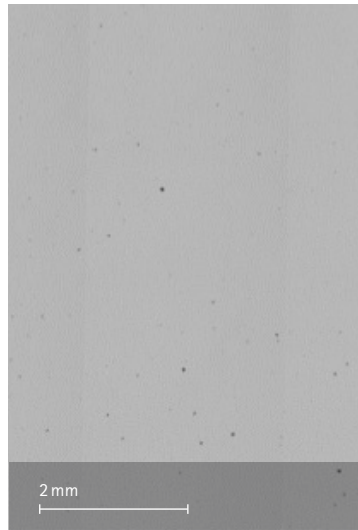


Chemical composition of built parts is compliant to EOS StainlessSteel 316L powder chemical composition.

Micrograph of polished surface (40  $\mu\text{m}$ )



Micrograph of polished surface (80  $\mu\text{m}$ )



Microstructure solution annealed Etched with etchant Kallings 2



Defects	Result
Average defect percentage	0.1 %* (40 $\mu\text{m}$ ), < 0.2 %* (80 $\mu\text{m}$ )

\* Defect% varies with platform position.

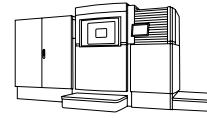
## Heat Treatment

Heat treatment according to AMS 2759 is optional.

Stress relief: Hold temperature 900  $^{\circ}\text{C}$ , hold time minimum 2 h when thoroughly heated, water quenching

Solution annealing: Hold temperature 1150  $^{\circ}\text{C}$ , hold time minimum 1.5 h when thoroughly heated, water quenching

## Mechanical Properties as manufactured



### Typical properties as manufactured ISO 6892-1

	Yield strength $R_{p0.2}$ [MPa]	Tensile strength $R_m$ [MPa]	Elongation at break A [%]
40 $\mu\text{m}$ horizontal	500	600	35
40 $\mu\text{m}$ vertical	450	550	50
80 $\mu\text{m}$ horizontal	500	600	35
80 $\mu\text{m}$ vertical	450	550	45

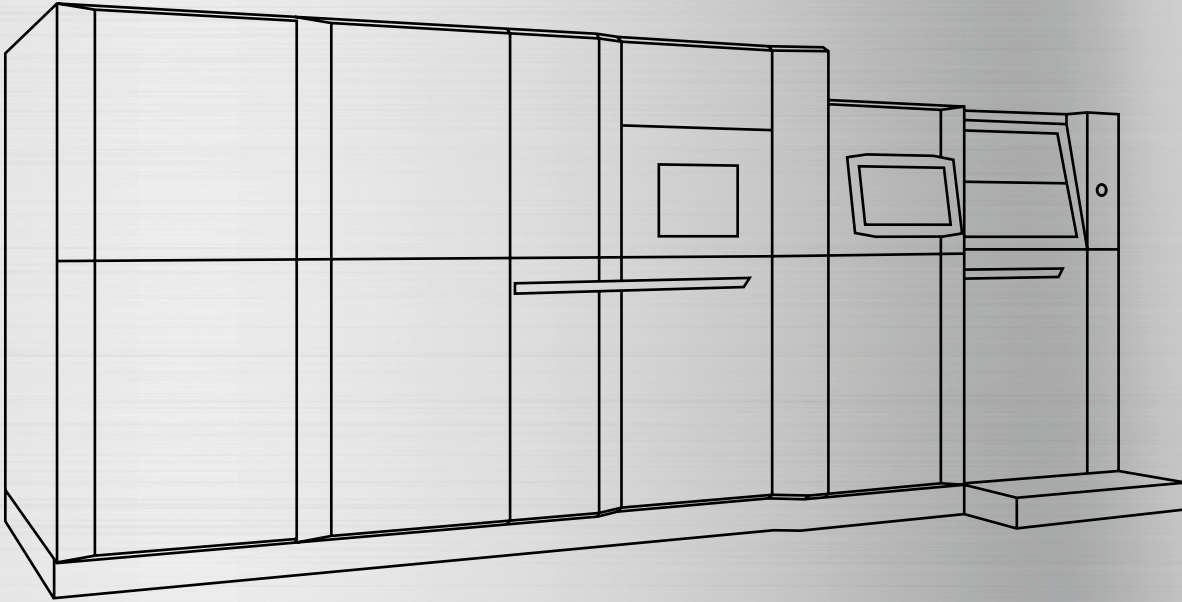
## Additional Data

### Surface Roughness

Surface roughness	9 - 15 Ra
Surface roughness shot-peened	<5 Ra

### Coefficient of Thermal Expansion ASTM E228

Temperature	25-100 °C	25-200 °C	25-300 °C	25-400 °C
CTE	$15.72 \cdot 10^{-6}/\text{K}$	$16.75 \cdot 10^{-6}/\text{K}$	$17.27 \cdot 10^{-6}/\text{K}$	$17.70 \cdot 10^{-6}/\text{K}$



## EOS StainlessSteel 316L for EOS M 300-4 | 40/80 $\mu\text{m}$

Process Information

Chemical and Physical Part Properties

Mechanical Properties

## EOS StainlessSteel 316L for EOS M 300-4 | 40/80 µm Process Information

This process product is optimized for flexible and fast production of 316L parts with the EOS M 300-4 system. The parameter set has three different layer thickness options that can all be utilized within the same build: 40µm, 80 µm and 40/80 µm SkinCore.

For high productivity needs a 80 µm parameter set is included with a build rate more than double the 40 µm parameter set. Both can be used separately for different parts or combined by using 40/80 µm SkinCore with faster 80 µm for the core of the part and higher quality 40 µm building for the surface of the part with defined thickness. Sectioning parts in the vertical direction for different parameters is also possible.

### Main Characteristics:

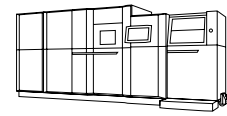
- Parameter set for fast and cost efficient production of 316L parts in small series or serial production
- 100% increase in productivity with 80 µm parameter compared to 316L 40 µm FlexLine parameter with only minor decrease in quality
- High part quality – mechanical properties and surface – with 40µm parameter

System set-up	EOS M 300-4
EOS ParameterSet	316L 40µm+80µm Core M300-4
EOSPAR name	316L_040_080_Core M304 1.X
Software requirements	EOSPRINT 2.11 or newer EOSYSTEM 2.15 or newer
Powder part no.	9011-0032
Recoater blade	EOS HSS blade
Inert gas	Argon
Sieve	63 µm

### Additional information

Layer thickness	40 µm, 80 µm & 40/80 µm SkinCore
Volume rate*	14.8 mm <sup>3</sup> /s (40µm), 33.6 mm <sup>3</sup> /s (80µm) and 14.8 – 33.6 mm <sup>3</sup> /s (40/80 µm Skin)

\* Volume rate depends on the part dimensions and skin thickness.



## Chemical and Physical Properties of Parts

Defects	Result	Number of Samples
Average defect percentage 40 $\mu\text{m}$	0.002%	32
Average defect percentage 80 $\mu\text{m}$	0.024%	32
Max. pore size 40 $\mu\text{m}$	100 $\mu\text{m}$	32
Max. pore size 80 $\mu\text{m}$	150 $\mu\text{m}$	32

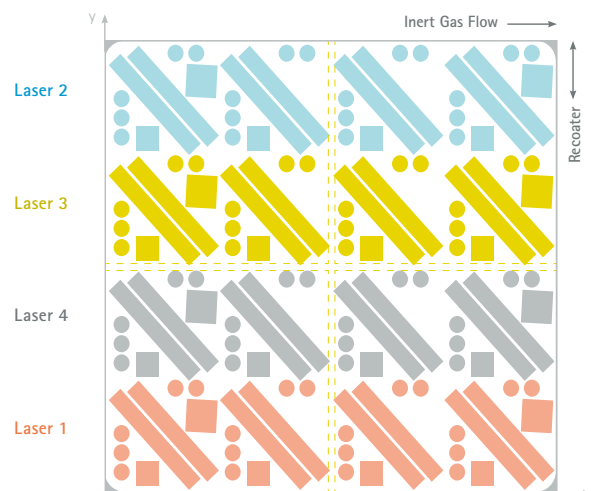
## Mechanical Properties as manufactured

Typical properties as manufactured ISO 6892-1

	Yield strength $R_{p0.2}$ [MPa]	Tensile strength $R_m$ [MPa]	Elongation at break A [%]	Number of Samples
40 $\mu\text{m}$ horizontal	575	671	34.3	64
40 $\mu\text{m}$ vertical	510	607	41.3	160
80 $\mu\text{m}$ horizontal	554	660	35.6	64
80 $\mu\text{m}$ vertical	485	621	41.1	160

### Layout of test job

Part properties based on two test jobs each for 40 $\mu\text{m}$  and 80 $\mu\text{m}$  process (as manufactured).



The values in the tables above are average values and dependent on the build platform temperature, the thermal load of the job layout as well as the position on the build plate.



Status 11/2021

EOS is certified according to ISO 9001. EOS® and EOSPRINT® are registered trademarks of EOS GmbH in some countries. For more information visit [www.eos.info/trademarks](http://www.eos.info/trademarks).

Cover: This image shows a possible application.

Part properties stated above are provided for information purposes only and EOS makes no representation or warranty whatsoever, and disclaims any liability, with respect to actual part properties achieved with this material. Part properties are subject to variation and dependent on factors such as system parameters, process and test geometries. Therefore actual part properties may deviate and users of this material are exclusively responsible to determine its suitability for the intended use. The part properties stated above have been determined by testing this material with above specified type of EOS Laser Powder Bed Fusion system, EOSYSTEM and EOSPRINT software version, parameter set and operation in compliance with parameter sheet and operating instructions. Part properties are measured with specified measurement methods using defined test geometries and procedures. Further details of the test procedures used by EOS are available on request.

#### Important Note

This data sheet specifies the powder properties of the EOS powder type referenced above. If you purchase powder from EOS, EOS will deliver such powder in conformity with the version of this data sheet prevailing at the time of your order. If you purchase powder from any source other than EOS, EOS makes no warranties or representations with respect to powder properties to you whatsoever, and claims with respect to the quality or properties of EOS powder are available only against the seller of such powder in accordance with your agreement with the seller, not against EOS. EOS data sheets are subject to change without notice. This data sheet does not constitute a guaranty or warranty of properties or fitness for a specific purpose and may not be relied upon as such.

#### Headquarters

EOS GmbH  
Electro Optical Systems  
Robert-Stirling-Ring 1  
D-82152 Krailling/Munich  
Germany  
Phone +49 89 893 36-0  
[info@eos.info](mailto:info@eos.info)

[www.eos.info](http://www.eos.info)

**in** EOS  
EOSGmbH  
EOS.global  
EOSGmbH  
#ShapingFuture

#### Further Offices

EOS France  
Phone +33 437 497 676

EOS Greater China  
Phone +86 21 602 307 00

EOS India  
Phone +91 443 964 8000

EOS Italy  
Phone +39 023 340 1659

EOS Japan  
Phone +81 45 670 0250

EOS Korea  
Phone +82 2 6330 5800

EOS Nordic & Baltic  
Phone +46 31 760 4640

EOS of North America  
Phone +1 877 388 7916

EOS Singapore  
Phone +65 6430 0463

EOS UK  
Phone +44 1926 675 110



## Material data sheet – FlexLine

---

### EOS StainlessSteel 316L

EOS StainlessSteel 316L is a stainless steel powder intended for processing on EOS DMLS™ machines.

- EOS DMLS™ EOS M100 system
  - HSS blade (300006274)
  - Argon atmosphere
  - IPCM extra sieving module with 63 µm mesh
  - Hand sieve with 63 µm mesh (300013590) recommended
- EOSYSTEM
  - EOSPRINT v 1.6 or higher
  - Software: HCS 1.8 or higher
- EOS Parameter set: 316L\_020\_FlexM100\_200

### Description

EOS StainlessSteel 316L is a corrosion resistant iron based alloy which has been optimized for processing on EOS DMLS systems. EOS 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, e.g. watches, other jewellery, spectacle frames, decorations
- Automotive/Industrial, e.g. non-corroding common material, food and chemical plants
- Aerospace/Turbine industry
- Entry-level material for Laser Sintering Technology, e.g. mounting parts, heat exchangers, functional elements in electronic housing and accessories

Parts built from EOS 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. Due to layer-wise building method, the parts have a certain anisotropy which could be seen from mechanical properties.

## Material data sheet – FlexLine

### Technical Data

#### Powder properties

The chemical composition of the powder (wt-%):

Material composition	Element	Min	Max
	Fe	Balance	
	Cr	17.00	19.00
	Ni	13.00	15.00
	Mo	2.25	3.00
	C		0.030
	Mn		2.00
	Cu		0.50
	P		0.025
	S		0.010
	Si		0.75
	N		0.10

#### Max. particle size

≥ 63µm [1]

Max. 1,0 wt%

[1] analysis according to ASTM B214.

#### General process data

Layer thickness

20 µm

Volume rate [2]

1,16 mm<sup>3</sup>/s (4,17 cm<sup>3</sup>/h)

0,25 in<sup>3</sup>/h

[2] The volume rate is a measure of build speed during laser exposure of the skin area. The total build speed depends on this volume rate and many other factors such as exposure parameters of contours, supports, up and downskin, recoating time, Home-In or LPM settings.

## Material data sheet – FlexLine

### Physical and chemical properties of parts

Part density [3]	min. 7,98 g/ cm <sup>3</sup>
Surface roughness after shot peening [4]	R <sub>a</sub> < 12 μm; R <sub>z</sub> < 62 μm

[3] Weighing in air and water according to ISO 3369.

[4] Measurement according to ISO 4287. The numbers were measured at the horizontal (up-facing) and all vertical surfaces of test cubes. Due to the layerwise building the roughness strongly depends on the orientation of the surface, for example sloping and curved surfaces exhibit a stair-step effect.

### Tensile data at room temperature [5, 6]

	As built	
	Horizontal	Vertical
Ultimate tensile strength, R <sub>m</sub>	650 MPa	590 MPa
Yield strength, R <sub>p0.2</sub>	535 MPa	490 MPa
Elongation at break, A	35 %	45 %

[5] The numbers are average values of vertical and horizontal orientation.

[6] Tensile testing according to ISO 6892 & ASTM E8M, proportional test pieces, diameter of the neck area 4 mm, original gauge length 4D (16 mm). Tensile test parameters: Stress rate 10MPa/s in elastic range, strain speed in plastic region 0,375 1/min. Results are derived from the validation data made with EOS M100 system and two powder LOTS



## Material data sheet – FlexLine

---

### Abbreviations

min. minimum  
max. maximum  
wt. weight

### Legal notes

The quoted values refer to the use of this material with above specified EOS DMLS system, EOSYSTEM software version, parameter set and operation in compliance with parameter sheet and operating instructions. All measured values are average numbers. Part properties are measured with specified measurement methods using defined test geometries and procedures. Further details of the test procedures used by EOS are available on request. Any deviation from these standard settings may affect the measured properties.

The data correspond to EOS knowledge and experience at the time of publication and they are subject to change without notice as part of EOS' continuous development and improvement processes.

EOS does not warrant any properties or fitness for a specific purpose, unless explicitly agreed upon. This also applies regarding any rights of protection as well as laws and regulations.

EOS®, EOSINT®, DMLS®, DirectTool® and DirectPart® are registered trademarks of EOS GmbH.

©2017 EOS GmbH – Electro Optical Systems. All rights reserved.