

# Technical Data Sheet

# Ultrafuse 316L

## General information

### Components

Polymer and 316L stainless steel composite filament

### Product Description

Metal-polymer composite filament to produce metal components in a stainless steel type 316L using standard FFF printer systems and subsequently an industry standard debinding and sintering process. The filament has a non-slip surface allowing its application in any Bowden or direct drive extruder. Its high flexibility allows it to be funnelled through complex idler pulleys as well as many guide roller filament transportation systems in any printer.

Typical applications are:

- Tooling
- Jigs and fixtures
- Series production
- Functional parts and prototypes

### Delivery form

Ultrafuse 316L is delivered on 3KG spools. The two products have 1.75 mm and 2.85 mm diameters. The filament is available in both diameters.

### Product safety

Recommended industrial hygiene procedures and the relevant industrial safety precautions for the handling of polymers must be followed whenever these products are being handled and processed. For additional information please consult the corresponding material safety data sheets.

### For your information

Standards: DIN 1.4404, X 2 CrNiMo 17 13 2, AISI 316L; UNS S31603

### Notice

The data contained in this publication are based on our current knowledge and experience. In view of the many factors that may affect processing and application of our product, these data do not relieve processors from carrying out their own investigations and tests; neither do these data imply any guarantee of certain properties, nor the suitability of the product for a specific purpose. Any descriptions, drawings, photographs, data, proportions, weights etc. given herein may change without prior information and do not constitute the agreed contractual quality of the product. It is the responsibility of the recipient of our products to ensure that any proprietary rights and existing laws and legislation are observed.

The safety data given in this publication is for information purposes only and does not constitute a legally binding Material Safety Data Sheet (MSDS). The relevant MSDS can be obtained upon request from your supplier or you may contact BASF 3D Printing Solutions GmbH directly at [sales@basf-3dps.com](mailto:sales@basf-3dps.com).

### Recommended 3D-Print processing parameters

Nozzle Temperature	230 – 250 °C
Build Chamber Temperature	-
Bed Temperature	90 – 120 °C
Bed material	Glass + approved glues* / polyimide tape (*Dimafix® suggested)
Nozzle Diameter	≥ 0.4 mm
Print Speed	15 – 50 mm/s

### Filament Properties

Filament Diameter	1.75 mm	2.85 mm
Tolerance	±0.050 mm	±0.075 mm
Roundness	±0.050 mm	±0.075 mm
Bending Radius	5 ± 1 mm	10 ± 3 mm
Length per Spool	250 m	95 m
Weight per Spool	3 kg	3 kg



### Drying Recommendations

Under normal conditions no drying is required.

### General Properties

#### Standard

Sintered Part Density	7.85 g/cm <sup>3</sup>	ISO 1183-1
Density values obtained from tensile and fracture samples.		

	<sup>1</sup> Specimen shape Form E2x6x20 according to DIN 50125  <sup>2</sup> Undersized impact test specimen according to DIN EN ISO 148-1		
Print direction	Standard	XY	ZX
Orientation		Flat	Upright
Tensile strength	DIN EN ISO 6892-1 <sup>1</sup>	561 MPa	521 MPa
Yield Strength, R <sub>p0.2</sub>	DIN EN ISO 6892-1 <sup>1</sup>	251 MPa	234 MPa
Elongation at Break	DIN EN ISO 6892-1 <sup>1</sup>	53 %	36 %
Impact Strength Charpy (notched)	DIN EN ISO 148:2017-05 <sup>2</sup> (2mm V-notch)	111 J/cm <sup>2</sup>	-
Vickers Hardness	DIN EN ISO 6507-1	128 HV10	128 HV10