

# Technical Data Sheet

# Ultrafuse 17-4 PH

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Version No.: 1.1

## General information

### Components

17-4 PH stainless steel composite filament for Fused Filament Fabrication.

### Product Description

Ultrafuse® 17-4 PH is a filament for the production of metal components in 17-4 stainless steel on standard Fused Filament Fabrication (FFF) printers. This stainless steel can be fully heat treated to high levels of strength and hardness. It is therefore ideal for Petrochemistry, Aerospace, the Automotive and the Medical Industry. Parts printed with our metal-polymer composite filament Ultrafuse® 17-4 PH obtain their final properties through a catalytic debinding and sintering process known from traditional Metal Injection Molding.

### Delivery form and warehousing

Ultrafuse® 17-4 PH filament should be stored at 15 - 25°C in its originally sealed package in a clean and dry environment. If the recommended storage conditions are observed the products will have a minimum shelf life of 12 months.

### Product safety

Recommended: Process materials in a well ventilated room, or use professional extraction systems. For further and more detailed information please consult the corresponding material safety data sheets.

### For your information

Standards: DIN 1.4542, X 5 CrNiCuNb 17 4, AISI/UNS S17400 ; SAE J 467 (17-4PH)

### 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 / 446 – 482 °F  |
| Build Chamber Temperature | -  |
| Bed Temperature           | 90 – 120 °C / 194 – 248 °F   |
| Bed Material              | Glass + approved glues* / polyimide tape (*Magigoo® or Dimafix® suggested) |
| Nozzle Diameter           | ≥ 0.4 mm   |
| Print Speed               | 15 - 50 mm/s   |

### Drying Recommendations

|   |  |
|---|--|
| Drying recommendations to ensure printability | 17-4 PH is in a printable condition, drying is not necessary |
|---|--|

### General Properties

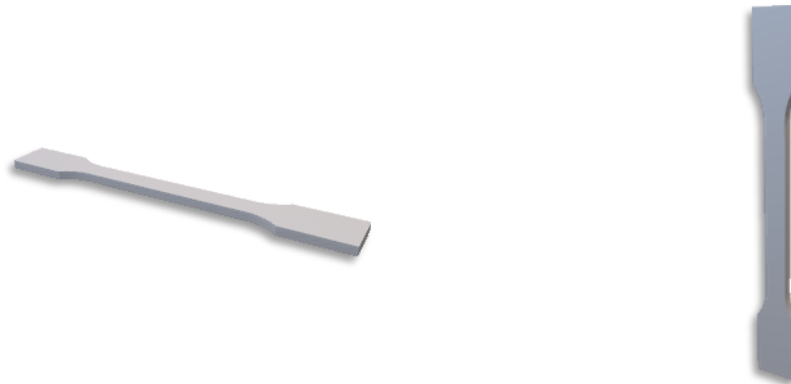
Standard

|                       |   |            |
|-----------------------|---|------------|
| Sintered Part Density | 7600 kg/m <sup>3</sup> / 474.5 lb/ft <sup>3</sup> | ISO 1183-1 |
|-----------------------|---|------------|

### 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      |

**Mechanical Properties | sintered**



| Print direction                    | Standard                | XY<br>Flat                        | ZX<br>Upright       |
|------------------------------------|-------------------------|-----------------------------------|---------------------|
| Tensile strength                   | ISO 6892-1 <sup>1</sup> | 760 MPa / 110.2 ksi               | 730 MPa / 105.9 ksi |
| Elongation at Break                | ISO 6892-1 <sup>1</sup> | 4 %                               | 3 %                 |
| Yield Strength, R <sub>p 0.2</sub> | ISO 6892-1 <sup>1</sup> | 680 MPa / 98.6 ksi                | 700 MPa / 101.5 ksi |
| Vickers Hardness                   | ISO 6507-1              | 257 HV10   352 HV 10 <sup>3</sup> | -                   |

<sup>1</sup>Specimen shape Form E2x6x20 according to DIN 50125

<sup>3</sup>Heat treated H900