

Preliminary Technical Data Sheet

Ultrafuse 17-4 PH

General information

Components

Polymer and 17-4 PH stainless steel composite filament

Product Description

Ultrafuse® 17-4 PH is a filament for the production of metal components on standard Fused Filament Fabrication (FFF) printers. Also referred to as Type 630, this chromium-copper martensitic precipitation hardened stainless steel it is both magnetic and fully heat treatable to high levels of strength and hardness. Maintaining its mechanical and corrosion resistance at temperatures up to 315 °C (600°F), 17-4 PH parts are ideal for the Petrochemical, Aerospace, Automotive, and Medical industries. Parts printed with our metal-polymer composite Ultrafuse® 17-4 PH filament obtain their final full metal properties via an industrially proven catalytic debinding and sintering process developed for the metal injection molding industry.

Typical applications are:

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

Delivery form

Ultrafuse® 17-4 PH filament is available in two diameters, 1.75 mm and 2.85 mm, on 3 kg and 1kg spools.

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 1.4542, 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.

Recommended 3D-Print processing parameters

Nozzle Temperature	230 – 250 °C
Build Chamber	Enclosed build chamber recommended
Bed Temperature	90 – 120 °C
Bed material	Glass + approved glues* / polyimide tape (Magigoo® for Ultrafuse Metal or 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 / 83 m	95 m / 32 m
Weight per Spool	3 kg / 1kg	3 kg / 1 kg



Drying Recommendations

Under normal conditions no drying is required.

General Properties

Standard

Sintered Part Density	≥ 7.6 g/cm ³ Density values obtained from tensile and fracture samples.	ISO 1183-1
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	¹ Specimen shape Form E2x6x20 according to DIN 50125 ² Undersized impact test specimen according to DIN EN ISO 148-1		
Print direction	Standard	XY (Flat)	ZX (Upright)
Tensile strength	DIN EN ISO 6892-1 ¹	880 MPa	TBA
Yield Strength, R _{p0.2}	DIN EN ISO 6892-1 ¹	680 MPa	TBA
Elongation at Break	DIN EN ISO 6892-1 ¹	5,8 %	TBA
Impact Strength Charpy (notched)	DIN EN ISO 148:2017-05 ² (2mm V-notch)	TBA	TBA
Vickers Hardness	DIN EN ISO 6507-1	257 HV 10	-