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### General information

#### Components

BASF Polyphenylsulfone (PPSU) based filament for Fused Filament Fabrication.

#### Product Description

Outstanding thermal stability, good chemical resistance and high strength are the key features of Ultrafuse PPSU. Parts produced by fused filament fabrication show often mechanical limitations in z-direction - the good layer adhesion of Ultrafuse PPSU leads to balanced flexural strength properties between z- and x-direction.

Ultrafuse PPSU can be used for functional applications which require a high mechanical strength as well as a high heat distortion temperature – properties, where existing 3D printing materials often show limitations.

#### Delivery form and warehousing

Ultrafuse PPSU 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.

#### For your information

Ultrafuse PPSU comes in its natural yellow/brown color. Chemical properties (e.g. resistance against particular substances) and tolerance for solvents can be made available if these factors are relevant for a specific application. Generally, these properties correspond to publicly available data on polysulfones.

This material is not FDA conform.

#### 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.

#### 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.



### Recommended 3D-Print processing parameters

Nozzle Temperature	390 – 410 °C / 734 – 770 °F
Build Chamber Temperature	170 – 210 °C / 338 – 410 °F
Bed Temperature	220 °C / 428 °F
Bed Material	Glass, BASF fiber reinforced build sheet
Nozzle Diameter	≥ 0.4 mm
Print Speed	25 – 50 mm/s

### Drying Recommendations

Drying recommendations to ensure printability	Spools can be dried in a vacuum dryer at 125 °C / 257 °F for 8 hours and should be stored in a closed box during printing. High moisture content is visible by bubbles in the material after the melting process.
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Please note: Processing of moist material will decrease part quality significantly (uncontrolled material flow, undefined dimensional accuracy, decreased mechanical properties).

### General Properties

#### Standard

Printed Part Density	1208 kg/m <sup>3</sup> / 75.4 lb/ft <sup>3</sup>	ISO 1183-1
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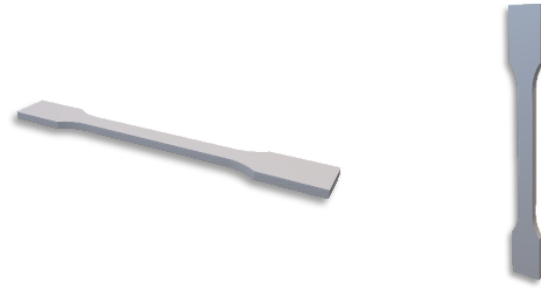
### Thermal Properties

#### Standard

HDT at 1.8 MPa	212 °C / 414 °F	ISO 75-2
HDT at 0.45 MPa	218 °C / 424 °F	ISO 75-2
Vicat softening point at 50 N	220 °C / 428 °F	ISO 306
Glass Transition Temperature	220 °C / 428 °F	ISO 11357-2
Melt Volume Rate	39 cm <sup>3</sup> /10 min / 2.38 in <sup>3</sup> /10 min (360 °C, 10 kg)	ISO 1133
Coefficient of Thermal Expansion	55 E-6/K	ISO 11359-2
Flammability 12 s. vertical	Passed (thickness 1.59 and 6.35 mm)	FAR 25.853 (a)
Flammability 60 s. vertical	Passed (thickness 1.59 and 6.35 mm)	FAR 25.853 (a)



## Mechanical Properties | Dried specimen



Print direction	Standard	XY Flat	ZX Upright
Tensile strength	ISO 527	65.1 MPa / 9.4 ksi	51.6 MPa / 7.5 ksi
Elongation at Break	ISO 527	6.5 %	3.2 %
Young's Modulus	ISO 527	2037 MPa / 295 ksi	2036 MPa / 295 ksi
Flexural Strength	ISO 178	92.6 MPa / 13.4 ksi	96.5 MPa / 14.0 ksi
Flexural Modulus	ISO 178	2152 MPa / 312 ksi	1999 MPa / 290 ksi
Flexural Strain at Break	ISO 178	-	-
Impact Strength Charpy (notched)	ISO 179-2	13.8 kJ/m <sup>2</sup>	5.5 kJ/m <sup>2</sup>
Impact Strength Charpy (unnotched)	ISO 179-2	200.7 kJ/m <sup>2</sup>	22.6 kJ/m <sup>2</sup>
Impact Strength Izod (notched)	ISO 180	12.0 kJ/m <sup>2</sup>	5.5 kJ/m <sup>2</sup>
Impact Strength Izod (unnotched)	ISO 180	119 kJ/m <sup>2</sup>	14.3 kJ/m <sup>2</sup>

