Ultrafuse

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Technical Data Sheet

Ultrafuse PA

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General information

Components

BASF Polyamide (PA) based filament for Fused Filament Fabrication.

Product Description

The key features of Ultrafuse PA are the high strength and high modulus. Furthermore, Ultrafuse PA shows a good thermal distortion stability.

Delivery form and warehousing

Ultrafuse PA 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

Mandatory, recommended industrial hygiene procedures and the relevant industrial safety precautions must be followed whenever this product is being handled and processed. Product is sensitive to humid environment conditions. For additional information please consult the corresponding material safety data sheets.

For your information

Ultrafuse PA comes in its natural white/translucent 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 polyamides.

This material is not FDA conform.

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 Innofil3D directly at info@innofil3d.com.

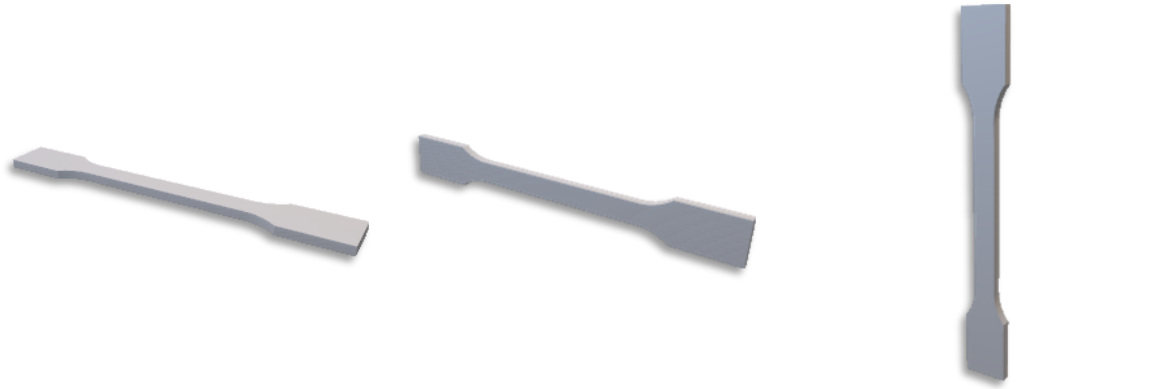
Recommended 3D-Print processing parameters	
Nozzle Temperature	220 – 250 °C / 428 – 482 °F
Build Chamber Temperature	-
Bed Temperature	90 – 120 °C / 194 – 248 °F
Bed material	Glass + PVA glue stick / Kapton tape
Nozzle Diameter	≥ 0.4 mm
Print Speed	30 – 60 mm/s

Drying Recommendations	
Drying recommendations to ensure printability	70 °C in a hot air dryer for 4 to 16 hours
Optimum drying recommendations for best mechanical part properties	80 °C in a vacuum oven for at least 40 hours
Please note: To ensure constant material properties the material should always be kept dry.	

General Properties		Standard
Printed Part Density	1115 kg/m^3 / 69.6 lb/ft^3	ISO 1183-1

Thermal Properties		Standard
HDT at 1.8 MPa	65 °C / 149 °F	ISO 75-2
HDT at 0.45 MPa	135 °C / 275 °F	ISO 75-2
Vicat softening point at 50 N	To be tested	ISO 306
Glass Transition Temperature	49 °C / 120 °F	ISO 11357-2
Crystallization Temperature	147 °C / 297 °F	ISO 11357-3
Melting Temperature	195 – 197 °C / 383 – 386 °F	ISO 11357-3
Melt Volume Rate	49.5 cm^3/10 min / 3.02 in^3/10 min (275 °C, 5 kg)	ISO 1133

Mechanical Properties



Print direction	Standard	XY	XZ	ZX
		Flat	On its edge	Upright
Tensile strength	ISO 527	61.4 MPa / 8.9 ksi	-	16.4 MPa / 2.4 ksi
Elongation at Break	ISO 527	9.6 %	-	0.8 %
Young's Modulus	ISO 527	2419 MPa / 351 ksi	-	2122 MPa / 308 ksi
Flexural Strength	ISO 178	80.8 MPa / 11.7 ksi	99.8 MPa / 14.5 ksi	40.2 MPa / 5.8 ksi
Flexural Modulus	ISO 178	2051 MPa / 297 ksi	2246 MPa / 326 ksi	2149 MPa / 312 ksi
Flexural Strain at Break	ISO 178	No break	No break	1.8 %
Impact Strength Charpy (notched)	ISO 179-2	5.6 kJ/m^2	3.3 kJ/m^2	1.2 kJ/m^2
Impact Strength Charpy (unnotched)	ISO 179-2	23.0 kJ/m^2	29.7 kJ/m^2	3.5 kJ/m^2
Impact Strength Izod (notched)	ISO 180	5.8 kJ/m^2	3.9 kJ/m^2	1.7 kJ/m^2
Impact Strength Izod (unnotched)	ISO 180	28.0 kJ/m^2	45.6 kJ/m^2	3.2 kJ/m^2