

# Technical Data Sheet

# Ultrafuse Z PCTG

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## General information

### Components

PCTG (amorphous copolyester) based ESD safe filament for Fused Filament Fabrication.

### Product Description

Ultrafuse Z PCTG is an ESD safe filament developed specifically for printing handheld tools, general assembly fixtures for electronics, robotics, automation components, and parts for explosion proof environments. Printed objects have very smooth surface properties which help to prevent latent failures in electronics. PCTG is an easy to print material with significantly increased impact strength when compared to PETG.

### Delivery form and warehousing

Ultrafuse Z PCTG 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.

### 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	250 – 270 °C / 482 – 518 °F
Build Chamber Temperature	-
Bed Temperature	70 – 80 °C / 158 - 176°F
Bed Material	Glass bed with PVA
Nozzle Diameter	≥ 0.4 mm
Print Speed	40 – 80 mm/s

### Drying Recommendations

Drying recommendations to ensure printability	70 °C in a vacuum oven for at least 12 hours.
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Please note: To ensure constant material properties the material should always be kept dry.  
 Please note: Filament should be handled only with gloves to ensure a good printability.

### General Properties

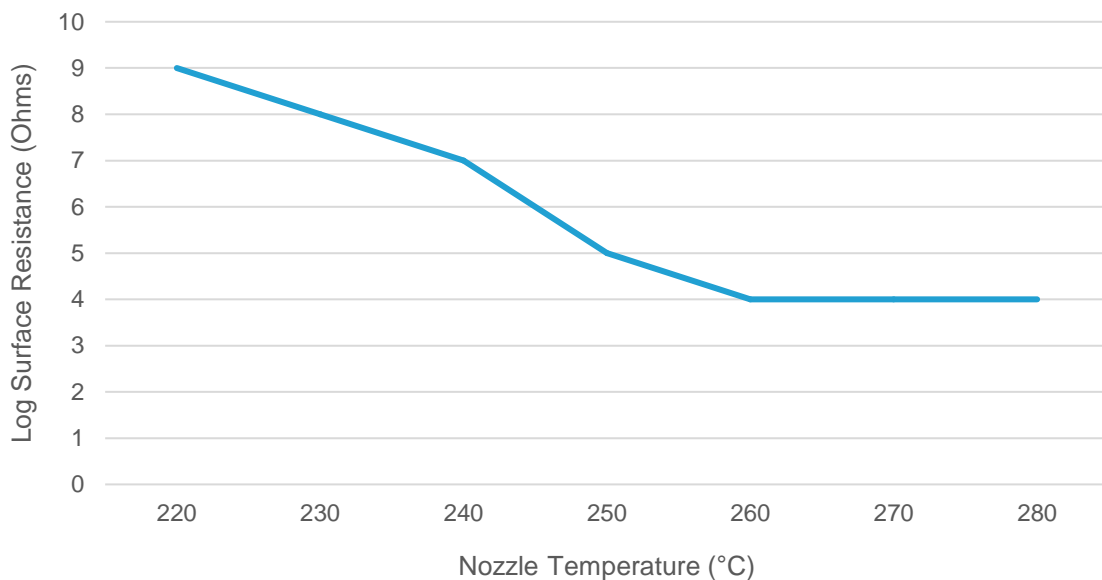
		Standard
Printed Part Density (conditioned)	1200 kg/m <sup>3</sup> / 75 lb/ft <sup>3</sup>	ISO 1183-1

### Thermal Properties

		Standard
HDT at 1.8 MPa	69 °C / 156 °F	ISO 75-2
HDT at 0.45 MPa	73 °C / 163 °F	ISO 75-2
Glass Transition Temperature	81 °C / 178 °F	ISO 11357-2
Melt Volume Rate	67.5 cm <sup>3</sup> /10 min / 4.1 in <sup>3</sup> /10 min (275 °C, 5 kg)	ISO 1133

### Electro Static Discharge Properties (ESD)

Surface Resistance



## Mechanical Properties



Print direction	Standard	XY	XZ	ZX
		Flat	On its edge	Upright
Tensile strength	ISO 527	37.1 MPa / 5.4 ksi	-	13.6 MPa / 2.0 ksi
Elongation at Break	ISO 527	3.1%	-	0.8%
Young's Modulus	ISO 527	1763 MPa / 256 ksi	-	1607 MPa / 233 ksi
Flexural Strength	ISO 178	55.5 MPa / 8.0 ksi #	70.8 MPa / 10.3 ksi #	20.2 MPa / 2.9 ksi
Flexural Modulus	ISO 178	1613 MPa / 234 ksi	1781 MPa / 258 ksi	1492 MPa / 216 ksi
Flexural Strain at Break	ISO 178	No break	No break	1.3%
Impact Strength Charpy (notched)	ISO 179-2	2.1 kJ/m <sup>2</sup>	2.6 kJ/m <sup>2</sup>	0.9 kJ/m <sup>2</sup>
Impact Strength Charpy (unnotched)	ISO 179-2	-	9.5 kJ/m <sup>2</sup>	-
Impact Strength Izod (notched)	ISO 180	-	3.4 kJ/m <sup>2</sup>	-
Impact Strength Izod (unnotched)	ISO 180	14.3 kJ/m <sup>2</sup>	24.2 kJ/m <sup>2</sup>	3.4 kJ/m <sup>2</sup>

## Electrical Properties

Volume resistivity	IEC 62631-3-1	4.0E+6 Ωcm	1.3E+4 Ωcm	-
Surface resistivity	IEC 62631-3-2	1.1E+7 Ω	6.3E+4 Ω	-

# No break, Strength at 5% bending strain