



# Technical Data Sheet

## **Ultrafuse rPET**

Date / Revised: 14.11.2019 Version No.: 3.2

#### **General information**

#### Components

Recycled Polyethylene terephthalate based filament for Fused Filament Fabrication.

#### **Product Description**

PET is mainly known by the well-known PET bottle material. This recycled has a natural transparent blueish look. It has excellent 3D printing properties and good mechanical characteristics.

#### **Delivery form and warehousing**

Ultrafuse rPET 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                         | 225 – 245 °C / 437 – 473 °F |  |  |  |
| Build Chamber Temperature                  | -                           |  |  |  |
| Bed Temperature                            | 65 – 85 °C / 149 – 185 °F   |  |  |  |
| Bed Material                               | Adhesive spray or glue      |  |  |  |
| Nozzle Diameter                            | ≥ 0.4 mm                    |  |  |  |
| Print Speed                                | 30 - 60 mm/s                |  |  |  |

| Drying Recommendations                        |   |
|---|---|
| Drying recommendations to ensure printability | 60 °C in a hot air dryer or vacuum oven for 4 to 16 hours |

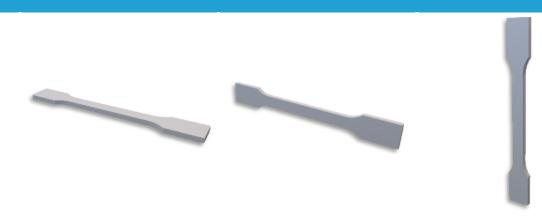
Please note: To ensure constant material properties the material should always be kept dry.

| General Properties   |                          | Standard   |
|----------------------|--------------------------|------------|
| Printed Part Density | 1273 kg/m³ / 79.5 lb/ft³ | ISO 1183-1 |

| Thermal Properties           |   | Standard    |
|------------------------------|---|-------------|
| HDT at 1.8 MPa               | 65 °C / 149 °F  | ISO 75-2    |
| HDT at 0.45 MPa              | 71 °C / 159 °F  | ISO 75-2    |
| Glass Transition Temperature | 83 °C / 181 °F  | ISO 11357-2 |
| Melt Volume Rate             | 15.1 cm <sup>3</sup> /10 min / 0.9 in <sup>3</sup> /10 min (220 °C, 5 kg) | ISO 1133    |

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### **Mechanical Properties**



| Print direction                    | Standard  | XY                     | XZ                     | ZX                    |
|------------------------------------|-----------|------------------------|------------------------|-----------------------|
|                                    |           | Flat                   | On its edge            | Upright               |
| Tensile strength                   | ISO 527   | 38.6 MPa / 2.4 ksi     | -                      | 14.7 MPa / 0.9 ksi    |
| Elongation at Break                | ISO 527   | 4.3 %                  | -                      | 1.2 %                 |
| Young's Modulus                    | ISO 527   | 1640 MPa / 100 ksi     | -                      | 1334 MPa / 81.4 ksi   |
| Flexural Strength                  | ISO 178   | 66.9 MPa / 4.1 ksi     | 65.4 MPa / 4.0 ksi     | 30.2 MPa / 1.8 ksi    |
| Flexural Modulus                   | ISO 178   | 1662 MPa / 101 ksi     | 1551 MPa / 97.6 ksi    | 829 MPa / 50.6 ksi    |
| Flexural Strain at Break           | ISO 178   | 5.5 %                  | 4.8 %                  | 3.0 %                 |
| Impact Strength Charpy (notched)   | ISO 179-2 | 4.0 kJ/m <sup>2</sup>  | 2.0 kJ/m <sup>2</sup>  | 1.0 kJ/m <sup>2</sup> |
| Impact Strength Charpy (unnotched) | ISO 179-2 | 55.5 kJ/m <sup>2</sup> | 33.7 kJ/m <sup>2</sup> | 3.3 kJ/m <sup>2</sup> |
| Impact Strength Izod (notched)     | ISO 180   | 4.4 kJ/m²              | 3.3 kJ/m <sup>2</sup>  | 1.5 kJ/m <sup>2</sup> |
| Impact Strength Izod (unnotched)   | ISO 180   | 48.2 kJ/m <sup>2</sup> | 21.9 kJ/m <sup>2</sup> | 4.4 kJ/m <sup>2</sup> |

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