Technical Data Sheet | Ultrafuse TPU 85A

Date / Revised: 06.11.2020   Version No.: 2.4

General information

Components

BASF thermoplastic polyurethane (TPU) based filament for Fused Filament Fabrication.

Product Description

Ultrafuse TPU 85A comes in its natural white 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 polyether based TPUs. This material is not FDA conform. Good flexibility at low temperature, good wear performance and good damping behavior are the key features of Ultrafuse TPU 85A.

Delivery form and warehousing

Ultrafuse TPU 85A 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

Please process materials in a well ventilated room, or use professional air 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	200 – 220 °C / 392 – 428 °F
Build Chamber Temperature	-
Bed Temperature	40 °C / 104 °F
Bed Material	Glass
Nozzle Diameter	≥ 0.4 mm
Print Speed	15 – 40 mm/s

Drying Recommendations	
Drying recommendations to ensure printability	60 °C in a hot air dryer or vacuum oven for at least 5 hours

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

| General Properties		Standard
Printed Part Density (conditioned)	1082 kg/m^3 / 67.5 lb/ft^3	ISO 1183-1

Thermal Properties		Standard
Glass Transition Temperature	-44 °C / -47 °F	ISO 11357-2
Melt Volume Rate	10.7 cm3/10 min / 0.7 in3/10 min (190 °C, 2.16 kg)	ISO 1133

General Mechanical Properties		Standard
Compression Set at 23 °C, 72 h	26%	ISO 815
Compression Set at 70 °C, 24 h	52%	ISO 1133
Abrasion Resistance	82 mm^3 / 0.005 in^3	ISO 4649
Shore A Hardness (3 s)	90	ISO 7619-1
Shore D Hardness (15 s)	37	ISO 7619-1

Mechanical Properties | Conditioned specimens
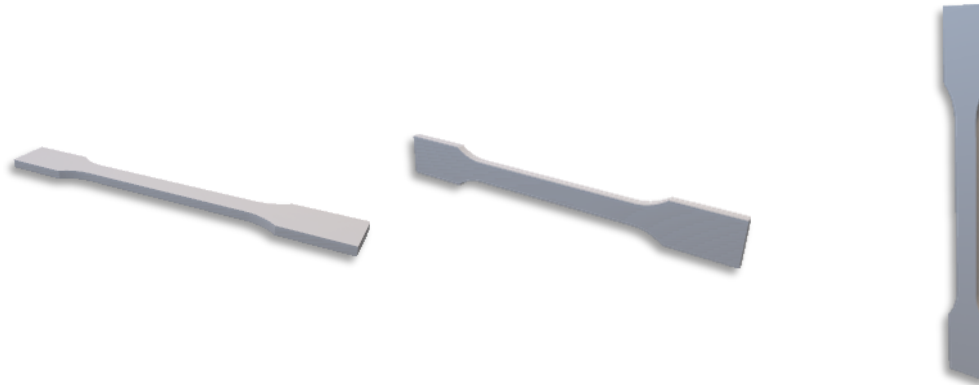
Print direction	Standard	XY	XZ	ZX
		Flat	On its edge	Upright
Stress at 50% Strain	ISO 527	7.2 MPa / 1.0 ksi	-	6.2 MPa / 0.9 ksi
Stress at 100% Elongation	ISO 527	8.7 MPa / 1.3 ksi	-	7.5 MPa / 1.1 ksi
Stress at 200% Elongation	ISO 527	12.1 MPa / 1.8 ksi	-	-
Stress at Break TPE	ISO 527	34 MPa / 4.9 ksi	-	10 MPa / 1.5 ksi
Strain at Break TPE	ISO 527	600%	-	320%
Young's Modulus	ISO 527	20 MPa / 2.9 ksi	-	27 MPa / 3.9 ksi
Impact Strength Charpy (notched)	ISO 179-2	No break	No break	No break
Impact Strength Charpy (notched) @ -30 °C	ISO 179-2	47.3 kJ/m^2	95.4 kJ/m^2	9.3 kJ/m^2
Impact Strength Charpy (unnotched) @ -30 °C	ISO 179-2	No break	No break	No break
Impact Strength Izod (notched)	ISO 180	No break	No break	No break
Tensile Notched Impact Strength	ISO 8256/1	No break	No break	132 kJ/m^2
Tear Strength	ISO 34-1	80 kN/m	18 kN/m	30 kN/m

Electrical Properties | Conditioned specimens

Volume Resistivity	IEC 62631-3-1	2.6E+11 Ωcm	2.1E+11 Ωcm	-