TECHNICAL DATA SHEET
FLEX HARD CF

1. DESCRIPTION

TPU FLEX Carbon combines the two worlds of fibre composites and the extremely resistant and durable elastomer based on polycaprolactone polyester. The carbon reinforces the TPU and makes it more resistant and stiffer. In addition, an excellent carbon look is created. The material is also very easy to process and has very low warping. It has been specially developed for industrial applications. The material is optimised for the FFF/FDM process with regard to thermal stability and better flow properties. The raw material is compliant with REACH and RoHS standards.

2. FEATURES

- Extreme layer adhesion
- Carbon look
- Very low warping
- Excellent chemical resistance
- Free of silicone, plasticisers, oil and halogen
- UV-resistant

3. PROPERTIES

TEST	METHOD	UNIT	VALUE
Tensile modulus (E-Modulus)	ISO 527-2/5A/500	MPa	35
Ultimate elongation	ISO 527-2/5A/500	%	380
Stress at break	ISO 527-2/5A/500	MPa	14 (50%)
	ISO 527-2/5A/500	MPa	14 (100%)
	ISO 527-2/5A/500	MPa	27 (300%)
VICAT A (VST)	ISO 306	°C	140*
Melting temperature	ISO 3146-C	°C	200-240
Density	ISO 2781	g/cm³	1.22
Abrasion resistance	ISO 4649-A	mm³	26
Shore hardness	ISO 868	Shore	70D
Tear strength	ISO 34-1B	kN/m	165
Glass transition temperature		°C	-24
Compressive strength	DIN 53453	MPa	50
Permeability AIR	DIN 53380	25°/60°C	420/-
Permeability N2	DIN 53380	25°/60°C	300/1600
Permeability O2	DIN 53380	25°/60°C	790/3900
Permeability CO2	DIN 53380	25°/60°C	5800/1700
Permeability N2O	DIN 53380	25°/60°C	11600/-
Poisson-ratio	acc. to Hencky		0.45

*Temperature resistance tested at a minimum wall thickness of 4 mm.

PRINT SETTINGS	
Nozzle	230-260°C
Heatbed	50-90°C
Adhesive	not required
Speed	20-100mm/s
Cooling	0-30%
Enclosed Space	no
Hardened Nozzle	yes

Recommended settings for printers with a 0.5mm Nozzle. Max. 50% layerheight. Optimal print settings may vary between different printers and also depend on environmental factors.

4. CERTIFICATIONS & ADDITIONAL INFORMATION

RoHS compliant · **REACH** compliant · **CHEMICAL** resistent · **FREE** of Silicone · **SHORE** 58D

Certifications depend on colors in final product. More info in the additional information sheet.

5. STORAGE AND SHELF LIFE

Store in a dry room at room temperature (18-27°C / 65-80°F). Keep out of direct heat and sunlight.
When stored correctly, this material has a shelf life of 2 years.
Additional info in our regulatory, additional information and chemical resistance data sheets.