TECHNICAL DATA SHEET
FLEX HARD

1. DESCRIPTION

TPU FLEX Hard has been specially developed for the FDM/FFF process. Based on Polycaprolactone-Polyester, it offers an extensibility of up to 480%, high material quality, high chemical resistance, and a heat distortion resistance of up to 140°C, making the material suitable for numerous industrial applications. Due to its low evaporation rate, FLEX Hard is particularly suitable for automotive interior applications. The raw material is compliant with REACH and RoHS standards.

2. FEATURES

- Very impact and breakage resistant
- Halogen-free
- Free of silicone, plasticisers and oils
- Shore hardness D58
- UV-resistant
- Extreme layer adhesion

3. PROPERTIES

TEST	METHOD	UNIT	VALUE
Tensile modulus (E-Modulus)	ISO 527-2/5A/500	MPa	40
Ultimate elongation	ISO 527-2/5A/500	%	490
Stress at break	ISO 527-2/5A/500	MPa	16 (50%)
	ISO 527-2/5A/500	MPa	16 (100%)
	ISO 527-2/5A/500	MPa	29 (300%)
VICAT A (VST)	ISO 306	°C	140*
Melting temperature	ISO 3146-C	°C	190-210
Density	ISO 2781	g/cm³	1.2
Abrasion resistance	ISO 4649-A	mm³	26
Shore hardness	ISO 868	Shore	58D
Tear strength	ISO 34-1B	kN/m	175
Glass transition temperature		°C	-24
Compressive strength	DIN 53453	MPa	40
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
Fogging value	DIN 75201 MB	mg	<1.3

*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	no
Max. Volumetric Speed	4,6 mm³/s

Recommended settings for printers with a 0.4mm Nozzle. Max. 50% layerheight. Optimal print settings may vary between different printers and also depend on environmental factors.

4. CERTIFICATIONS & ADDITIONAL INFORMATION

FDA konform · RoHS compliant · REACH compliant · CHEMICAL resistent · FREE of Silicone · SHORE D58

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.