

MATERIAL DATA SHEET

ZX-100K 3D TRIBOLOGICAL FILAMENT



Description

In addition to the very good tribological properties, such as very low wear and good friction values, ZX-100K tribofilaments offer universal properties. Due to the universal properties, it can be used in a variety of ways. ZX-100K tribofilaments are not brittle, do not warp and can be used for large components. ZX-100K Tribofilaments have an approval for permanent contact with foodstuffs and the printing is odorless. Depending on the printing parameters, it can be printed in mother-of-pearl colour.

Characteristics

- Hard, stiff, tough but at the same time elastic
- Good weathering resistance
- Good machinability
- Bondable and weldable
- PTFE and silicon free
- Low-outgassing
- Support material easy to detach
- Food industry conform
- Affordable price

Resistances

- UV radiation**
(1000 hours Xenon DIN 53597)
Tensile strength: -25%
Elongation at break: -43%
- Gamma-radiation**
Limit dose 1200 kGy
- Lubricants and fuels**
Resistant
- Chemicals, resistant**
Aromatic and aliphatic hydrocarbons, weak acids and alkalis

Chemicals, not resistant

- Strong acids and alkalis, phenols, cresols
- Water**
Max. water absorption: 0.3%
Dimensional changes: 0.1%
Up to max. 80°C resistant
- Fire behavior**
Oxygen index (LOI): 24%
Classification: HB (UL94)

Conformities

- LABS
- FDA & EU 10/2011
- KTW

Properties	Symbol Unit	Standard	Value
Filament data			
Material code	-	-	A1K
Diameter	-	mm	1,75
Tolerance of the diameter	-	mm	±0,05
Weight per metre (theoretical)	-	g/m	3,12



Values determined on printed test specimens
Filament moisture: 0.08% - Orientation: Flat - Slicing 45 °

Properties	Symbol Unit	Standard	Value		
Material properties					
Filament moisture content during printing	w	%	DIN EN ISO 15512	0,08	
Thermal post-treatment (annealing)	-	-	-	No	
3D printing orientation	-	-	-	XY (flat)	
	Tensile modulus	E_t	MPa	DIN EN ISO 527-2/1B/1	2100
	Tensile strength at yield	σ_y	MPa	DIN EN ISO 527-2/1B/5	50
	Tensile strain at yield	ϵ_y	%	DIN EN ISO 527-2/1B/5	3,5
	Tensile strength	σ_m	MPa	DIN EN ISO 527-2/1B/5	51
	Elongation at tensile strength	ϵ_m	%	DIN EN ISO 527-2/1B/5	3,7
	Tensile strength at break	σ_b	MPa	DIN EN ISO 527-2/1B/5	50
	Elongation at break	ϵ_b	%	DIN EN ISO 527-2/1B/5	3,7
	Impact resistance notched Charpy	α_{cN}	kJ/m ²	DIN EN ISO 179	-
	Impact resistance un-notched Charpy	α_{cU}	kJ/m ²	DIN EN ISO 179	31
	Ball indentation hardness	HB	N/mm ²	DIN 2039 H358/30	-
	Specific wear rate $p = 1N / mm^2$; $v = 100m / min$; 100Cr6, dry-running	K	mm ³ /km * 10 ⁻⁷	ASTM G99:2000	3,5
	Specific wear rate $p = 10N / mm^2$; $v = 4 m / min$; 100Cr6, dry-running	K	mm ³ /km * 10 ⁻⁷	ASTM G99:2000	15,8
	Annealing shrinkage 125 ° C, length	-	%	-	1,5
	Annealing shrinkage 125 ° C, width	-	%	-	1,6
	Annealing shrinkage 125 ° C, thickness	-	%	-	-1