

MATERIAL DATA SHEET

ZX-100K 3D TRIBOFILAMENT



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			
Diameter	-	mm	-
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
	Filament moisture content during printing	w	%	DIN EN ISO 15512
	Thermal post-treatment (annealing)	-	-	No
	3D printing orientation	-	-	XY (flat)
	Tensile modulus	E _t	MPa	DIN EN ISO 527-2/1B/1
	Tensile strength at yield	σ _y	MPa	DIN EN ISO 527-2/1B/5
	Tensile strain at yield	ε _y	%	DIN EN ISO 527-2/1B/5
	Tensile strength	σ _m	MPa	DIN EN ISO 527-2/1B/5
	Elongation at tensile strength	ε _m	%	DIN EN ISO 527-2/1B/5
	Tensile strength at break	σ _b	MPa	DIN EN ISO 527-2/1B/5
	Elongation at break	ε _b	%	DIN EN ISO 527-2/1B/5
	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
	Ball indentation hardness	HB	N/mm ²	DIN 2039 H358/30
	Specific wear rate p = 1 N / mm ² ; v = 100m / min; 100Cr6, dry-running	K	mm ³ /km * 10 ⁻⁷	ASTM G99:2000
	Specific wear rate p = 10N / mm ² ; v = 4 m / min; 100Cr6, dry-running	K	mm ³ /km * 10 ⁻⁷	ASTM G99:2000
	Annealing shrinkage 125 ° C, length	-	%	-
	Annealing shrinkage 125 ° C, width	-	%	-
	Annealing shrinkage 125 ° C, thickness	-	%	-1

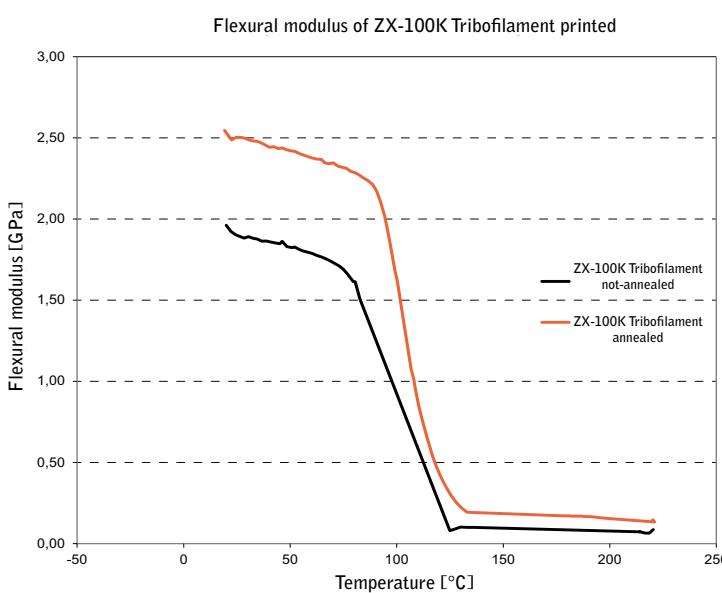
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Property change due to different filament moisture during printing and post-treatment (annealing)

Characteristics		Symbol unit		Standard	Value					
					Annealed					
		material properties								
Filament moisture content during printing		w	%	DIN EN ISO 15512	0,08	0,13	0,2	0,08	0,13	0,2
Thermal post-treatment (annealing)		-	-	-	No	No	No	Yes	Yes	Yes
3D printing orientation		-	-	-	XY (flat)					
	Tensile modulus	E_t	MPa	DIN EN ISO 527-2/1B/1	2100	1900	1400	2550	2300	1900
	Tensile strength at yield	σ_y	MPa	DIN EN ISO 527-2/1B/5	50	38	23	63	45	25
	Tensile strain at yield	ε_y	%	DIN EN ISO 527-2/1B/5	3,5	2,2	1,7	2,5	2,2	1,5
	Tensile strength	σ_m	MPa	DIN EN ISO 527-2/1B/5	51	48	32	68	60	38
	Elongation at tensile strength	ε_m	%	DIN EN ISO 527-2/1B/5	3,7	3,5	3,15	3,7	3,5	3,18
	Tensile strength at break	σ_b	MPa	DIN EN ISO 527-2/1B/5	50	39	30	50	59	38
	Elongation at break	ε_b	%	DIN EN ISO 527-2/1B/5	3,7	7	3,8	12	3,5	3,5
	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	10	35	-	-	-
	Ball indentation hardness	HB	N/mm ²	DIN 2039 H358/30	-	-	-	-	-	-
	Specific wear rate $p = 1\text{ N} / \text{mm}^2; v = 100\text{m} / \text{min}; 100\text{Cr}6$, dry-running	K	mm ³ /km * 10 ⁻⁷	ASTM G99:2000	3,5	12,7	-	3,2	12,5	-
	Specific wear rate $p = 10\text{ N} / \text{mm}^2; v = 4 \text{ m} / \text{min}; 100\text{Cr}6$, dry-running	K	mm ³ /km * 10 ⁻⁷	ASTM G99:2000	15,8	38,3	-	11,5	36,4	-



Seeking for Solutions?
3dtribofilament.de