MATERIAL DATASHEET

ZX-200LT 3D FILAMENT

ZEDEX®
3D TRIBO FILAMENT

Description

ZX-200 belongs to the group of aliphatic polyketones. Half of it consists of carbon monoxide (CO), which is produced during the combustion of combustibles and fuels. With the other component it forms a perfectly alternating and symmetrical structure of flexible polymer chains. ZX-200 is comparable in media and hydrolysis resistance to PPS and, for common chemicals, to aromatic polyetheretherketone (PEEK). ZX-200 has excellent elasticity, meaning it can be stretched greatly with very little permanent deformation and relaxes back to its original state. This simplifies assemblies at room temperature (e.g. tight-fit) and simplifies the component design. The energy applied during deformation is converted into heat only to a minimal extent thus allowing ZX-200 to behave more elastic and less plastic. This reflects the low tan delta loss factor. The maximum damping value is lower than 25°C, so if the temperature increases by deformation (track rollers) from 25°C on, the internal friction decreases and further heating becomes more difficult. The low internal coefficient of friction allows the ZX-200 to react to an imposed deformation very quickly. This property improves the „sealing properties" in seals reducing so leakages.

Properties

- Low density
- Inexpensive
- Superior ratio of tensile strength to elongation at yield
- Mechanical properties better than polyamide (PA) and POM-C
- Continuous service temperature of 140°C (approx. 40°C higher than polyamide (PA) and POM)
- high dynamic load capacity and fatigue strength
- high resilience and low creep
- high impact strength (similar to polycarbonate) in the „cold" down to -40°C better than PA6.6, PA6,POM
- high mechanical damping
- good di-polar barrier properties (against coolant,transmission fluid, oils, greases)
- good tribological properties, especially with the pairing ZX-200/ ZX-200 or with oil lubrication
- wear resistant under abrasion, insensitive to rough surfaces and dirt (approx. 10x better than POM-C)
- high chemical resistance
- very good hydrolysis resistance (water at 100°C permanently permissible)
- Gamma sterilizable, steam sterilizable < 115°C
- Food contact grade approved

Resistances

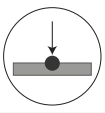
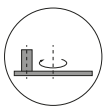
Lubricants and fuels
resistant
Chemicals, resistant
aromatic and aliphatic Hydrocarbons, weak acids and alkalis
Chemicals, unstable
strong acids and alkalis
Water
max. water absorption: 0.5 % Resistant up to max. 100 °C
Reaction to fire
Classification: HB (UL94)

Conformities

- RoHS / WEEE
- REACH
- FDA
- EU 10/2011

Properties	Symbol | Unit		Standard	Value
Filament data				
Material Code		-	-	894
Diameter	-	mm	-	1,75
Tolerance of the diameter	-	mm	-	±0,05
Weight per metre (theoretical)	-	g/m	-	2,93

Values determined on printed test specimens.
Filament undried – Alignment: horizontal/upright – slicing 45°

	Properties	Symbol | Unit		Standard	Value (horizontal)	Value (upright)
	Material properties					
	Filament moisture content during printing	w	%	DIN EN ISO 15512	0,25	0,25
	Thermal post-treatment (annealing)	-	-	-	no	no
	3D printing orientation	-	-	-	XY	ZX
	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	36,27	30,30
	Tensile strain at yield	ε_y	%	DIN EN ISO 527-2/1B/5	19,18	9,84
	Tensile strength	σ_m	MPa	DIN EN ISO 527-2/1B/5	36,27	30,30
	Elongation at tensile strength	ε_m	%	DIN EN ISO 527-2/1B/5	19,18	9,84
	Tensile strength at break	σ_b	MPa	DIN EN ISO 527-2/1B/5	17,50	30,29
	Elongation at break	ε_b	%	DIN EN ISO 527-2/1B/5	39,19	9,92
	Impact resistance notched Charpy	α_{cN}	kJ/m²	DIN EN ISO 179	-	-
	Impact resistance un-notched Charpy	α_{cU}	kJ/m²	DIN EN ISO 179	-	-
	Ball indentation hardness	HB	N/mm²	DIN 2039 H358/30	48,18	34,57
	Specific wear rate p = 1N / mm²; v = 100m / min; 100Cr6, dry-running	K	mm³/km * 10-7	ASTM G99:2000	-	-
	Specific wear rate p = 10N / mm²; v = 4 m / min; 100Cr6, dry-running	K	mm³/km * 10-7	ASTM G99:2000	-	-
	Annealing shrinkage 125 ° C, length	-	%	-	2,5	2,5
	Annealing shrinkage 125 ° C, width	-	%	-	2,5	2,5
	Annealing shrinkage 125 ° C, thickness	-	%	-	2,6	2,6