ZEDEX®

Tribological Polymer Solutions

Datasheet

Material: ZX-100EL55

EN 1.0

Properties	Symbol	Unit	Standard	Value
Information				
Material code	-	-	Internal Standard	A1F
Colour	-	-	-	Black
Density	ρ	kg/dm³	ISO 1183	1,2
Mechanical				
Compressive modulus	Ec	MPa	DIN EN ISO 604	334
Elastic limit	σ_{el}	MPa	Internal Standard	14
Compressive stress at yield	σ_Y	MPa	DIN EN ISO 604	n.v.
Compressive strength	σ_M	MPa	DIN EN ISO 604	n.v.
Compressive stress at 3,5% strain	$\sigma_{3,5\%}$	MPa	DIN EN ISO 604	6
Compressive strength (0,01 h)	σ_M	MPa	Internal Standard	15
Compressive strength (100 h)	σ_M	MPa	Internal Standard	12
Compressive strength (10000 h)	σ_M	MPa	Internal Standard	5,5
Compressive stress at break	σ_B	MPa	DIN EN ISO 604	k.Br.
Elastic compression limit	ε_{el}	%	Internal Standard	7,1
Nominal compressive yield strain	ε_{cy}	%	DIN EN ISO 604	n.v.
Nominal compressive strain at compressive strength	ε_{cM}	%	DIN EN ISO 604	n.v.
Nominal compressive strain at break	ε_{cB}	%	DIN EN ISO 604	k.Br.
Modulus in tension (tensile modulus)	E_t	MPa	DIN EN ISO 527	200
Elastic limit	σ_{el}	MPa	Internal Standard	4
Tensile stress at yield	σ_Y	MPa	DIN EN ISO 527	14
Tensile strength	σ_M	MPa	DIN EN ISO 527	37
Tensile stress at break	σ_B	MPa	DIN EN ISO 527	30
Elastic yield point	ε_{el}	%	Internal Standard	2
Yield strain	ε_y	%	DIN EN ISO 527	20
Elongation at maximum force	ε_M	%	DIN EN ISO 527	>300
Tensile elongation at break	ε_B	%	DIN EN ISO 527	>300
Modulus in flexure	E_f	MPa	DIN EN ISO 178	350
Outer fibre stress at 3,5% outer fibre strain	$\sigma_{f3,5}$	MPa	DIN EN ISO 178	11
Flexural strength	σ_{fM}	MPa	DIN EN ISO 178	17
Flexural stress at break	σ_{fB}	MPa	DIN EN ISO 178	k.Br.
Elongation at flexural yield stress	ε_M	%	DIN EN ISO 178	9
Flexural elongation at break	ε_B	%	DIN EN ISO 178	k.Br.
Creep modulus at 1% deformation after 1000h	E	N/mm²	DIN 53444	400
Stress at 1% deformation after 1000h	$\sigma_{1\%}$	N/mm²	DIN 53444	4
Creep resistance	-	-	Relative value	②
Ball indentation hardness H358/30 (H132/30) [H49/30]	HB	N/mm²	DIN 2039	[49]
Shore A hardness	-	Shore	DIN 53505	>100
Shore D hardness	-	Shore	DIN 53505	56
Impact strength Charpy not notched	-	kJ/m²	EN ISO 179/1eU	k.Br.
Impact strength Charpy notched	-	kJ/m²	EN ISO 179/1eA	k.Br.
Loss tangent (1Hz)	tanδ	1	Internal Standard	0,141
Fatigue strength at 20°C, 106 stress cycles, 1 Hz	-	MPa	Internal Standard	7
Thermal				
Continuous operating temperature (long term)	RTi	°C	UL 746B	75
Short term operating temperature (3 h)	-	°C	Internal Standard	80
Maximum RTi temperature for bushings when pressed	-	°C	Internal Standard	50
Melting temperature	T_m	°C	DSC	207
Glass transition temperature	T_g	°C	DSC	-64
Coefficient of thermal expansion up to 100°C	α	10^{-5}/K	ISO E 830	16,2
Coefficient of thermal expansion up to 150°C	α	10^{-5}/K	ISO E 831	16,7
Heat distortion temperature HDT/A 1,8 MPa	HDT(A)	°C	DIN EN ISO 75	110
Thermal conductivity	λ	W/(m*K)	DIN 52612	-
Specific heat capacity	c_p	kJ/(kg*K)	DSC	1,75
Fire behaviour (3,2mm) UL94	-	-	UL 94 HB	94HB
Limiting oxygen index (LOI)	%	LOI	DIN EN ISO 4589	-

Properties	Symbol	Unit	Standard	Value
Electrical				
Volume resistivity	R_D	Ω*cm	IEC 60093	2E14
Surface resistance	R_O	Ω	IEC 60093	4E12
Penetration resistance	E	kV/mm	IEC 243	21
Tracking resistance	-	V	IEC 112	-
Dielectric constant (110Hz)	-	1	IEC 250	4,4
Dissipation factor (110Hz)	tanδ	1	IEC 112	0,011
PV values				
Max. surface pressure v=1m/min	p_{zul}	N/mm²	Internal test radial bushing	0,84
Max. surface pressure v=10m/min	p_{zul}	N/mm²		0,17
Max. surface pressure v=100m/min	p_{zul}	N/mm²		-
Max. surface pressure v=200m/min	p_{zul}	N/mm²		-
Evolution of heat with v=1m/min	-	°C		34
Evolution of heat with v=10m/min	-	°C		40
Evolution of heat with v=100m/min	-	°C		n.d.
Evolution of heat with v=200m/min	-	°C		n.d.
Friction				
μ static 20° C dry operation	$\mu_{stat.}$	1	Internal Standard inclined plane	0,25
μ dynamic 20° C dry operation	$\mu_{dyn.}$	1		0,2
μ dynamic 100° C dry operation	$\mu_{dyn.}$	1		0,08
Wear				
Wear factor at 20°C	-	mm/100 km	Internal test periodic translative movement under load	0,54
Wear factor at 100°C	-	mm/100 km		0,23
Wear factor at 200°C	-	mm/100 km		n.d.
Wear factor at 240°C	-	mm/100 km		n.d.
Available as				
Tubes (hollow rods) up to ø (de)	-	-	-	✓
Sheets up to max. thickness	-	-	-	✓
Rods up to ø (de)	-	-	-	✓
Plastic granules	-	-	-	✓
Injection moulded parts	-	-	-	✓
Machined parts	-	-	-	✓
Precision				
Dimensional stability with moisture absorption	-	-	Relative value	⑧
Water absorption 23°C / RMC 93%	-	%	DIN EN ISO 62	0,2
Water absorption until an equilibrium moisture content	-	%	DIN EN ISO 62	0,65
Dimensional stability with temperature variation	-	-	Relative value	②
High precision bushings (negative clearance)	-	-	-	✓
Alignment adjustment	-	-	Relative value	⑩
Envrionmental influences				
Suitable for use in water	-	-	-	✓
Resistance against hot water	-	°C	-	70
Resistance against dust, dirt, abrasive substances	-	-	Relative value	⑧
UV rays resistance	-	-	Relative value	⑧
Suitable for outdoor use	-	-	Relative value	⑦
Resistance to chemicals	-	-	Relative value	⑤
FDA compliant	-	-	-	✓
Suitable for vacuum	-	-	-	✓
Rate of desorption	a_{1h}	mbar*l/(s/cm²)	-	-
ROHS / WEEE	-	-	-	-
Free from silicone	-	-	-	✓
Free from PTFE	-	-	-	✓
Sterilization				
Resistant against disinfectant	-	-	-	×
Moist heat sterilization	-	-	Relative value	⑥
Gamma-rays radiation sterilization	-	-	Relative value	③
Chemical sterilization	-	-	Relative value	×
UV-sterilization	-	-	Relative value	×

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Legend

①	Low
⑩	High
✓	Applicable
×	Not applicable
(✓)	Limited
k.Br.	No break
n.d.	Not feasible
-	Not determined
n.v.	Non-existent