MATERIAL DATASHEET
ZEDEX NEWLIFE PVDF

In addition to the well-known ZEDEX® families, PVDF is the first representative of our new product family ZEDEX® newlife. All products of the newlife families are based on single-variety, used or already processed plastics, which are reprocessed and turned into new products.

The newlife families make a significant contribution to reducing waste, the use of resources and primary energy. Compared to thermal recycling, CO2 emissions are avoided in a considerable amount.

Various industries are already supporting us in this. In cooperation with Marubeni International, we have created a very stable and sustainable closed process chain especially for this purpose. This enables us to offer you economic advantages and durable alternatives to virgin material.

The products of the ZEDEX® newlife family are subject to the strict process and characteristic value controls that are also applied to the processing of virgin material. The high quality standards are intended to encourage our customers to choose newlife products.

Only for applications where high-purity semi-finished products are required, such as in the process and media-carrying areas of the semiconductor industry or in the food industry where intended contact with food requires approval, products of the ZEDEX® newlife family cannot be used.

Please contact us. As usual, our team will help you find the right material for your needs.

MATERIAL DATASHEET
ZEDEX NEWLIFE PVDF

newlife ZEDEX®

Properties	Symbol	Unit	Standard	Parameters	Value
information					
material code	-	-	internal Standard	-	F5S
Standard / Sonder (STD/SO)	-	-	-	-	STD
colour	-	-		-	ivory to beige
density	ρ	kg/dm³	ISO 1183	-	1,78
mechanical					
compressive modulus	Ec	MPa	DIN EN ISO 604	1 mm/min; Specimen 50 x 10 x 4 mm	2138
elastic limit	σ_{yel}	MPa	internal Standard	5mm/min; 10 x 10 x 4 mm	50,65
compressive stress at yield	σ_{cy}	MPa	DIN EN ISO 604	5mm/min; 10 x 10 x 4 mm	75,76
compressive strength	σ_{cm}	MPa	DIN EN ISO 604	5mm/min; 10 x 10 x 4 mm	75,76
compressive stress at 1% strain	$\sigma_{1\%}$	MPa	DIN EN ISO 604	5mm/min; 10 x 10 x 4 mm	9,93
compressive stress at 2% strain	$\sigma_{2\%}$	MPa	DIN EN ISO 604	5mm/min; 10 x 10 x 4 mm	19,92
compressive stress at 3,5% strain	$\sigma_{3,5\%}$	MPa	DIN EN ISO 604	5mm/min; 10 x 10 x 4 mm	35,01
compressive strength (0,01 h)	$\sigma_{M0,01}$	MPa	internal Standard	3% Compression	-
compressive strength (100 h)	σ_{M100}	MPa	internal Standard	3% Compression	-
compressive strength (10000 h)	σ_{M1000}	MPa	internal Standard	3% Compression	-
compressive stress at break	σ_{mb}	MPa	DIN EN ISO 604	5mm/min; 10 x 10 x 4 mm	k.Br.
elastic compression limit	ε_{yel}	%	Werksnorm	5mm/min; 10 x 10 x 4 mm	5,31
nominal compressive yield strain	ε_{cy}	%	DIN EN ISO 604	5mm/min; 10 x 10 x 4 mm	14,76
nominal compressive strain at compressive strength	ε_{cm}	%	DIN EN ISO 604	5mm/min; 10 x 10 x 4 mm	14,76
nominal compressive strain at break	ε_{cb}	%	DIN EN ISO 604	5mm/min; 10 x 10 x 4 mm	k.Br.
modulus in tension (tensile modulus)	E_t	MPa	DIN EN ISO 527	1mm/min; Specimen 1A	2040
elastic limit	σ_{yel}	MPa	internal Standard	5mm/min; Specimen 1A	38,22
tensile stress at yield	σ_y	MPa	DIN EN ISO 527	5mm/min; Specimen 1A	50,4
tensile strength	σ_m	MPa	DIN EN ISO 527	5mm/min; Specimen 1A	50,4
tensile stress at break	σ_b	MPa	DIN EN ISO 527	5mm/min; Specimen 1A	38,56
elastic yield point	ε_{yel}	%	internal Standard	5mm/min; Specimen 1A	2,77
yield strain	ε_y	%	DIN EN ISO 527	5mm/min; Specimen 1A	8,55
elongation at maximum force	ε_m	%	DIN EN ISO 527	5mm/min; Specimen 1A	8,55
tensile elongation at break	ε_b	%	DIN EN ISO 527	5mm/min; Specimen 1A	17,11
modulus in flexure	E_f	MPa	DIN EN ISO 178	2mm/min; 64 mm span	2044
outer fibre stress at 3,5% outer fibre strain	$\sigma_{f3,5\%}$	MPa	DIN EN ISO 178	2mm/min; 64 mm span	54,67
flexural strength	σ_{fm}	MPa	DIN EN ISO 178	2mm/min; 64 mm span	74
flexural stress at break	σ_{fb}	MPa	DIN EN ISO 178	2mm/min; 64 mm span	k.Br.
elongation at flexural yield stress	ε_{fm}	%	DIN EN ISO 178	2mm/min; 64 mm span	7,18
flexural elongation at break	ε_{fb}	%	DIN EN ISO 178	2mm/min; 64 mm span	k.Br.
creep modulus at 1% deformation after 1000h	E	N/mm²	DIN 53444		-
stress at 1% deformation after 1000h	$\sigma_{1\%}$	N/mm²	DIN 53444		-
creep resistance	-	-	relative value		-
ball indentation hardness H358/30 (H132/30) [H49/30]	HB	N/mm²	DIN 2039	Specimen Ø30 x 4 mm	110,7
Shore A hardness	-	Shore	DIN 53505	Ø30 x 6 mm	>100
Shore D hardness	-	Shore	DIN 53505	Ø30 x 3 mm	82
impact strength Charpy not notched	-	kJ/m²	EN ISO 179/1eU	Span 64mm, Standard test specimen	k.Br.
impact strength Charpy notched	-	kJ/m²	EN ISO 179/1eA	Span 64mm, Standard test specimen	10,69
loss tangent (1Hz)	tanδ	1	internal Standard	-	-
fatigue strength at 20°C, 106 stress cycles, 1 Hz	-	MPa	internal Standard	-	-
Poisson's ratio, 20°C	υ	-	internal Standard	-	0,34
thermal					
max. continuous operating temperature stationary	DGMX	°C	RTI Index	-	120
max. short-term op. temp. transient (3h)	KGMX	°C	experience value	-	150
min. Continuous operating temperature stationary	DGMIN	°C	ASTM D746 ISO 974	Brittleness Temperature	-30
min. short-term op. temp. transient	KGMIN	°C	internal Standard	-	-
max.continuous operating temp. for bushings when pressed	.	°C	internal Standard	-	-
melting temperature	T_m	°C	DIN EN ISO 11357-1	-	174,7
glass transition temperature	T_g	°C	DIN EN ISO 11357-1	-	-40
coefficient of thermal expansion up to 100°C, longitudinal	α	10^{-5}/K	ISO E 830	Heating rate 3°C/min, Static force 110mN	16
coefficient of thermal expansion up to 150°C, longitudinal	α	10^{-5}/K	ISO E 831	Heating rate 3°C/min, Static force 110mN	-
Heat distortion temperature HDT/A 1,8 Mpa	HDT(A)	°C	DIN EN ISO 75	Heating rate 120°C/hour, span 65mm, specimen 80 x 10 x 4	77,27
Heat distortion temperature HDT/B 0,45 Mpa	HDT(B)	°C	DIN EN ISO 75	Heating rate 120°C/hour span 65mm	-
thermal conductivity	λ	W/(m*K)	DIN 52612	specimen Ø6 x 10 mm	0,25
specific heat capacity	c_p	kJ/(kg*K)	DSC	-	1,2
fire behavior (3.2mm) UL94	-	-	UL 94 HB	-	V-0
limiting oxygen index	%	LOI	DIN EN ISO 4589	-	44

Properties	Symbol	Unit	Standard	Parameters	Value
electrical					
volume resistivity	R_D	Ω*cm	IEC 60093	-	>10E+10
surface resistance	R_O	Ω	IEC 60093	-	>10E+14
penetration resistance	E	kV/mm	IEC 243	-	27
tracking resistance	-	V	IEC 112	-	-
dielectric constant (110Hz)	-	1	IEC 250	-	-
dissipation factor (110Hz)	tanδ	1	IEC 112	-	-
pv values					
max. surface pressure v=1m/min	p_{zul}	N/mm²	Factory standard Plain bearing radial	Translation; intermediate medium air; specimen Ø16 / 12 x 9mm; Counter-Body: X5CrNi189	-
max. surface pressure v=10m/min	p_{zul}	N/mm²			-
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			-
evolution of heat with v=10m/min	-	°C			-
evolution of heat with v=100m/min	-	°C			-
evolution of heat with v=200m/min	-	°C			-
friction					
μ static 20° C dry operation	$\mu_{stat.}$	1	Factory standard inclined plane	Factory standard inclined plane counter-body: X5CrNi189; hard chrome plated; Rz 2μm; surface pressure: 0.3-4.7MPa	-
μ dynamic 20° C dry operation	$\mu_{dyn.}$	1			-
μ dynamic 100° C dry operation	$\mu_{dyn.}$	1			-
wear					
wear factor at 20°C	-	mm/100km	Factory standard periodic translatory movement under load	Translational; Sliding speed: 10.3 m/min; Surface pressure: 0.3 MPa; Counter-Body: X5CrNi189	-
wear factor at 100°C	-	mm/100km			-
wear factor at 200°C	-	mm/100km			-
wear factor at 240°C	-	mm/100km			-
wear coefficient stationary	K	mm³/Nm			-
available					
tubes	-	-	-	-	✓
sheets	-	-	-	-	✓
rods	-	-	-	-	✓
granules	-	-	-	-	×
injection moulded parts	-	-	-	-	✓
machined parts	-	-	-	-	✓
welding rod	-	-	-	-	✓
filaments	-	-	-	1,75mm	✓
precision					
dimensional stability with moisture absorption	-	-	relative value	-	❿
water absorption 23°C / RMC 93%	-	%	DIN EN ISO 62	-	0,02
water absorption until an equilibrium moisture content	-	%	DIN EN ISO 62	-	0,05
dimensional stability with temperature variation	-	-	relative value	-	❶
high precision bushings (negative clearance)	-	-		-	×
Alignment adjustment	-	-	relative value	-	❸
environmental influences					
suitable for use in water	-	-	-	-	✓
resistance against hot water	-	°C	-	-	120
resistance against dust, dirt, abrasive substances	-	-	relative value	-	❼
UV rays resistance	-	-	relative value	-	❾
suitable for outdoor use	-	-	relative value	-	❾
resistance to chemicals	-	-	relative value	-	❾
suitable for vacuum	-	-	-	-	-
rate of desorption	a_{1h}	mbar*l/(s/cm²)	-	-	-
sterilization					
resistant against disinfectant	-	-	-	-	✓
moist heat sterilization	-	-	relative value	-	❿
gamma-rays radiation sterilization	-	-	relative value	-	❿
chemical sterilization	-	-	relative value	-	❾
UV-sterilization	-	-	relative value	-	❾
adhesiveness/weldability					
glueable	-	-	-	-	(✓)
weldable	-	-	-	-	✓
wetting inhibiting substances					
Silicone-free	-	-	-	-	✓
PTFE-free	-	-	-	-	✓
conformities					
ROHS / WEEE	-	-	-	-	✓
REACH	-	-	-	-	✓
EU Nr. 10/2011	-	-	-	-	×
FDA	-	-	-	-	×

Legend

❶	low
❿	high
✓	applicable
×	not applicable
(✓)	limited
k.Br.	no break
n.d.	not feasible
-	not determined
n.v.	non-existent

Legal information
All tests were carried out in a normal climate (23°C) (unless a different temperature is specified). The values given were determined from many individual measurements as average values and correspond to the state of our current knowledge. They serve only as information about our products and are intended as an aid to material selection. They do not constitute a legally binding guarantee of specific properties or suitability for specific applications. The tests were carried out on specimens of extruded semi-finished products. Since the properties of the plastics depend on the processing (extrusion, injection molding) and also on the dimensions of the semi-finished products and the degree of crystallization, the actual property values of a particular product may deviate somewhat from the specifications. We will be pleased to provide you with information on deviating properties. For the design of constructions and the definition of material specifications, we will be pleased to provide you with the data applicable to your application upon request. Notwithstanding the above, the customer bears sole responsibility for thoroughly testing the suitability, performance, efficacy and safety of selected products in pharmaceutical, medical device or other end-use applications.