Stemapet PET

Polyester

PET

> rod - sheet

STEMPLAST HATZIAVGOUSTIS
ENGINEERING PLASTICS

Product data sheet

Revision date: 1.7.2025 - Version: 1.0

Industries

Elevators & escalators
Bakery & confectionery
Semiconductor industry
Beverage industry
Food industry
Paper industry
Semiconductor factory equipment
Electronics
Vehicle construction
Mechanical engineering industry
Ship & boatbuilding
Crane & lifting technology
Conveyor technology & automation
Healthcare

Characteristics

High tensile strength
High stiffness
High hardness
Good creep properties
Good wear resistance
Good dimensional stability
Good machinability
Good sliding properties
Low coefficient of thermal expansion
Low moisture absorption

Applications

Precision bearing bushes
Bearings
Cams
Gears
Springs
Rollers
Screws
Rings
Pistons
Moulds

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General properties

Density ρ	DIN EN ISO 1183-1 - ASTM D792 sim. - DIN 53479	1,38 gr/cm³
	DIN IEC 60413 / 203	-
Moisture absorption		
saturation in air, 23 °C, 50% RH	DIN EN ISO 62 - ASTM D570 - DIN 53495 sim.	0,30 %
saturation in water 23 °C	DIN EN ISO 62 - ASTM D570 - DIN 53495 sim.	0,50 %
immersion in water, 50x50x3 mm, 23 °C/24h	DIN EN ISO 62 - ASTM D570 - DIN 53495 sim.	-
Flammability (thickness 3 / 6 mm)	UL94	HB / HB
Oxygen index	ISO 4589 -1,-2 - ASTM D2863 sim.	25 %
Open porosity	DIN 66133	-

Mechanical properties

Tensile stress at yield σ^{yT}	DIN EN ISO 527 - ASTM D638 - DIN 53455 sim.	85 MPa
Tensile strength σ^{T}	DIN EN ISO 527 - ASTM D638 - DIN 53455 sim.	-
Elongation at break ε^{br}	DIN EN ISO 527 - ASTM D638 - DIN 53455 sim.	15 %
Modulus of elasticity E^{T}	DIN EN ISO 527 - ASTM D638 - DIN 53455 sim.	3000 MPa
Stress at 20% strain σ	ISO 37 - ASTM D412 - DIN 53504-S2	-
Stress at 300% strain σ	ISO 37 - ASTM D412 - DIN 53504-S2	-
Tensile strength σ^{T}	ISO 37 - ASTM D412 - DIN 53504-S2	-
Elongation at break ε^{br}	ISO 37 - ASTM D412 - DIN 53504-S2	-
Flexural stress at yield σ^{yB}	DIN EN ISO 178 - ASTM D790 - DIN 53452 sim.	-
Flexural strength σ^{B}	DIN EN ISO 178 - ASTM D790 - DIN 53452 sim.	121 MPa
Modulus of elasticity E^{B}	DIN EN ISO 178 - ASTM D790 - DIN 53452 sim.	3000 MPa
Flexural strength σ^{B}	DIN IEC 60413 / 501	-
Compressive stress at 1/2/5% nominal strain σ^{yC}	DIN EN ISO 604 - ASTM D695 - DIN 53454	26/51/103 MPa
Compressive strength σ^{C}		
-	DIN EN ISO 604 - ASTM D695 - DIN 53454	103 MPa
parallel to layers	DIN EN ISO 604 - ASTM D695 - DIN 53454	-
perpendicular to layers	DIN EN ISO 604 - ASTM D695 - DIN 53454	-
Compressive strength σ^{C}	DIN 51910	-
Young's modulus E	DIN 51915	-
Deformation		
under load (13,7 N/mm², 24 h, 23 °C)	ASTM D621	-
permanent (after 24 h relaxation, 23 °C)	ASTM D621	-
compression set (72 h, 20 °C)	ISO 815-B - ASTM D395 sim. - DIN 53517 sim.	-
compression set (24 h, 70 °C)	ISO 815-B - ASTM D395 sim. - DIN 53517 sim.	-
Impact strength		
Charpy unnotched α^{CU}	DIN EN ISO 179/1eU - DIN 53453	> 50 kJ/m²
Charpy notched α^{CN}	DIN EN ISO 179/1eA - ASTM D6110 sim.	2 kJ/m²
Charpy α^{N} 10 and α^{N} 15	DIN EN ISO 179 - DIN 53453	-
Charpy α^{K} 10	DIN EN ISO 179 - DIN 53453	-
Charpy notched α^{K} 15	DIN EN ISO 179 - DIN 53453	-
Izod notched α^{IN}	DIN EN ISO 180/1A - ASTM D256 sim.	1 kJ/m²
Creep rate stress at 1% strain after 1000 h $\sigma^{1\ 1000}$	DIN EN ISO 899-1 - ASTM D2990 sim. - DIN 53444	26 MPa

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Mechanical properties

Tear strength (propagation resistance)	ISO 34-1B - ASTM D624	-
Hardness		
ball indentation $H^{358\ 30}$	DIN EN ISO 2039-1 - DIN 53456	170
Rockwell	DIN EN ISO 2039-2 - ASTM D785	M93
Rockwell $HR^{5\ 100}$	DIN IEC 60413 / 303	-
Shore	DIN EN ISO 868 - ASTM D2240 sim. - DIN 53505	D84
Shore	DIN ISO 48-4 - ASTM D2240 sim. - DIN 53505	-
Coefficient of sliding friction μ	DIN EN ISO 8295 - ASTM D1894 sim.	0,25
Wear rate S (dry running against steel, P=0.05 MPa, V=0.6 m/s, t=60 °C, near running surface, Pin on disc apparatus)	DIN ISO 7148-2 sim.	0,35 μm/km
Abrasion resistance	DIN EN ISO 4649-A - ASTM D5963 sim. - DIN 53516	-

Electrical properties

Dielectric constant (relative permittivity) ε^R		
100 Hz	IEC 60250 - ASTM D150 - VDE 0303-4	3,4
1 MHz	IEC 60250 - ASTM D150 - VDE 0303-4	3,2
Dielectric dissipation factor tanδ		
100 Hz	IEC 60250 - ASTM D150 - VDE 0303-4	0,001
1 MHz	IEC 60250 - ASTM D150 - VDE 0303-4	0,014
Volume resistivity ρ	IEC 60093 - ASTM D257 - VDE 0303-30	10^{18} Ω·cm
Surface resistivity σ	IEC 60093 - ASTM D257 - VDE 0303-30	10^{16} Ω
Surface resistivity σ (immersion in water 24h)	IEC 60093 - ASTM D257 - VDE 0303-30	-
Dielectric strength E^D	IEC 60243-1 - ASTM D149 - VDE 0303-21	20 kV/mm
Dielectric strength E^D (in oil at 90 °C)		
parallel to layers	IEC 60243-1 - ASTM D149 - VDE 0303-21	-
perpendicular to layers	IEC 60243-1 - ASTM D149 - VDE 0303-21	-
Tracking resistance V	IEC 60112 - ASTM D3638 - VDE 0303-11	600 CTI

Thermal properties

Melting temperature T^M (DSC, 10 °C/min)	ISO 11357-1,-3 - ASTM D3418 sim.	248 °C
Specific heat (thermal capacity) c	ISO 11357-4 - ASTM E1269	1,1 J/(g·K)
Thermal conductivity λ (23 °C)	DIN 51908	-
	ISO 22007-2 - ASTM C177 sim. - DIN 52612-2	0,28 W/(m·K)
Coefficient of linear thermal expansion α		
average value 23-60 °C	ISO 11359-2 - ASTM E831 sim. - DIN 53752	60 10^{-6}·K^{-1}
average value 20-200 °C	DIN 51909	-
Service temperature		
long term (min / max - 5000 h)		-20 / +115 °C
short term (not under stress - few hours)		180 °C
max service		-

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Thermal properties

Vicat softening point		
Vicat VST A50 - 10N	ISO 306 - ASTM D1525 - DIN 53460 sim.	-
Vicat VST B50 - 50N	ISO 306 - ASTM D1525 - DIN 53460 sim.	-
Heat deflection temperature		
HDT A - 1.80 MPa	DIN EN ISO 75-1,-2 - ASTM D648 - DIN 53461 sim.	80 °C
HDT B - 0.45 Mpa	DIN EN ISO 75-1,-2 - ASTM D648 - DIN 53461 sim.	-

The mechanical properties change due to the influence of moisture absorption. The modulus of elasticity declines and the material becomes tougher and more resistant to impact.

The above mentioned electrical properties result from measurements on natural and dry material.

The indicated values result from numerous individual measurements for an approximation of the values and correspond to our today's knowledge.

They serve as information about our products and are presented as a guide to choose from our range of materials. This, however, does not include an assurance of specific properties or the suitability for particular application purposes that are legally binding. Since the properties also depend on the dimension of the semi-finished products and the degree of crystallisation (e.g. nucleating by pigments), the actual values of the properties of a particular product may differ from the indicated values.