

STEMAPET PET

Product data sheet

Revision date: 1.2.2017 - Version: 2.0



STEMPLAST HATZIAVGOSTIS
ENGINEERING PLASTICS

Material:	polyethylene terephthalate (PET)
DIN EN ISO 1043-1 ¹ Norm:	PET poly(ethylene terephthalate)
Product's shape:	semi-finished products

Material characteristics

Very high dimensional stability, minimal absorption of moisture, excellent creep behaviour, high surface hardness, high mechanical strength and stiffness, very good sliding properties, very high wear resistance, good workability.

Application examples

Precision bearing bushes, bearings, cams, gears, springs, rollers, screws, rings, pistons, moulds, automobile articles.

General properties

Density ρ	1.38 gr/cm ³	DIN EN ISO 1183-1 DIN 53479/ASTM D792 sim.
Moisture absorption		DIN EN ISO 62
saturation in air (23 °C, 50% RH)	0.25 %	DIN 53495 sim.
saturation in water (23 °C)	0.50 %	ASTM D570

Mechanical properties

Tensile stress at yield σ_Y	85 MPa	DIN EN ISO 527
Tensile strength σ_T		DIN 53455 sim.
Elongation at break ϵ_B	15 %	ASTM D638
Modulus of elasticity E_t	3000 MPa	
Flexural stress at yield σ_Y		DIN EN ISO 178
Flexural strength σ_b	121 MPa	DIN 53452 sim.
Modulus of elasticity E_b	3000 MPa	ASTM D790
Compressive stress at 1/2/5% nominal strain σ_Y	26/51/103 MPa	DIN EN ISO 604 / ASTM D695
Compressive strength σ_c	103 MPa	DIN 53454/53457 sim.
Impact strength		DIN EN ISO 179/1eU (DIN 53453)
Charpy unnotched a_{CU}	>50 kJ/m ²	
Charpy notched a_{CN}	2 kJ/m ²	DIN EN ISO 179/1eA ASTM D6110 sim.
Izod notched a_{IN}	1 kJ/m ²	DIN EN ISO 180/1A ASTM D256 sim.
Creep rate stress at 1% strain after 1000 h $\sigma_{1/1000}$	26 MPa	DIN EN ISO 899-1 DIN 53444/ASTM D2990 sim.
Hardness		DIN EN ISO 2039-1 (DIN 53456)
ball indentation $H_{358/30}$	170	
Rockwell	M93	DIN EN ISO 2039-2 ASTM D785
Shore scale D	84	DIN EN ISO 868 (DIN 53505) ASTM D2240 sim.
Coefficient of sliding friction μ	0.25	
Wear rate S (dry running against steel, P=0.05 MPa, V=0.6 m/s, t=60 °C, near running surface)	0.35 $\mu\text{m}/\text{km}$	DIN ISO 7148-2 sim. Pin on disc apparatus

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Electrical properties

Dielectric constant (relative permittivity) ϵ_r		
100 Hz	3.4	IEC 60250
1 MHz	3.2	DIN 53483 sim.
Dielectric dissipation factor $\tan\delta$		VDE 0303-4
100 Hz	0.001	ASTM D150
1 MHz	0.014	
Volume resistivity ρ	$10^{16} \Omega \cdot \text{cm}$	IEC 60093 / VDE 0303-30
Surface resistivity σ	$10^{14} \Omega$	DIN 53482 sim. / ASTM D257
Dielectric strength E_d	20 kV/mm	IEC 60243-1 / VDE 0303-21 DIN 53481 sim. / ASTM D149
Tracking resistance V	CTI 600	IEC 60112 / VDE 0303-11 DIN 53480 sim. ASTM D3638 / UL 746A

Thermal properties

Melting temperature T_m (DSC, $10^\circ\text{C}/\text{min}$)	255 °C	ISO 11357-1,-3 ASTM D3418 sim.
Thermal conductivity λ (23°C)	0.28 W/(m·K)	ISO 22007-2 / ISO 8302 sim. DIN 52612-2/ASTM C177 sim.
Specific heat (thermal capacity) c	1.1 J/(g·K)	ISO 11357-4 ASTM E1269/ASTM C351 sim.
Coefficient of linear thermal expansion α (average value $23-60^\circ\text{C}$)	$60 \cdot 10^{-6} \cdot \text{K}^{-1}$	ISO 11359-2 DIN 53752/ASTM E831 sim.
Service temperature		
long term (min / max - 5000 h)	-20 / 115 °C	
short term (not under stress - few hours)	160 °C	
Vicat softening point		ISO 306
VST A50 - 10N		DIN 53460 sim.
VST B50 - 50N		ASTM D1525
Heat deflection temperature		DIN EN ISO 75-1,-2
HDT A - 1.80 MPa	80 °C	DIN 53461 sim.
HDT B - 0.45 MPa		ASTM D648
Flammability		
according to UL94 (thickness 3 / 6 mm)	HB / HB	
oxygen index	25 %	ISO 4589 -1,-2 ASTM D2863 sim.

The above mentioned electrical properties result from measurements on natural 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.

¹ DIN 7728-1, January 1988 edition, has been superseded by the specifications of EN ISO 1043-1, which is identical to ISO 1043-1

nb : no break