

# STEMYLEN PE-HMW

## Product data sheet

Revision date: 1.2.2017 - Version: 2.0



STEMPLAST HATZIAVGOSTIS  
ENGINEERING PLASTICS

Material:	polyethylene HMW (PE 500)
DIN EN ISO 1043-1 <sup>1</sup> Norm:	PE-HMW   polyethylene high molecular weight
Product's shape:	semi-finished products

### Material characteristics

Low density, almost no absorption of moisture, very good sliding properties, high wear resistance, very high impact loading, acid and alkali resistant.

### Application examples

Cutting boards, sliding surfaces, elements for food, textile, chemical, paper industries.

### General properties

Density $\rho$	0.96 gr/cm <sup>3</sup>	DIN EN ISO 1183-1 DIN 53479/ASTM D792 sim.
Moisture absorption		DIN EN ISO 62
saturation in air (23 °C, 50% RH)	<0.01 %	DIN 53495 sim.
saturation in water (23 °C)	<0.01 %	ASTM D570

### Mechanical properties

Tensile stress at yield $\sigma_Y$	27 MPa	DIN EN ISO 527
Tensile strength $\sigma_T$		DIN 53455 sim.
Elongation at break $\epsilon_B$	>50 %	ASTM D638
Modulus of elasticity $E_t$	1100 MPa	
Flexural stress at yield $\sigma_Y$		DIN EN ISO 178
Flexural strength $\sigma_b$	>30 MPa	DIN 53452 sim.
Modulus of elasticity $E_b$	>850 MPa	ASTM D790
Compressive stress at 1/2/5% nominal strain $\sigma_Y$	9/15/23 MPa	DIN EN ISO 604 / ASTM D695
Compressive strength $\sigma_c$		DIN 53454/53457 sim.
Impact strength		DIN EN ISO 179/1eU
Charpy unnotched $a_{cU}$	nb	(DIN 53453)
Charpy notched $a_{cN}$	50 kJ/m <sup>2</sup>	DIN EN ISO 179/1eA ASTM D6110 sim.
Izod notched $a_{iN}$		DIN EN ISO 180/1A ASTM D256 sim.
Creep rate stress at 1% strain after 1000 h $\sigma_{1/1000}$	3 MPa	DIN EN ISO 899-1 DIN 53444/ASTM D2990 sim.
Hardness		DIN EN ISO 2039-1
ball indentation $H_{358/30}$	46	(DIN 53456)
Rockwell	M64	DIN EN ISO 2039-2 ASTM D785
Shore scale D	65	DIN EN ISO 868 (DIN 53505) ASTM D2240 sim.
Coefficient of sliding friction $\mu$	0.29	
Wear rate S (dry running against steel, P=0.05 MPa, V=0.6 m/s, t=60 °C, near running surface)	1.00 $\mu\text{m}/\text{km}$	DIN ISO 7148-2 sim. Pin on disc apparatus

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### Electrical properties

Dielectric constant (relative permittivity) $\epsilon_r$		
100 Hz	2.4	IEC 60250
1 MHz	2.4	DIN 53483 sim.
Dielectric dissipation factor $\tan\delta$		VDE 0303-4
100 Hz	0.0002	ASTM D150
1 MHz	0.0002	
Volume resistivity $\rho$	$>10^{14} \Omega \cdot \text{cm}$	IEC 60093 / VDE 0303-30
Surface resistivity $\sigma$	$>10^{14} \Omega$	DIN 53482 sim. / ASTM D257
Dielectric strength $E_d$	45 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 °C/min)	133-135 °C	ISO 11357-1,-3 ASTM D3418 sim.
Thermal conductivity $\lambda$ (23 °C)	0.40 W/(m·K)	ISO 22007-2 / ISO 8302 sim. DIN 52612-2/ASTM C177 sim.
Specific heat (thermal capacity) c	1.9 J/(g·K)	ISO 11357-4 ASTM E1269/ASTM C351 sim.
Coefficient of linear thermal expansion $\alpha$ (average value 23-60 °C)	$180 \cdot 10^{-6} \cdot \text{K}^{-1}$	ISO 11359-2 DIN 53752/ASTM E831 sim.
Service temperature		
long term (min / max - 5000 h)	-100 / 80 °C	
short term (not under stress - few hours)	100 °C	
Vicat softening point		ISO 306
VST A50 - 10N	127 °C	DIN 53460 sim.
VST B50 - 50N	80 °C	ASTM D1525
Heat deflection temperature		DIN EN ISO 75-1,-2
HDT A - 1.80 MPa	44 °C	DIN 53461 sim.
HDT B - 0.45 MPa	75 °C	ASTM D648
Flammability		
according to UL94 (thickness 3 / 6 mm)	HB	
oxygen index	18 %	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.

<sup>1</sup> 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