

# STEMATEC X2061

## Product data sheet

Revision date: 1.2.2017 - Version: 2.0



STEMPLAST HATZIAVGOSTIS  
ENGINEERING PLASTICS

Material:	paper phenolic resin
IEC/EN 60893-3-1 Norm:	PF CP 201
NEMA LI-1 Norm:	X, XP
DIN 7735 Norm:	Hp 2061
Product's shape:	semi-finished products

### Material characteristics

Good mechanical properties, excellent electrical properties, high surface hardness.

### Application examples

Panels, elements for electronics, working surfaces.

### General properties

Density $\rho$	1.30-1.40 gr/cm <sup>3</sup>	DIN EN ISO 1183-1 DIN 53479/ASTM D792 sim.
Moisture absorption (immersion in water, 50x50x3 mm, 23 °C/24h)	550 mg	DIN EN ISO 62 DIN 53495 sim. ASTM D570

### Mechanical properties

Tensile stress at yield $\sigma_Y$		
Tensile strength $\sigma_T$	120 MPa	DIN EN ISO 527 DIN 53455 sim.
Elongation at break $\epsilon_B$		ASTM D638
Modulus of elasticity $E_t$	7000 MPa	
Flexural stress at yield $\sigma_Y$		DIN EN ISO 178
Flexural strength $\sigma_b$	150 MPa	DIN 53452 sim.
Modulus of elasticity $E_b$	7000 MPa	ASTM D790
Compressive strength $\sigma_c$ (parallel to layers)	150 MPa	DIN EN ISO 604 / ASTM D695
Compressive strength $\sigma_c$ (perpendicular to layers)	310 MPa	DIN 53454/53457 sim.
Impact strength Charpy $\alpha_n$ 10 and $\alpha_n$ 15	20 kJ/m <sup>2</sup>	DIN EN ISO 179 (DIN 53453)
Charpy $\alpha_k$ 10	5 kJ/m <sup>2</sup>	DIN EN ISO 179 (DIN 53453)
Charpy notched $\alpha_k$ 15	15 kJ/m <sup>2</sup>	DIN EN ISO 179 (DIN 53453)
Creep rate stress at 1% strain after 1000 h $\sigma_{1/1000}$		DIN EN ISO 899-1 DIN 53444/ASTM D2990 sim.
Hardness ball indentation $H_{358/30}$		DIN EN ISO 2039-1 (DIN 53456)
Rockwell	M105	DIN EN ISO 2039-2 ASTM D785
Shore scale D		DIN EN ISO 868 (DIN 53505) ASTM D2240 sim.
Coefficient of sliding friction $\mu$		
Wear rate S (dry running against steel, $P=0.05$ MPa, $V=0.6$ m/s, $t=60$ °C, near running surface)		DIN ISO 7148-2 sim. Pin on disc apparatus

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### Electrical properties

Dielectric constant (relative permittivity) $\epsilon_r$		
100 Hz		IEC 60250
1 MHz	3.2	DIN 53483 sim.
Dielectric dissipation factor $\tan\delta$		VDE 0303-4
100 Hz		ASTM D150
1 MHz		
Surface resistivity $\sigma$		IEC 60093 / VDE 0303-30
(immersion in water 24h)	$>10^6 \Omega$	DIN 53482 sim. / ASTM D257
Dielectric strength $E_d$		IEC 60243-1 / VDE 0303-21
(in oil at 90°C, parallel to layers)	15 kV	DIN 53481 sim. / ASTM D149
(in oil at 90°C, perpendicular to layers)	15 kV	
Tracking resistance V	CTI 100	IEC 60112 / VDE 0303-11
		DIN 53480 sim.
		ASTM D3638 / UL 746A

### Thermal properties

Melting temperature $T_m$ (DSC, 10°C/min)		ISO 11357-1,-3
		ASTM D3418 sim.
Thermal conductivity $\lambda$ (23°C)	0.20 W/(m·K)	ISO 22007-2 / ISO 8302 sim.
		DIN 52612-2/ASTM C177 sim.
Specific heat (thermal capacity) c		ISO 11357-4
		ASTM E1269/ASTM C351 sim.
Coefficient of linear thermal expansion $\alpha$		ISO 11359-2
(average value 23-60°C)	$20-40 \cdot 10^{-6} \cdot K^{-1}$	DIN 53752/ASTM E831 sim.
Service temperature		
long term (min / max - 5000 h)	- / 100 °C	
short term (not under stress - few hours)	120 °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		DIN 53461 sim.
HDT B - 0.45 MPa		ASTM D648
Flammability		
according to UL94 (thickness 3 / 6 mm)		
oxygen index		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.