

## TECAPEEK® ELS nano black - Stock Shapes (rods, plates, tubes)

### Chemical Designation

PEEK (Polyetheretherketone)

### Colour

black opaque

### Density

1.36 g/cm<sup>3</sup>

### Fillers

CNT

### Main features

- high dimensional stability
- high continuous use temperature
- high strength
- very good chemical resistance
- electrically conductive
- high thermal and mechanical capacity
- good machinability
- high toughness

### Target Industries

- aircraft and aerospace technology
- electronics
- mechanical engineering
- semiconductor technology
- computer technology

Mechanical properties	condition	value	unit	test method	comment
Tensile strength	2 in/min	15400	psi	DIN EN ISO 527-2	(1) For tensile test: specimen type 1b
Modulus of elasticity (tensile test)	0.039 in/min	696000	psi	DIN EN ISO 527-2	1) (2) For flexural test: support span 2.52", norm specimen.
Tensile strength at yield	2 in/min	15400	psi	DIN EN ISO 527-2	(3) Specimen 0.39" x 0.39" x 0.39"
Elongation at yield (tensile test)	2 in/min	4	%	DIN EN ISO 527-2	(4) Specimen 0.39" x 0.39" x 0.39"
Elongation at break (tensile test)	2 in/min	4	%	DIN EN ISO 527-2	(5) Specimen 0.39" x 0.39" x 0.39"
Flexural strength	0.078 in/min, 2.25 lbf	25800	psi	DIN EN ISO 178	2) (6) Specimen 0.39" x 0.39" x 1.97", modulus range between 0.5 and 1% compression.
Modulus of elasticity (flexural test)	0.078 in/min, 2.25 lbf	682000	psi	DIN EN ISO 178	(7) For Charpy test: support span 2.52", norm specimen.
Compression strength	5% strain 0.197 in/min, 2.25 lbf	15400	psi	EN ISO 604	3) (8) Specimen in 0.157" thickness
Compression strength	2% strain 0.197 in/min, 2.25 lbf	6820	psi	EN ISO 604	4)
Compression strength	1% strain 0.197 in/min, 2.25 lbf	3920	psi	EN ISO 604	5)
Compression modulus	0.197 in/min, 2.25 lbf	522000	MPa	EN ISO 604	6)
Impact strength (Charpy)	ft-lbs/in <sup>2</sup>	27.6		DIN EN ISO 179-1eU	7)
Ball indentation hardness		36700	psi	ISO 2039-1	8)
Thermal properties	condition	value	unit	test method	comment
Glass transition temperature		297	°F	DIN EN ISO 11357	1) (1) Found in public sources.
Melting temperature		646	°F	DIN EN ISO 11357	(2) Found in public sources.
Service temperature	short term	572	°F	-	2) Individual testing regarding application conditions is mandatory.
Service temperature	long term	500	°F	-	
Thermal expansion (CLTE)	73 - 140°F, long.	2.78	*10 <sup>-5</sup> in/in/°F	DIN EN ISO 11359-1;2	
Thermal expansion (CLTE)	73 - 212°F, long.	2.78	*10 <sup>-5</sup> in/in/°F	DIN EN ISO 11359-1;2	
Thermal expansion (CLTE)	212 - 300°F, long.	3.89	*10 <sup>-5</sup> in/in/°F	DIN EN ISO 11359-1;2	
Specific heat		0.00026	BTU/lb-F°	ISO 22007-4:2008	
Thermal conductivity		3.19	BTU-in/hr-ft <sup>2</sup> -°F	ISO 22007-4:2008	
Electrical properties	condition	value	unit	test method	comment
surface resistivity	Conductive rubber, 73°F, 12% r.h.	10 <sup>2</sup> - 10 <sup>4</sup>	Ω	DIN EN 61340-2-3	1) (1) Specimen in 0.787" thickness
volume resistivity	Conductive rubber, 73°F, 12% r.h.	10 <sup>3</sup> - 10 <sup>5</sup>	Ω*cm	DIN EN 61340-2-3	
Other properties	condition	value	unit	test method	comment
Water absorption	24h / 96h (73°F)	0.02 / 0.03	%	DIN EN ISO 62	1) (1) Ø ca. 1.57", h=0.512"
Resistance to hot water/ bases		+	-		2) (2) + good resistance
Resistance to weathering		(+)	-		3) (3) (+) limited resistance
Flammability (UL94)	corresponding to	V0		DIN IEC 60695-11-10;	4) (4) Corresponding means no listing at UL (yellow card). The information might be taken from resin, stock shape or estimation. Individual testing regarding application conditions is mandatory.

→ TECAPEEK products are based on Victrex® PEEK polymer.

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