

Semitron™ ESd 480 PEEK



Poly-ether-ether-ketone

Semitron™ ESd 480 PEEK is an electrostatic dissipative material that exhibits excellent chemical resistance properties while also maintaining high dimensional stability under varying environmental conditions. Due to these characteristics, this grade in particular is ideal for critical test fixture and wafer handling applications in wet process tools, where static dissipation is critical.

ISO*					ASTM*		
		Test methods	Units	Indicative values	Test methods	Units	Indicative values
Thermal properties (1)	Melting temperature (DSC, 10°C (50°F) / min)	ISO 11357-1/-3	°C	340	ASTM D3418	°F	644
	Glass transition temperature (DMA- Tan δ) (2)		°C			°F	
	Thermal conductivity at 23°C (73°F)		W/(K.m)			BTU in./hr.ft².°F)	
	Coefficient of linear thermal expansion (-40 to 150 °C) (-40 to 300°F)				ASTM E-831 (TMA)	µin./in./°F	17
	Coefficient of linear thermal expansion (23 to 100°C) (73°F to 210°F)		µm/(m.K)	37			
	Coefficient of linear thermal expansion (23 to 150°C) (73°F to 300°F)		µm/(m.K)	40			
	Coefficient of linear thermal expansion (>150°C) (> 300°F)		µm/(m.K)	76			
	Heat Deflection Temperature: method A: 1.8 MPa (264 PSI)	ISO 75-1/-2	°C		ASTM D648	°F	500
	Continuous allowable service temperature in air (20.000 hrs) (3)		°C	250		°F	480
	Min. service temperature (4)		°C			°F	
Flammability: UL 94 (3 mm (1/8 in.)) (5)			V-0			V-0	
Flammability: Oxygen Index	ISO 4589-1/-2	%					
Mechanical Properties (6)	Tensile strength	ISO 527-1/-2 (7)	MPa	70	ASTM D638 (8)	PSI	14,500
	Tensile strain (elongation) at yield	ISO 527-1/-2 (7)	%		ASTM D638 (8)	%	
	Tensile strain (elongation) at break	ISO 527-1/-2 (7)	%	2	ASTM D638 (8)	%	1.5
	Tensile modulus of elasticity	ISO 527-1/-2 (9)	MPa	5,800	ASTM D638 (8)	KSI	940
	Shear Strength	ASTM D732	MPa		ASTM D732	PSI	
	Compressive stress at 1 / 2 / 5 % nominal strain	ISO 604 (10)	MPa	42 / 83 / 141			
	Compressive strength				ASTM D695 (11)	PSI	26,500
	Charpy impact strength - unnotched	ISO 179-1/1eU	kJ/m²	17			
	Charpy impact strength - notched	ISO 179-1/1eA	kJ/m²	2.5			
	Izod Impact notched						
	Flexural strength	ISO 178 (12)	MPa	110	ASTM D256	ft.lb./in	1
	Flexural modulus of elasticity	ISO 178 (12)	MPa	5,600	ASTM D790 (13)	PSI	21,000
	Rockwell M hardness (14)	ISO 2039-2		103	ASTM D790	KSI	1,000
	Rockwell R hardness (14)	ISO 2039-2			ASTM D785		107
				ASTM D785		122	
Electrical Properties	Electric strength	IEC 60243-1 (15)	kV/mm		ASTM D149	Volts/mil	
	Volume resistivity	IEC 62631-3-1	Ohm.cm		ASTM D257	Ohm.cm	
	Surface resistivity	ANSI/ESD STM 11.11	Ohm	10^6-10^9	ANSI/ESD STM 11.11	Ohm	10^6-10^9
	Dielectric constant at 1 MHz	IEC 62631-2-1			ASTM D150		10.9
	Dissipation factor at 1MHz	IEC 62631-2-1			ASTM D150		0.518
Miscellaneous	Color			Black			Black
	Density	ISO 1183-1	g/cm³	1.46			
	Specific Gravity				ASTM D792		1.47
	Water absorption after 24h immersion in water of 23 °C (73°F)	ISO 62 (16)	%	0.18	ASTM D570 (17)	%	0.18
	Water absorption at saturation in water of 23 °C (73°F)		%	1.65	ASTM D570 (17)	%	1.65
	Wear rate	ISO 7148-2 (18)	µm/km	4	QTM 55010 (19)	in³.min/ft.lbs.hrX10-10	200
	Dynamic Coefficient of Friction (-)	ISO 7148-2 (18)		0.23-0.45	QTM 55007 (20)		0.2
	Limiting PV at 100 FPM (safety factor 4)				QTM 55007 (21)	ft.lbs/in².min	36,000
	Limiting PV at 0.1 / 1 m/s cylindrical sleeve bearings		MPa.m/s				
	Limiting PV at 0.5 m/s cylindrical sleeve bearings	QTM 55007 (21)	MPa.m/s				
	Chemical Resistance						

Note: 1 g/cm³ = 1,000 kg/m³ ; 1 MPa = 1 N/mm² ; 1 kV/mm = 1 MV/m

NYP: there is no yield point