



via Rossini 1, 20010 Ossona (MI) - Italy t: 0039.02.90380361/561 f: 0039.02.28097684

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## PEEK (POLYETHERETHERKETONE) MATERIAL DATA SHEET

- Very high maximum allowable service temperature in air (250°C continuously, up to 310°C for short periods of time)
- · High mechanical strength, stiffness and creep resistance, also at elevated temperatures
- Excellent chemical and hydrolysis resistance
- Excellent wear & frictional behaviour
- · Very good dimensional stability
- Inherent low flammability and very low levels of smoke evolution during combustion
- PEEK natural complies with the compositional requirements of the FDA regulation 21 CFR § 177.2415 "Poly(aryletherketone) resins"

This material exhibits a unique combination of mechanical properties, temperature and chemical resistance.

Colour	PROPERTIES	Test methods	Units	VALUES	
Water absorption: - after 24/96 h Immersion in water of 23°C	Colour	-	-	Natural	
- after 24/96 h immersion in water of 23°C	Density	ISO 1183-1	g/cm³	1.31	
- after 24/96 h immersion in water of 23°C	Water absorption:		1 0		
- at saturation in air of 23°C / 50% RH		ISO 62	mg	5 / 10	
- at saturation in water of 23°C Thermal Properties  Melting temperature (DSC, 10°C/min) ISO 11357  "C 343 Thermal conductivity at 23°C - W/(K.m) 0.25  Coefficient of linear thermal expansion: - average value between 23 and 10°C - average value between 23 and 150°C - average value between 23 and 150°C - m/(m.K) 55 x 10° - average value above 150°C - m/(m.K) 130 x 10°  Max. allowable service temperature in air: - for short periods - continuously; for min. 20,000 h - "C 310 - continuously; for min. 20,000 h - "C 250  Flammability - "Oxygen Index" - according to (1.5 / 3 mm thickness) - "C 460  Mechanical Properties at 23°C  Tension test - tensile stress at yield - tensile strength - ISO 527 - MPa 1110 - tensile strength - ISO 527 - when 115 - tensile strain at break - ISO 527 - tensile strain at break - ISO 527 - tensile strain at break - ISO 527 - MPa 4000 - Compression test - compressive stress at 1 / 2 / 5 % nominal strain - Charpy impact strength - unnotched - ISO 179-1/1eA - Ryma - August - Au		ISO 62	%	0.06 / 0.12	
- at saturation in water of 23°C	- at saturation in air of 23°C / 50% RH	-	%	0.20	
Melting temperature (DSC, 10°C/min)	- at saturation in water of 23°C	-	%	0.45	
Melting temperature (DSC, 10°C/min)					
Coefficient of linear thermal expansion:		ISO 11357	°C	343	
- average value between 23 and 100°C - m/(m.K) 50 x 10°6 - average value between 23 and 150°C - m/(m.K) 55 x 10°6 - average value above 150°C m/(m.K) 130 x 10°6  Max. allowable service temperature in air: - for short periods - °C 310 - continuously: for min. 20,000 h - °C 250  Flammability - "Oxygen Index"   ISO 4589-11-2   % 35 - according to (1.5 / 3 mm thickness)   UL 94   - V-0 / V-0   Min. service temperature   - °C - 60  Mechanical Properties at 23°C  Tension test   ISO 527   MPa   110 - tensile strens at yield   ISO 527   MPa   115 - tensile strain at yield   ISO 527   % 5 - tensile strain at break   ISO 527   MPa   4000  Compression test   ISO 527   MPa   4000  Compression test   ISO 604   MPa   38 / 75 / 140  Charpy impact strength - unnotched   ISO 179-1/1eU   kJ/m²   400  Charpy impact strength - notched   ISO 179-1/1eU   kJ/m²   3.5  Shore hardness   ISO 688   Scale D   88  Electrical Properties at 23 °C  Volume resistivity   DIN EN 62631-3-1   Ohm.cm   4.9 * 10 * 10 * 18  DIN EN 62631-3-1   Ohm.cm   4.9 * 10 * 18  DIN EN 62631-3	Thermal conductivity at 23°C	-	W/(K.m)	0.25	
- average value between 23 and 150°C - m/(m.K) 55 x 10°6 - average value above 150°C m/(m.K) 130 x 10°6  Max. allowable service temperature in air: - for short periods - °C 310 - continuously: for min. 20,000 h - °C 250  Flammability - "Oxygen Index"   ISO 4589-11-2   % 35 - according to (1.5 / 3 mm thickness)   UL 94   - V-0 / V-0   Min. service temperature   - °C - 60  Machanical Properties at 23°C  Tension test   SO 527   MPa   110 - tensile strens at yield   ISO 527   MPa   115 - tensile strain at break   ISO 527   % 5 - tensile strain at break   ISO 527   % 17 - tensile modulus of elasticity   ISO 527   MPa   4000  Compression test   SO 527   SO MPa   5 - compressive stress at 1 / 2 / 5 % nominal strain   ISO 604   MPa   38 / 75 / 140  Charpy impact strength - unnotched   ISO 179-1/1eU   KJ/m²   400  Charpy impact strength - notched   ISO 179-1/1eU   KJ/m²   3.5  Shore hardness   ISO 868   Soale D   88  Electrical Properties at 23 °C  Volume resistivity   DIN EN 62631-3-1   Ohm.cm   4.9 * 10 16  DIN EN 626					
- average value between 23 and 150°C - m/(m.K) 55 x 10°6 - average value above 150°C m/(m.K) 130 x 10°6  Max. allowable service temperature in air: - for short periods - °C 310 - continuously: for min. 20,000 h - °C 250  Flammability - "Oxygen Index"   ISO 4589-11-2   % 35 - according to (1.5 / 3 mm thickness)   UL 94   - V-0 / V-0   Min. service temperature   - °C - 60  Machanical Properties at 23°C  Tension test   SO 527   MPa   110 - tensile strens at yield   ISO 527   MPa   115 - tensile strain at break   ISO 527   % 5 - tensile strain at break   ISO 527   % 17 - tensile modulus of elasticity   ISO 527   MPa   4000  Compression test   SO 527   SO MPa   5 - compressive stress at 1 / 2 / 5 % nominal strain   ISO 604   MPa   38 / 75 / 140  Charpy impact strength - unnotched   ISO 179-1/1eU   KJ/m²   400  Charpy impact strength - notched   ISO 179-1/1eU   KJ/m²   3.5  Shore hardness   ISO 868   Soale D   88  Electrical Properties at 23 °C  Volume resistivity   DIN EN 62631-3-1   Ohm.cm   4.9 * 10 16  DIN EN 626		-	m/(m.K)	50 x 10 <sup>-6</sup>	
- average value above 150°C		-	· '		
Max. allowable service temperature in air:         - 0°C         310           - continuously: for min. 20,000 h         - 0°C         250           Flammability         Flammability           - "Oxygen Index"         ISO 4589-1/-2         %         35           - according to (1.5 / 3 mm thickness)         UL 94         - 0.0         V-0 / V-0           Min. service temperature         - 0°C         -60           Mechanical Properties at 23°C         - 60         MPa         110           Tension test         - 110         - 115         - 115           - tensile stress at yield         ISO 527         MPa         115           - tensile strain at break         ISO 527         MPa         115           - tensile strain at break         ISO 527         %         5           - tensile strain at break         ISO 527         MPa         4000           Compression test         - 0mpression test         - 0mpressive stress at 1 / 2 / 5 % nominal strain         ISO 604         MPa         38 / 75 / 140           Charpy impact strength - unnotched         ISO 179-1/1eU         kJ/m²         3.5           Shore hardness         ISO 868         Scale D         88           Electrical Properties at 23 °C         Volume resistivity		L			
- for short periods - continuously: for min. 20,000 h - °C 250  Flammability					
- continuously: for min. 20,000 h		-	°C	310	
Flammability		_			
- "Oxygen Index"				100	
- according to (1.5 / 3 mm thickness)  Min. service temperature  - °C  - 60  - 70  -		ISO 4589-1/-2	%	35	
Min. service temperature         -         °C         -60           Mechanical Properties at 23°C         Tension test           - tensile stress at yield         ISO 527         MPa         110           - tensile strength         ISO 527         MPa         115           - tensile strain at yield         ISO 527         %         5           - tensile strain at break         ISO 527         %         17           - tensile modulus of elasticity         ISO 527         MPa         4000           Compression test         - compressive stress at 1 / 2 / 5 % nominal strain         ISO 604         MPa         38 / 75 / 140           Charpy impact strength - unnotched         ISO 179-1/1eU         kJ/m²         4.00           Charpy impact strength - notched         ISO 179-1/1eA         kJ/m²         3.5           Shore hardness         ISO 868         Scale D         88           Electrical Properties at 23 °C         Volume resistivity         DIN EN 62631-3-1         Ohm.cm         4.9 * 10 <sup>16</sup> Volume resistivity         DIN EN 62631-3-1         Ohm         10 <sup>18</sup> Dielectric strength         IEC 60243         kV/mm         20           Dielectric constant         IEC 60250         3.2		UL 94	-	V-0 / V-0	
Mechanical Properties at 23°C           Tension test         .           - tensile stress at yield         ISO 527         MPa         110           - tensile strength         ISO 527         MPa         115           - tensile strain at yield         ISO 527         %         5           - tensile strain at break         ISO 527         %         17           - tensile modulus of elasticity         ISO 527         MPa         4000           Compression test         .         .         .           - compressive stress at 1 / 2 / 5 % nominal strain         ISO 604         MPa         38 / 75 / 140           Charpy impact strength - unnotched         ISO 179-1/1eU         kJ/m²         3.5           Shore hardness         ISO 868         Scale D         88           Electrical Properties at 23 °C         Volume resistivity         DIN EN 62631-3-1         Ohm.cm         4.9 * 10 <sup>16</sup> Volume resistivity         DIN EN 62631-3-1         Ohm         10 <sup>18</sup> Dielectric strength         IEC 60243         kV/mm         20           Dielectric constant         IEC 60250         3.2	, ,	-	°C	-60	
- tensile stress at yield       ISO 527       MPa       110         - tensile strength       ISO 527       MPa       115         - tensile strain at yield       ISO 527       %       5         - tensile strain at break       ISO 527       %       17         - tensile modulus of elasticity       ISO 527       MPa       4000         Compression test       - compressive stress at 1 / 2 / 5 % nominal strain       ISO 604       MPa       38 / 75 / 140         Charpy impact strength - unnotched       ISO 179-1/1eU       kJ/m²       400         Charpy impact strength - notched       ISO 179-1/1eA       kJ/m²       3.5         Shore hardness       ISO 868       Scale D       88         Electrical Properties at 23 °C       Volume resistivity       DIN EN 62631-3-1       Ohm.cm       4.9 * 10 <sup>16</sup> Volare resistivity       DIN EN 62631-3-1       Ohm       10 <sup>18</sup> Dielectric strength       IEC 60243       kV/mm       20         Dielectric constant       IEC 60250       3.2					
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- tensile strain at yield       ISO 527       %       5         - tensile strain at break       ISO 527       %       17         - tensile modulus of elasticity       ISO 527       MPa       4000         Compression test         - compressive stress at 1 / 2 / 5 % nominal strain       ISO 604       MPa       38 / 75 / 140         Charpy impact strength - unnotched       ISO 179-1/1eU       kJ/m²       400         Charpy impact strength - notched       ISO 179-1/1eA       kJ/m²       3.5         Shore hardness       ISO 868       Scale D       88         Electrical Properties at 23 °C         Volume resistivity       DIN EN 62631-3-1       Ohm.cm       4.9 * 10 <sup>16</sup> Surface resistivity       DIN EN 62631-3-1       Ohm       10 <sup>18</sup> Dielectric strength       IEC 60243       kV/mm       20         Dielectric constant       IEC 60250       3.2		ISO 527	MPa	115	
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Charpy impact strength - unnotched         ISO 179-1/1eU         kJ/m²         400           Charpy impact strength - notched         ISO 179-1/1eA         kJ/m²         3.5           Shore hardness         ISO 868         Scale D         88           Electrical Properties at 23 °C           Volume resistivity         DIN EN 62631-3-1         Ohm.cm         4.9 * 10 <sup>16</sup> Surface resistivity         DIN EN 62631-3-1         Ohm         10 <sup>18</sup> Dielectric strength         IEC 60243         kV/mm         20           Dielectric constant         IEC 60250         3.2	Compression test				
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Surface resistivityDIN EN 62631-3-1Ohm10 18Dielectric strengthIEC 60243kV/mm20Dielectric constantIEC 602503.2					
Dielectric strength         IEC 60243         kV/mm         20           Dielectric constant         IEC 60250         3.2	Volume resistivity	DIN EN 62631-3-1	Ohm.cm		
Dielectric constant IEC 60250 3.2	Surface resistivity	DIN EN 62631-3-1	Ohm	10 18	
	Dielectric strength	IEC 60243	kV/mm	20	
Dielectric dissipation factor (50 Hz) IEC 60250 0.001	Dielectric constant	IEC 60250		3.2	
	Dielectric dissipation factor (50 Hz)	IEC 60250			

Note: 1 g/cm<sup>3</sup> = 1,000 kg/m<sup>3</sup>; 1 MPa = 1 N/mm<sup>2</sup>; 1 kV/mm = 1 MV/m. NA: not applicable

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