

PPS (POLYPHENYLENE SULFIDE) MATERIAL DATA SHEET

- Very high maximum allowable service temperature in air (220°C continuously, up to 260°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
- Physiologically inert (suitable for food contact)
- Excellent resistance to high energy radiation (gamma- and X-rays)
- Good UV-resistance
- Inherent low flammability
- Good electrical insulating and dielectric properties

PPS (polyphenylene sulfide) products offer the broadest resistance to chemicals of any advanced engineering plastic. They have no known solvents below 200 °C (392 °F) and offer inertness to steam, strong bases, fuels and acids. Minimal moisture absorption and a very low coefficient of linear thermal expansion, combined with Quadrant's proprietary stress relieving processes, make these PPS products ideally suited for precise tolerance machined components. In addition, PPS products exhibit excellent electrical characteristics and are inherently flame retardant.

PROPERTIES	Test methods	Units	VALUES
Colour	-	-	deep blue
Density	ISO 1183-1	g/cm ³	1.43
Water absorption:			
- after 24/96 h immersion in water of 23°C	ISO 62	mg	1 / 2
	ISO 62	%	0.01 / 0.03
- at saturation in air of 23°C / 50% RH	-	%	0.03
- at saturation in water of 23°C	-	%	0.09
Thermal Properties			
Melting temperature (DSC, 10°C/min)	-	°C	280
Thermal conductivity at 23°C	-	W/(K.m)	0.30
Coefficient of linear thermal expansion:			
- average value between 23 and 100°C	-	m/(m.K)	50 x 10 ⁻⁶
- average value between 23 and 150°C	-	m/(m.K)	60 x 10 ⁻⁶
- average value above 150°C	-	m/(m.K)	80 x 10 ⁻⁶
Temperature of deflection under load:			
- method A: 1.8 MPa	ISO 75-1/-2	°C	115
Max. allowable service temperature in air:			
- for short periods	-	°C	260
- continuously : for min. 20,000 h	-	°C	220
Flammability:			
- "Oxygen Index"	ISO 4589-1/-2	%	47
- according to UL 94 (1.5 / 3 mm thickness)	-	-	V-0 / V-0
Mechanical Properties at 23°C (7)			
Tension test:			
- tensile stress at break	ISO 527-1/-2	MPa	75
- tensile strain at break	ISO 527-1/-2	%	5
- tensile modulus of elasticity	ISO 527-1/-2	MPa	3700
Compression test:			
- compressive stress at 1 / 2 % nominal strain	ISO 604	MPa	28 / 55
Charpy impact strength - unnotched	ISO 179-1/1eU	kJ/m ²	25
Charpy impact strength - notched	ISO 179-1/1eA	kJ/m ²	3.5
Ball indentation hardness	ISO 2039-1	N/mm ²	180
Rockwell hardness	ISO 2039-2	-	M 84
Electrical Properties at 23 °C			
Electric strength (14)	IEC 60243-1	kV/mm	24
Volume resistivity	IEC 60093	Ohm.cm	> 10 ¹⁴

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Surface resistivity	ANSI/ESD STM 11.11	Ohm/sq.	> 10 ¹³
Relative permittivity εr: - at 100 Hz	IEC 60250	-	3.3
- at 1 MHz	IEC 60250	-	3.3
Dielectric dissipation factor tan δ: - at 100 Hz	IEC 60250	-	0.003
- at 1 MHz	IEC 60250	-	0.003
Comparative tracking index (CTI)-	IEC 60112100	-	100

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

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