

This reinforced, internally lubricated polyphenylene sulphide grade demonstrates an excellent combination of properties including wear resistance, load-bearing capabilities and dimensional stability, when exposed to chemicals and high temperature environments. TECHTRON HPV PPS finds its applications where PA, POM, PET, PEI and PSU fall short or where PBI, PI, PEEK and PAI are over-engineered and a more economical solution must be found. Thanks to the uniformly dispersed internal lubricant, TECHTRON HPV PPS exhibits excellent wear resistance and a low coefficient of friction. It overcomes the disadvantages of virgin PPS caused by a high coefficient of friction, and of glass fibre reinforced PPS which can cause premature wear of the counterface in moving-part applications. It goes without saying that these features, in combination with its excellent chemical resistance, offer numerous application possibilities to TECHTRON HPV PPS in all kinds of industries.

## Physical properties (indicative values\*)

PROPERTIES	Test methods ISO/(IEC)	Units	VALUES
Colour	—	—	deep blue
Density	1183	g/cm <sup>3</sup>	1.43
<b>Water absorption:</b>			
- after 24h/96h immersion in water of 23°C (1)	62	mg	1/2
- at saturation in air of 23°C / 50% RH	62	%	0.01/0.03
- at saturation in water of 23°C	—	%	0.03
- at saturation in water of 23°C	—	%	0.09
<b>Thermal Properties</b>			
Melting temperature	—	°C	280
Thermal conductivity at 23°C	—	W/(K·m)	0.30
<b>Coefficient of linear thermal expansion:</b>			
- average value between 23 and 100°C	—	m/(m·K)	50 · 10 <sup>-6</sup>
- average value between 23 and 150°C	—	m/(m·K)	60 · 10 <sup>-6</sup>
- average value above 150°C	—	m/(m·K)	100 · 10 <sup>-6</sup>
<b>Temperature of deflection under load:</b>			
- method A: 1.8 MPa	75	°C	115
<b>Max. allowable service temperature in air:</b>			
- for short periods (2)	—	°C	260
- continuously: for min. 20,000h (3)	—	°C	220
<b>Flammability (4):</b>			
- "Oxygen index"	4589	%	47
- according to UL 94 (1.5/3 mm thickness)	—	—	V-0/V-0
<b>Mechanical Properties at 23°C</b>			
<b>Tension test (5):</b>			
- tensile stress at break (6)	527	MPa	75
- tensile strain at break (6)	527	%	5
- tensile modulus of elasticity (7)	527	MPa	4,250
<b>Compression test (8):</b>			
- compressive stress at 1% nominal strain (7)	604	MPa	28
- compressive stress at 2% nominal strain (7)	604	MPa	55
Charpy impact strength - Unnotched (9)	179/1eU	kJ/m <sup>2</sup>	25
Charpy impact strength - Notched	179/1eA	kJ/m <sup>2</sup>	3.5
Ball indentation hardness (10)	2039-1	N/mm <sup>2</sup>	180
Rockwell hardness (10)	2039-2	—	M 84
<b>Electrical Properties at 23°C</b>			
Electric strength (11)	(60243)	kV/mm	24
Volume resistivity	(60093)	Ω·cm	> 10 <sup>14</sup>
Surface resistivity	(60093)	Ω	> 10 <sup>13</sup>
<b>Relative permittivity ε<sub>r</sub>:</b>			
- at 100 Hz	(60250)	—	3.3
- at 1 MHz	(60250)	—	3.3
<b>Dielectric dissipation factor tan δ:</b>			
- at 100 Hz	(60250)	—	0.003
- at 1 MHz	(60250)	—	0.003
Comparative tracking index (CTI)	(60112)	—	100

### Legend

- (1) According to method 1 of ISO 62 and done on discs Ø 50 x 3 mm.
- (2) Only for short time exposure (a few hours) in applications where no or only a very low load is applied to the material.
- (3) Temperature resistance over a period of min. 20,000 hours. After this period of time, there is a decrease in tensile strength of about 50% as compared with the original value. The temperature value given here is thus based on the thermal-oxidative degradation which takes place and causes a reduction in properties. Note, however, that the maximum allowable service temperature depends in many cases essentially on the duration and the magnitude of the mechanical stresses to which the material is subjected.
- (4) These mostly estimated ratings, derived from raw material supplier data, are not intended to reflect hazards presented by the materials under actual fire conditions. There is no UL yellow card available for TECHTRON HPV PPS stock shapes.
- (5) Test specimens: Type 1 B.
- (6) Test speed: 5 mm/min.
- (7) Test speed: 1 mm/min.
- (8) Test specimens: cylinders Ø 12 x 30 mm.
- (9) Pendulum used: 4 J.
- (10) 10 mm thick test specimens.
- (11) 1 mm thick test specimens.

• This table is a valuable help in the choice of a material. The data listed here fall within the normal range of product properties of dry material. **However, they are not guaranteed and they should not be used to establish material specification limits nor used alone as the basis of design.**

It has to be noted that TECHTRON HPV PPS is filled, and consequently anisotropic material (properties differ when measured parallel and perpendicular to the extrusion direction).

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

## Availability

**Round Rods:** Ø 8-100 mm - **Plates:** Thicknesses 5-100 mm - **Tubes:** O.D. 50-200 mm

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