

## Physical properties Torlon 4301 PAI

Properties	Test methods	Units	Values
Colour	-	-	black
Density	ISO 1183-1	g/cm <sup>3</sup>	1.45
Water absorption:			
- after 24/96 h immersion in water of 23°C	ISO 62	mg	26 / 48
- at saturation in air of 23°C / 50% RH	ISO 62	%	0.30 / 0.55
- at saturation in water of 23°C	-	%	1.9
	-	%	3.8
<b>Thermal Properties</b>			
Melting temperature (DSC, 10° C/min.)	ISO 11357-1/-3	°C	NA
Glass transition temperature	ISO 11357-1/-2	°C	280
Thermal conductivity at 23°C	-	W/(K.m)	0.54
Coefficient of linear thermal expansion:			
- average value between 23 and 100°C	-	m/(m.K)	35 x 10 <sup>-6</sup>
- average value between 23 and 150°C	-	m/(m.K)	35 x 10 <sup>-6</sup>
- average value above 150°C	-	m/(m.K)	40 x 10 <sup>-6</sup>
Temperature of deflection under load:			
- method A: 1.8 MPa	ISO 75-4/-2	°C	280
Max. allowable service temperature in air:			
- for short periods	-	°C	270
- continuously: for. min. 20'000 h	-	°C	250
Min. service temperature	-	°C	-20
Flammability:			
- „Oxygen Index“	ISO 4589-1/-2	%	44
- according to UL 94 (1.5 / 3 mm thickness)	-	-	V-0 / V-0
<b>Mechanical Properties at 23°C</b>			
Tension test:			
- tensile stress at yield / tensile stress at break	ISO 527-1/-2	MPa	NYP / 110
- Tensile strength	ISO 527-1/-2	MPa	110
- tensile strain at yield	ISO 527-1/-2	%	NYP
- tensile strain at break	ISO 527-1/-2	%	5
- tensile modulus of elasticity	ISO 527-1/-2	MPa	5500
Compression test:			
- compressive stress at 1 / 2 / 5% nominal strain	ISO 604	MPa	39 / 72 / 130
Charpy impact strength - unnotched	ISO 179-1/1eU	kJ/m <sup>2</sup>	45
Charpy impact strength - notched	ISO 179-1/1eA	kJ/m <sup>2</sup>	4
Ball indentation hardness	ISO 2039-1	MPa	200
Rockwell hardness	ISO 2039-2	-	M 106 (E 70)
<b>Electrical Properties at 23°C</b>			
Electrical strength	IEC 60243-1	kV/mm	-
Volume resistivity	IEC 60093	Ohm.cm	> 10 <sup>13</sup>
Surface resistivity	ANSI/ESD STM 11.11	Ohm/sq.	>10 <sup>13</sup>
Relative permittivity $\epsilon_r$ :			
- bei 100 Hz	IEC 60250	-	6.0
- bei 1 MHz	IEC 60250	-	5.4
Dielectric dissipation factor $\delta \tan$ :			
- bei 100 Hz	IEC 60250	-	0.037
- bei 1 MHz	IEC 60250	-	0.042
Comparative tracking index (CTI)	IEC 60112	--	175

Note: 1 g/cm<sup>3</sup> = 1000 kg/m<sup>3</sup>; 1 Mpa = 1 N/mm<sup>2</sup>; 1 kV/mm = 1 MV/m.

NA: not applicable  
NYP: there is no yield point

This table is a valuable help in the choice of a material. The data listed here fall within the normal range of products properties, but they should not be used to establish material specification limits nor used alone as the basis of design.