

Physical properties PA 46

Properties	Test methods	Units	Values
Colour	-	-	reddish brown
Density	ISO 1183-1	g/cm ³	1.19
Water absorption:			
- after 24/96 h immersion in water of 23°C	ISO 62	mg	90 / 180
	ISO 62	%	1.30 / 2.60
- at saturation in air of 23°C / 50% RH	-	%	2.8
- at saturation in water of 23°C	-	%	9.5
Thermal Properties			
Melting temperature (DSC, 10° C/min.)	ISO 11357-1/-3	°C	290
Glass transition temperature (DSC, 20° C/min)	ISO 11357-1/-2	°C	-
Thermal conductivity at 23°C	-	W/(K.m)	0.30
Coefficient of linear thermal expansion:			
- average value between 23 and 60°C	-	m/(m.K)	80 x 10 ⁻⁶
- average value between 23 and 100°C	-	m/(m.K)	90 x 10 ⁻⁶
Temperature of deflection under load:			
- method A: 1.8 MPa	+ ISO 75-1/-2	°C	160
Max. allowable service temperature in air:			
- for short periods	-	°C	200
- continuously: for 5'000 / 20'000 h	-	°C	150 / 130
Min. service temperature	-	°C	-40
Flammability:			
- „Oxygen Index“	ISO 4589-1/-2	%	24
- according to UL 94 (3 / 6 mm thickness)	-	-	HB / HB
Mechanical Properties at 23°C			
Tension test:			
- tensile stress at yield / tensile stress at break	+ ISO 527-1/-2	MPa	105 / -
	++ ISO 527-1/-2	MPa	55 / -
- Tensile strength	+ ISO 527-1/-2	MPa	105
- tensile strain at yield	+ ISO 527-1/-2	%	18
- tensile strain at break	+ ISO 527-1/-2	%	25
	++ ISO 527-1/-2	%	> 50
- tensile modulus of elasticity	+ ISO 527-1/-2	MPa	3400
	++ ISO 527-1/-2	MPa	1350
Compression test:			
- compressive stress at 1 / 2 / 5% nominal strain	+ ISO 604	MPa	31 / 60 / 102
Charpy impact strength - unnotched	+ ISO 179-1/1eU	kJ/m ²	No break
Charpy impact strength - notched	+ ISO 179-1/1eA	kJ/m ²	8
Ball indentation hardness	+ ISO 2039-1	N/mm ²	165
Rockwell hardness	+ ISO 2039-2	-	M92
Electrical Properties at 23°C			
Electrical strength	+ IEC 60243-1	kV/mm	25
	++ IEC 60243-1	kV/mm	15
Volume resistivity	+ IEC 60093	Ohm.cm	> 10 ¹⁴
	++ IEC 60093	Ohm.cm	> 10 ¹²
Surface resistivity	+ IEC 60093	Ohm	> 10 ¹³
	++ IEC 60093	Ohm	> 10 ¹²
Relative permittivity ϵ_r :			
- at 100 Hz	+ IEC 60250	-	3.8
	++ IEC 60250	-	7.4
- at 1 MHz	+ IEC 60250	-	3.4
	++ IEC 60250	-	3.8
Dielectric dissipation factor $\delta \tan$:			
- at 100 Hz	+ IEC 60250	-	0.009
	++ IEC 60250	-	0.13
- at 1 MHz	+ IEC 60250	-	0.019
	++ IEC 60250	-	0.06
Comparative tracking index (CTI)	+ IEC 60112	-	400
	++ IEC 60112	-	400

+ : Values for dry material
 ++ : Values for up to saturation in air of 23° C / 50% RH material stored (mostly derived from large)

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.

Note: 1 g/cm³ = 1000 kg/m³; 1 Mpa = 1 N/mm²; 1 kV/mm = 1 MV/m.