

Physical properties PETP natural and black

Properties	Test methods	Units	Values
Colour	-	-	natural (white) / black
Density	ISO 1183-1	g/cm ³	1.39
Water absorption:			
- after 24/96 h immersion in water of 23°C	ISO 62	mg	6 / 13
- at saturation in air of 23°C / 50% RH	ISO 62	%	0.07 / 0.16
- at saturation in water of 23°C	-	%	0.25
	-	%	0.50
Thermal Properties			
Melting temperature (DSC, 10° C/min.)	ISO 11357-1/-3	°C	245
Glass transition temperature	ISO 11357-1/-2	°C	-
Thermal conductivity at 23°C	-	W/(K.m)	0.29
Coefficient of linear thermal expansion:			
- average value between 23 and 60°C	-	m/(m.K)	60 x 10 ⁻⁶
- average value between 23 and 100°C	-	m/(m.K)	80 x 10 ⁻⁶
Temperature of deflection under load:			
- method A: 1.8 MPa	+ ISO 75-1/-2	°C	80
Max. allowable service temperature in air:			
- for short periods	-	°C	160
- continuously: for 5'000 / 20'000 h	-	°C	115 / 100
Min. service temperature	-	°C	-20
Flammability:			
- „Oxygen Index“	ISO 4589-1/-2	%	25
- 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	90 / -
	++ ISO 527-1/-2	MPa	90 / -
- tensile strength	+ ISO 527-1/-2	MPa	90
- tensile strain at yield	+ ISO 527-1/-2	%	4
- tensile strain at break	+ ISO 527-1/-2	%	15
	++ ISO 527-1/-2	%	15
- tensile modulus of elasticity	+ ISO 527-1/-2	MPa	3500
	++ ISO 527-1/-2	MPa	3500
Compression test:			
- compressive stress at 1 / 2 / 5% nominal strain	+ ISO 604	MPa	33 / 64 / 107
Charpy impact strength - unnotched	+ ISO 179-1/1eU	kJ/m ²	50
Charpy impact strength - notched	+ ISO 179-1/1eA	kJ/m ²	2
Ball indentation hardness	+ ISO 2039-1	N/mm ²	170
Rockwell hardness	+ ISO 2039-2	-	M96
Electrical Properties at 23°C			
Electrical strength	+ IEC 60243-1	kV/mm	22
	++ IEC 60243-1	kV/mm	22
Volume resistivity	+ IEC 60093	Ohm.cm	> 10 ¹⁴
	++ IEC 60093	Ohm.cm	> 10 ¹⁴
Surface resistivity	+ IEC 60093	Ohm	> 10 ¹³
	++ IEC 60093	Ohm	> 10 ¹³
Relative permittivity ε _r :			
- bei 100 Hz	+ IEC 60250	-	3.4
	++ IEC 60250	-	3.4
- bei 1 MHz	+ IEC 60250	-	3.2
	++ IEC 60250	-	3.2
Dielectric dissipation factor δ tan:			
- bei 100 Hz	+ IEC 60250	-	0.001
	++ IEC 60250	-	0.001
- bei 1 MHz	+ IEC 60250	-	0.014
	++ IEC 60250	-	0.014
Comparative tracking index (CTI)	+ IEC 60112	-	600
	++ IEC 60112	-	600

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

+ : Values referring to dry material
 ++ : Values referring to material in equilibrium with the standard atmosphere 23°C / 50% RH (mostly derived from literature)

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.

PETP natural and black

The specific properties of this virgin crystalline PETP make it especially suitable for the manufacture of mechanical precision parts which have to sustain high loads and/or are subject to wear.

Main characteristics:

- high mechanical strength, stiffness and hardness
- very good creep resistance
- low and constant coefficient of friction
- excellent wear resistance (comparable or even better than nylon grades)
- very good dimensional stability (better than polyacetal)
- excellent stain resistance
- better resistance to acids than nylon and polyacetal
- good electrical insulating properties
- physiologically inert (suitable for food contact)
- good resistance to high energy radiation (gamma and X-rays)