



HIGH-PERFORMANCE PLASTICS

DURATRON® PEI 1000

Amorphous plastic, DURATRON® U1000 PEI is a translucent thermoplastic material (non-optical quality), which offers high robustness and heat resistance. It has a good performance in continuous temperatures of 170°C, which makes it ideal for applications of high resistance, high temperatures and for applications that require dielectric properties consistent in a wide range of frequency and temperature.



MAIN CHARACTERISTICS

- Good maximum service air temperature (170°C in continuous service)
- Very good hydrolysis resistance (suitable for repeated steam sterilization and capable of withstanding repeated cycles of autoclaving)
- High resistance and stiffness over a wide range of temperatures
- Inherent low flammability and low levels of smoke emission during combustion
- Good dimensional stability
- Physiologically inert (composition compatible with food contact)
- Very good resistance against high energy radiation (gamma rays and X-rays)
- Very good electrical insulation and dielectric properties

APPLICATIONS

- Electrical/electronic insulation (including many components of semiconductor processes)
- Structural components requiring high resistance and stiffness at high temperatures
- Structural probes
- Collectors
- Clamps



CHEMICAL
RESISTANCE



ELECTRICAL
INSULATION



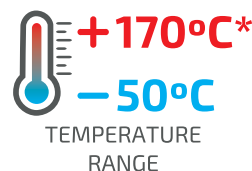
WEAR
RESISTANCE



SLIDING
PROPERTIES



IMPACT
AO RESISTANCE



TEMPERATURE
RANGE

*continuously (20.000H)

All figures given are indicative only, Polylanema Lda. is not liable for the use of the materials without consulting with our technical department.



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TECHNICAL DATASHEET

PROPERTIES	TEST METHODS	UNITS	PEI 1000
COLOR	-	-	AMBER TRANSLUCENT
DENSITY	ISO 1183-1	g/cm ³	1.27
WATER ABSORPTION			
AFTER 24/96H IMMERSION IN WATER OF 23°C ¹	ISO 62	mg	16/34
AFTER 24/96H IMMERSION IN WATER OF 23°C ¹	ISO 62	%	0.19/0.40
AT SATURATION IN AIR OF 23°C / 50% RH	-	%	0.70
AT SATURATION IN WATER OF 23°C	-	%	1.30
THERMAL PROPERTIES			
MELTING TEMPERATURE (DSC, 10°C/MIN)	ISO 11357-1/-3	°C	NA
GLASS TRANSITION TEMPERATURE (DSC, 20°C/MIN) ²	ISO 11357-1/-2	°C	215
THERMAL CONDUCTIVITY AT 23°C	-	W/(K.m)	0.24
COEFFICIENT OF LINEAR THERMAL EXPANSION			
AVERAGE VALUE BETWEEN 23-100°C	-	m/(m.K)	50 x 10 ⁻⁶
AVERAGE VALUE BETWEEN 23-150°C	-	m/(m.K)	50 x 10 ⁻⁶
AVERAGE VALUE ABOVE 150°C	-	m/(m.K)	60 x 10 ⁻⁶
TEMPERATURE OF DEFLECTION UNDER LOAD			
METHOD A 1.8 MPA	ISO 75-1/-2	°C	195
MAXIMUM ALLOWABLE SERVICE TEMPERATURE IN AIR			
FOR SHORT PERIODS ³	-	°C	200
CONTINUOUSLY (MIN. 20.000H) ⁴	-	°C	170
MINIMUM SERVICE TEMPERATURE ⁵	-	°C	-50
FLAMMABILITY ⁶			
"OXYGEN INDEX"	ISO 4589-1/-2	%	47
ACCORDING TO UL94 (1.5/3MM DE ESPESSURA)	-	-	V-0/V-0
MECHANICAL PROPERTIES AT 23°C ⁷			
TENSION TEST ⁸			
TENSILE STRESS AT YIELD/TENSILE STRESS AT BREAK	ISO 527-1/-2	MPa	129/-
TENSILE STRENGTH ⁹	ISO 527-1/-2	MPa	129
TENSILE STRAIN AT BREAK ⁹	ISO 527-1/-2	%	13
TENSILE MODULUS OF ELASTICITY ¹⁰	ISO 527-1/-2	MPa	3500
COMPRESSION TEST ¹¹			
COMPRESSIVE STRESS AT 1/2/5% NOMINAL STRAIN ¹⁰	ISO 604	MPa	31/61/137
CHARPY IMPACT STRENGTH - UNNOTCHED ²	ISO 179-1/1eU	KJ/m ²	NO BREAK
CHARPY IMPACT STRENGTH - NOTCHED	ISO 179-1/1eA	KJ/m ²	3.5
BALL INDENTATION HARDNESS ¹³	ISO 2039-1	N/mm ²	165
ROCKWELL HARDNESS ¹³	ISO 2039-2	-	M 115
ELECTRICAL PROPERTIES AT 23°C			
ELECTRIC STRENGTH ¹⁴	IEC 60243-1	kV/mm	27
VOLUME RESISTIVITY	IEC 60093	Ohm.cm	> 10 ¹⁶
SURFACE RESISTIVITY	ANSI/ESD STM 11.11	Ohm/sq.	> 10 ¹³
RELATIVE PERMITTIVITY ε : A 100HZ	IEC 60250	-	3.0
RELATIVE PERMITTIVITY ε : A 1MHZ	IEC 60250	-	3.0
DIELECTRIC DISSIPATION FACTOR TAN δ : A 100HZ	IEC 60250	-	0.002
DIELECTRIC DISSIPATION FACTOR TAN δ : A 1MHZ	IEC 60250	-	0.002
COMPARATIVE TRACKING INDEX (CTI)	IEC 60112	-	175

NOTE: 1 g/cm³ = 1000 kg/m³ ; 1 MPa = 1 N/mm² ; 1 KV/mm = 1 MV/m

(1) According to method 1 of iso 62 and done on discs ø 50x3 mm (2) The figures given for this properties are only attributed to amorphous rather than semi-crystalline materials. (3) For short exposure periods only (a few hours) in applications where only very low loads are applied to the material. (4) Temperature which it resists for a minimum period of 20,000 hours. After this time, there is a decrease of about 50% in tensile strength compared to the original value. The given temperature values are based on the thermal oxidation degradation which causes a reduction of the properties. In the meantime, the maximum permissible service temperature depends in many cases essentially on the deduction and magnitude of the mechanical stresses to which the material is subject. (5) As the impact strength decreases with decreasing temperature, the minimum permissible service temperature is determined by the extent of impact to which the material is subjected. The values given are based on unfavorable impact conditions and can not therefore be considered absolute limits. (6) These assessments are derived from the technical specifications of the manufacturers of the raw materials and do not allow the determination of the behavior of the materials under fire conditions. There is no yellow card for these formats. (7) Most of the figures given by the mechanical properties of the extruded materials are mean values of the tests done on specimens machined with ø 40-60 mm. With the exception of hardness tests, the best specimens were taken from an area between the center and outer diameter, with their length in the longitudinal direction (parallel to the direction of extrusion). (8) Specimen testing: Type 1b. (9) Speed test: 5 or 50 mm / min. (10) Speed test: 1 mm / min. (11) Test specimens: cylinders ø 8x16 mm. (12) Pendulum used: 4J. (13) Test on 10 mm thick specimens. (14) Test on 1 mm thick specimens.

The dielectric strength of the Ketron Peek 1000 (black) Ppsu 1000 black may be considerably lower than the figures listed in the table referring to non-black materials. It should be noted that the values of the compression properties of the Duratron 4503 PAI and 4501 PAI alloys may differ significantly.