TECASINT 4111 natural - Stock Shapes (rods, plates, tubes)

Chemical Designation
PI (Polyimide)

Colour
yellow

Density
1.47 g/cm^3

Main features
- very high thermal and oxidative resistance
- very low water absorption
- high thermal and mechanical capacity
- low outgassing
- good chemical resistance
- high creep resistance
- resistance against high energy radiation
- sensitive to hydrolysis in higher thermal range

Target Industries
- mechanical engineering
- precision engineering
- electronics
- electrical engineering
- conveyor technology
- semiconductor technology

Mechanical properties	parameter	value	unit	norm		comment
Tensile strength	50 mm/min	100	MPa	DIN EN ISO 527-1		(1) eU (2) eA
Modulus of elasticity (tensile test)	1 mm/min	6100	MPa	DIN EN ISO 527-1		(3) Specimen in 4mm thickness
Elongation at break (tensile test)	50 mm/min	1.7	%	DIN EN ISO 527-1		
Flexural strength	10 mm/min	160	MPa	DIN EN ISO 178		
Modulus of elasticity (flexural test)	2 mm/min	6100	MPa	DIN EN ISO 178		
Elongation at break (flexural test)	10 mm/min	2.5	%	DIN EN ISO 178		
Compression strength	10 mm/min	250	MPa	EN ISO 604		
Compression strength	10 mm/min, 10% strain	210	MPa	EN ISO 604		
Compression modulus	1 mm/min	6193	MPa	EN ISO 604		
Compression		15	%	-		
Compressive strain at break	10 mm/min	25	%	EN ISO 604		
Impact strength (Charpy)	max 7.5 J	20	kJ/m^2	DIN EN ISO 179-1	1)	
Notched impact strength (Charpy)	max 7.5 J	1.1	kJ/m^2	DIN EN ISO 179-1	2)	
Shore hardness	Shore D	90		DIN EN ISO 868		
Ball indentation hardness		345	MPa	-	3)	

Thermal properties	parameter	value	unit	norm		comment
Glass transition temperature		n.a.	°C	DIN EN ISO 11357		(1) Thermal expansion XY/Z axis (2) Thermal expansion XY/Z axis (3) Thermal expansion XY/Z axis
Heat distortion temperature	1.82 MPa	470	°C	ASTM D 648		
Thermal expansion (CLTE)	200-300°C	4.7 / 6.9	10^{-5} K^{-1}	DIN 53 752	1)	
Thermal expansion (CLTE)	50-200°C	3.6 / 5.2	10^{-5} K^{-1}	DIN 53 752	2)	
Thermal expansion (CLTE)	300-400°C	6.5 / 9.9	10^{-5} K^{-1}	DIN 53 752	3)	
Specific heat		1.24	J/(g*K)	ASTM E1461		
Thermal conductivity	40°C	0.52	W/(K*m)	ASTM E1461		

Electrical properties	parameter	value	unit	norm	comment
surface resistivity	23°C	10^{16}	Ω	ASTM D 257	
volume resistivity	23°C	10^{18}	Ω*cm	ASTM D 257	
Electric strength DC	23°C	22.7	kV*mm^{-1}	ASTM D 149	
Dielectric loss factor	1 MHz	0.0013		ASTM D 150	
Dielectric constant	1 MHz	3.7		ASTM D 150	

Other properties	parameter	value	unit	norm		comment
Water absorption	24 h in water, 23°C	0.08	%	DIN EN ISO 62		(1) Corresponding means no listing at UL (yellow card). The information might be taken from resin, stock shape or estimation. Individual testing regarding application conditions is mandatory.
Water absorption	24 h in water, 80°C	0.3	%	DIN EN ISO 62		
Outgassing in high vacuum		passed		ECSS-Q-70-02		
Flammability (UL94)	corresponding to	V0		DIN IEC 60695-11-10;	1)	
Oxygen Index		53	%	EN ISO 4589-2		

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