TECASINT 4011 natural - Stock Shapes (rods, plates, tubes)

Chemical Designation
PI (Polyimide)

Colour
yellow

Density
1.42 g/cm^3

Main features
- very high thermal and oxidative resistance
- very low water absorption
- high thermal and mechanical capacity
- high creep resistance
- low outgassing
- good chemical 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	condition	value	unit	test method		comment
Tensile strength	0.40 inch/min	134	MPa	ASTM D 638		(1) eU (2) eA (3) Specimen in 4mm thickness
Modulus of elasticity (tensile test)	0.04 inch/min	4083	MPa	ASTM D 638		
Elongation at break (tensile test)	0.40 inch/min	6.9	%	ASTM D 638		
Flexural strength	0.54 inch/min	207	MPa	ASTM D 790		
Modulus of elasticity (flexural test)	0.54 inch/min	4299	MPa	ASTM D 790		
Compression strength	0.05 inch/min, 10% strain	188	MPa	ASTM D 695		
Compression modulus	0.05 inch/min	4325	MPa	ASTM D 695		
Impact strength (Charpy)	max 7.5 J	87	kJ/m^2	DIN EN ISO 179-1	1)	
Notched impact strength (Charpy)	max 7.5 J	9.6	kJ/m^2	DIN EN ISO 179-1	2)	
Shore hardness	Shore D	88		DIN EN ISO 868		
Ball indentation hardness		265	MPa	ISO 2039-1	3)	

Thermal properties	condition	value	unit	test method		comment
Glass transition temperature		500	°F	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	680	°F	ASTM D 648		
Thermal expansion (CLTE)	122-392°F	46 / 56	10^{-6} K^{-1}	DIN 53 752	1)	
Thermal expansion (CLTE)	392-572°F	62 / 76	10^{-6} K^{-1}	DIN 53 752	2)	
Thermal expansion (CLTE)	572-662°F	85 / 112	10^{-6} K^{-1}	DIN 53 752	3)	
Specific heat		1.22	J/(g*K)	ASTM E1461		
Thermal conductivity	104°F	0.4	W/(K*m)	ASTM E1461		

Electrical properties	condition	value	unit	test method		comment
surface resistivity	73°F	10^{16}	Ω	ASTM D 257		
volume resistivity	73°F	10^{16}	Ω*cm	ASTM D 257		
Electric strength DC	73°F	18	kV*mm^{-1}	ASTM D 149		
Dielectric loss factor	1 kHz	1*10^{-3}		ASTM D 150		
Dielectric constant	1 kHz	3.59		ASTM D 150		

Other properties	condition	value	unit	test method		comment
Water absorption	24 h in water, 73°F	0.16	%	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, 176°F	0.6	%	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		49	%	EN ISO 4589-2		

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