

TECASINT 2011 - Stock Shapes

Chemical Designation

PI (Polyimide)

Colour

brown

Density

1.38 g/cm³

Main features

- very good thermal stability
- high thermal and mechanical capacity
- low outgassing
- very good electrical insulation
- resistance against high energy radiation
- good chemical resistance
- high creep resistance
- sensitive to hydrolysis in higher thermal range

Target Industries

- aircraft and aerospace technology
- semiconductor technology
- precision engineering
- medical technology
- mechanical engineering
- food engineering
- electrical engineering
- electronics
- cryogenic engineering
- vacuum technology

Mechanical properties	parameter	value	unit	norm	comment
Modulus of elasticity (tensile test)	1 mm/min, 23°C	3700	MPa	DIN EN ISO 527-1	(1) Specimen in 4mm thickness
Tensile strength	50 mm/min, 23°C	118	MPa	DIN EN ISO 527-1	
Elongation at break	50 mm/min, 23°C	4.5	%	DIN EN ISO 527-1	
Elongation at break	10 mm/min, 23°C	6.1	%	DIN EN ISO 178	
Flexural strength	10 mm/min, 23°C	177	MPa	DIN EN ISO 178	
Modulus of elasticity (flexural test)	2 mm/min, 23°C	3600	MPa	DIN EN ISO 178	
Modulus of elasticity (flexural test)	10 mm/min, 250°C	2300	MPa	DIN EN ISO 178	
Modulus of elasticity (flexural test)	10 mm/min, 300°C	2150	MPa	DIN EN ISO 178	
Compression strength	10 mm/min, 23°C	486	MPa	EN ISO 604	
Compression strength	10mm/min, 10% strain, 23°C	170	MPa	EN ISO 604	
Compression modulus	1 mm/min, 23°C	1713	MPa	EN ISO 604	
Compressive strain at break	10 mm/min, 23°C	58	%	EN ISO 604	
Impact strength (Charpy)	max 7.5 J, 23°C	87.9	kJ/m ²	DIN EN ISO 179-1eU	
Notched impact strength (Charpy)	max 7.5 J, 23°C	9.3	kJ/m ²	DIN EN ISO 179-1eA	
Shore hardness	Shore D, 23°C	90	D	DIN 53505	
Ball indentation hardness		260	MPa	ISO 2039-1	1)
Thermal properties	parameter	value	unit	norm	comment
Glass transition temperature		370	°C	-	1)
Heat distortion temperature	1.80 MPa	319	°C	DIN 53 461	(1) DMA, maximum loss factor tan d (2) Found in public sources.
Service temperature	long-term	-	°C	-	2)
Thermal expansion (CLTE)	50-200°C	4.4 / 4.3	10 ⁻⁵ K ⁻¹	DIN 53 752	Individual testing regarding application conditions is mandatory. 3)
Thermal expansion (CLTE)	200-300°C	5.1 / 5.1	10 ⁻⁵ K ⁻¹	DIN 53 752	4)
Specific heat		0.925	J/(g*K)	-	(3) Thermal expansion XY/Z axis (4) Thermal expansion XY/Z axis
Thermal conductivity	40°C	0.22	W/(K*m)	ISO 8302	
Electrical properties	parameter	value	unit	norm	comment
Specific surface resistance	23°C	10 ¹⁵	Ω	DIN IEC 60093	
Specific volume resistance	23°C	10 ¹⁵	Ω*cm	DIN IEC 60093	
Electric strength DC	23°C	21.8	kV*mm ⁻¹	ISO 60243-1	
Dielectric constant	100 Hz, 23°C	4.2		DIN IEC 60250	
Dielectric constant	1 kHz, 23°C	4.2		DIN IEC 60250	
Dielectric constant	10 kHz, 23°C	4.1		DIN IEC 60250	
Dielectric constant	100 kHz, 23°C	4.1		DIN IEC 60250	
Other properties	parameter	value	unit	norm	comment
Water absorption	24 h in water, 23°C	0.47	%	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	1.65	%	DIN EN ISO 62	
Flammability (UL94)	corresponding to	V0		DIN IEC 60695-11-10;	1)

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