

# SUPPLY SERVICES

## performance engineering products



### TECAPEI natural - Stock Shapes

#### Chemical Designation

PEI (Polyetherimide)

#### Colour

amber transparent

#### Density

1.28 g/cm<sup>3</sup>

#### Main features

- high thermal and mechanical capacity
- resistance against high energy radiation
- high dimensional stability
- inherent flame retardant

#### Target Industries

- electronics
- semiconductor technology
- aircraft and aerospace technology
- food technology
- medical technology
- automotive industry
- vacuum technology

Mechanical properties	parameter	value	unit	norm	comment
Modulus of elasticity (tensile test)	1mm/min	3200	MPa	DIN EN ISO 527-2	1)
Tensile strength	50mm/min	127	MPa	DIN EN ISO 527-2	
Tensile strength at yield	50mm/min	127	MPa	DIN EN ISO 527-2	
Elongation at yield	50mm/min	7	%	DIN EN ISO 527-2	
Elongation at break	50mm/min	35	%	DIN EN ISO 527-2	
Flexural strength	2mm/min, 10 N	164	MPa	DIN EN ISO 178	2)
Modulus of elasticity (flexural test)	2mm/min, 10 N	3300	MPa	DIN EN ISO 178	
Compression strength	1% / 2% / 5% 5mm/min, 10 N	23/41/92	MPa	EN ISO 604	3)
Compression modulus	5mm/min, 10 N	2800	MPa	EN ISO 604	4)
Impact strength (Charpy)	max. 7.5J	113	kJ/m <sup>2</sup>	DIN EN ISO 179-1eU	5)
Ball indentation hardness		225	MPa	ISO 2039-1	6)
Thermal properties	parameter	value	unit	norm	comment
Glass transition temperature		216	°C	DIN EN ISO 11357	1)
Melting temperature		n.a.	°C	DIN EN ISO 11357	2)
Service temperature	short term	200	°C		3)
Service temperature	long term	170	°C		
Thermal expansion (CLTE)	23-60°C, long.	5	10 <sup>-5</sup> K <sup>-1</sup>	DIN EN ISO 11359-1;2	
Thermal expansion (CLTE)	23-100°C, long.	5	10 <sup>-5</sup> K <sup>-1</sup>	DIN EN ISO 11359-1;2	
Thermal expansion (CLTE)	100-150°C, long.	6	10 <sup>-5</sup> K <sup>-1</sup>	DIN EN ISO 11359-1;2	
Specific heat		1.2	J/(g*K)	ISO 22007-4:2008	
Thermal conductivity		0.21	W/(K*m)	ISO 22007-4:2008	
Electrical properties	parameter	value	unit	norm	comment
Specific surface resistance		10 <sup>14</sup>	Ω	DIN IEC 60093	
Specific volume resistance		10 <sup>14</sup>	Ω*cm	DIN IEC 60093	
Other properties	parameter	value	unit	norm	comment
Water absorption	24h / 96h (23°C)	0.05 / 0.1	%	DIN EN ISO 62	1)
Resistance to hot water/ bases		+	-	-	2)
Resistance to weathering		-	-	-	3)
Flammability (UL94)	corresponding to	V0	-	DIN IEC 60695-11-10;	4)

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## TECAPEI GF30 natural - Stock Shapes

### Chemical Designation

PEI (Polyetherimide)

### Colour

amber opaque

### Density

1.51 g/cm<sup>3</sup>

### Fillers

glass fibres

### Main features

- high dimensional stability
- good heat deflection temperature
- high thermal and mechanical capacity
- high strength
- high creep resistance
- electrically insulating
- resistance against high energy radiation
- sensitive to stress cracking

### Target Industries

- electronics
- semiconductor technology
- automotive industry
- mechanical engineering
- vacuum technology

Mechanical properties	parameter	value	unit	norm	comment
Modulus of elasticity (tensile test)	1mm/min	5300	MPa	DIN EN ISO 527-2	1)
Tensile strength	5mm/min	135	MPa	DIN EN ISO 527-2	(1) For tensile test: specimen type 1b (2) For flexural test: support span 64mm, norm specimen.
Tensile strength at yield	5mm/min	135	MPa	DIN EN ISO 527-2	(3) Specimen 10x10x10mm
Elongation at yield	5mm/min	4	%	DIN EN ISO 527-2	(4) Specimen 10x10x50mm, modulus range between 0.5 and 1% compression.
Elongation at break	50mm/min	4	%	DIN EN ISO 527-2	(5) For Charpy test: support span 64mm, norm specimen.
Flexural strength	2mm/min, 10 N	195	MPa	DIN EN ISO 178	2)
Modulus of elasticity (flexural test)	2mm/min, 10 N	5500	MPa	DIN EN ISO 178	(6) Specimen in 4mm thickness
Compression strength	1% / 2% 5mm/min, 10 N	18 / 39	MPa	EN ISO 604	3)
Compression modulus	5mm/min, 10 N	4200	MPa	EN ISO 604	4)
Impact strength (Charpy)	max. 7.5J	51	kJ/m <sup>2</sup>	DIN EN ISO 179-1eU	5)
Notched impact strength (Charpy)	max. 2J	6	kJ/m <sup>2</sup>	DIN EN ISO 179-1eA	
Ball indentation hardness		325	MPa	ISO 2039-1	6)
Thermal properties	parameter	value	unit	norm	comment
Glass transition temperature		213	°C	DIN EN ISO 11357	(1) Found in public sources. Individual testing regarding application conditions is mandatory.
Melting temperature			°C	DIN EN ISO 11357	
Service temperature	short term	200	°C		1)
Service temperature	long term	170	°C		
Thermal expansion (CLTE)	23-60°C, long.	3	10 <sup>-5</sup> K <sup>-1</sup>	DIN EN ISO 11359-1,2	
Thermal expansion (CLTE)	23-100°C, long.	3	10 <sup>-5</sup> K <sup>-1</sup>	DIN EN ISO 11359-1,2	
Thermal expansion (CLTE)	100-150°C, long.	4	10 <sup>-5</sup> K <sup>-1</sup>	DIN EN ISO 11359-1,2	
Electrical properties	parameter	value	unit	norm	comment
Specific surface resistance		10 <sup>14</sup>	Ω	DIN IEC 60093	
Specific volume resistance		10 <sup>14</sup>	Ω*cm	DIN IEC 60093	
Other properties	parameter	value	unit	norm	comment
Water absorption	24h / 96h (23°C)	0.04 / <0.1	%	DIN EN ISO 62	1) (1) Ø ca. 50mm, h=13mm (2) + good resistance (3) - poor resistance (4) 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.
Resistance to hot water/ bases		+	-		2)
Resistance to weathering		-	-		3)
Flammability (UL94)	corresponding to	V0		DIN IEC 60695-11-10;	4)

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