

# SUPPLY SERVICES

performance engineering products

## TECATOR 5013 natural - Stock Shapes

### Chemical Designation

PAI (Polyamide-imide)

### Colour

yellow-brown opaque

### Density

1.4 g/cm<sup>3</sup>

### Main features

- good impact strength
- high pressure resistance
- very good electrical insulation
- stiff
- high creep resistance
- high strength
- good wear resistance
- good thermal stability

### Target Industries

- electrical engineering
- precision engineering
- mechanical engineering
- vacuum technology
- aircraft and aerospace technology
- semiconductor technology
- automotive industry

Mechanical properties	parameter	value	unit	norm	comment
Modulus of elasticity (tensile test)	50 mm/min	3800	MPa	DIN EN ISO 527-2	1) (1) For tensile test: specimen type 1b
Tensile strength	50 mm/min	151	MPa	DIN EN ISO 527-2	
Tensile strength at yield	50 mm/min	151	MPa	DIN EN ISO 527-2	
Elongation at break	50 mm/min	21	%	DIN EN ISO 527-2	
Modulus of elasticity (flexural test)	2 mm/min, 10 N	3900	MPa	DIN EN ISO 178	
Notched impact strength (Charpy)	2 J	13.2	kJ/m <sup>2</sup>	DIN EN ISO 179-1eA	
Ball indentation hardness		240	MPa	ISO 2039-1	
Thermal properties	parameter	value	unit	norm	comment
Glass transition temperature		280	°C	DIN 53765	1) (1) Found in public sources.
Melting temperature		n.a.	°C	DIN 53765	2) (2) n.a. = not applicable
Heat distortion temperature	1.82 MPa	278	°C	ASTM D 648	3) (3) Found in public sources. Individual testing regarding application conditions is mandatory.
Service temperature	short term	270	°C	-	3)
Service temperature	long term	250	°C	-	
Thermal expansion (CLTE)	23-55°C, long.	3.1	10 <sup>-5</sup> K <sup>-1</sup>	ASTM D 695	
Thermal conductivity		0.29	W/(K*m)	ASTM E1530	
Electrical properties	parameter	value	unit	norm	comment
Specific surface resistance		10 <sup>18</sup>	Ω	ASTM D 257	1) (1) Found in public sources.
Specific volume resistance		10 <sup>15</sup>	Ω*cm	ASTM D 257	2) (2) Found in public sources.
Dielectric strength		23	kV/mm	ASTM D 149	3) (3) Found in public sources.
Other properties	parameter	value	unit	norm	comment
Moisture absorption in normal climates	23°C, 50% rel. air humidity	2.5	%	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.
Resistance to hot water/ bases		-	-	-	
Flammability (UL94)	corresponding to	V0		DIN IEC 60695-11-10;	1)

# TECATOR 5031 PVX - Stock Shapes

## Chemical Designation

PAI (Polyamidimide)

## Colour

black opaque

## Density

1.46 g/cm<sup>3</sup>

## Fillers

graphite, PTFE

## Main features

- good chemical resistance
- high creep resistance
- high thermal and mechanical capacity
- easily machinable to tight tolerance
- good slide and wear properties
- high toughness
- good wear properties
- resistance against high energy radiation

## Target Industries

- electrical engineering
- precision engineering
- mechanical engineering
- vacuum technology
- aircraft and aerospace technology
- semiconductor technology

<b>Mechanical properties</b>	<b>parameter</b>	<b>value</b>	<b>unit</b>	<b>norm</b>	<b>comment</b>
Modulus of elasticity (tensile test)	50 mm/min	5900	MPa	DIN EN ISO 527-2	1)
Tensile strength	50 mm/min	135	MPa	DIN EN ISO 527-2	2)
Tensile strength at yield	50 mm/min	135	MPa	DIN EN ISO 527-2	2)
Elongation at break	50 mm/min	7	%	DIN EN ISO 527-2	2)
Modulus of elasticity (flexural test)	2 mm/min, 10 N	6200	MPa	DIN EN ISO 178	
Impact strength (Charpy)	max. 7.5 J	87	kJ/m <sup>2</sup>	DIN EN ISO 179-1eU	2)
Notched impact strength (Charpy)	2 J	5.6	kJ/m <sup>2</sup>	DIN EN ISO 179-1eA	2)
Ball indentation hardness		228	MPa	ISO 2039-1	3)
<b>Thermal properties</b>	<b>parameter</b>	<b>value</b>	<b>unit</b>	<b>norm</b>	<b>comment</b>
Glass transition temperature		280	°C	DIN 53765	1)
Melting temperature		n.a.	°C	DIN 53765	2)
Heat distortion temperature	1.82 MPa	279	°C	ASTM D 648	3)
Service temperature	short term	270	°C	-	3)
Service temperature	long term	250	°C	-	
Thermal expansion (CLTE)	23-55°C, long.	2.5	10 <sup>-5</sup> K <sup>-1</sup>	ASTM D 696	
Thermal conductivity		0.60	W/(K*m)	ASTM E1530	
<b>Electrical properties</b>	<b>parameter</b>	<b>value</b>	<b>unit</b>	<b>norm</b>	<b>comment</b>
Specific surface resistance		10 <sup>17</sup>	Ω	ASTM D 257	1)
Specific volume resistance		10 <sup>13</sup>	Ω*cm	ASTM D 257	2)
<b>Other properties</b>	<b>parameter</b>	<b>value</b>	<b>unit</b>	<b>norm</b>	<b>comment</b>
Moisture absorption in normal climates	23 °C, 50% rel. air humidity	1.9	%	DIN EN ISO 62	1)
Resistance to hot water/ bases		-		-	
Flammability (UL94)	corresponding to	V0		DIN IEC 60695-11-10;	1)

TECATOR has a high water uptake. Parts have to be pre-dried before fast heating to above 200 °C (drying process: 24 h per 3 mm wall thickness at 150 °C).

# TECATOR GF30 (XP-142T) - Stock Shapes

## Chemical Designation

PAI (Polyamide-imide)

## Colour

black

## Density

1.58 g/cm<sup>3</sup>

## Fillers

30% glass fibres

## Main features

- excellent dimensional stability
- high stiffness
- high thermal and mechanical capacity

## Target Industries

- aircraft and aerospace technology
- mechanical engineering
- oil and gas industry
- semiconductor technology

<b>Mechanical properties</b>	<b>condition</b>	<b>value</b>		<b>test method</b>	<b>comment</b>
Tensile strength at break	@ 73 °F	17,000	psi	ASTM D 638	1) (1) Compression molded
Elongation at break	@ 73 °F	2	%	ASTM D 638	
Flexural strength	@ 73 °F	21,000	psi	ASTM D 790	
Modulus of elasticity (flexural test)	@ 73 °F	821,000	psi	ASTM D 790	
Impact strength (Izod)	@ 73 °F, notched	0.75	ft-lbs/in	ASTM D 256	
Rockwell hardness	M Scale	116		ASTM D 785	
<b>Thermal properties</b>	<b>condition</b>	<b>value</b>		<b>test method</b>	<b>comment</b>
Service temperature		500	°F	ASTM D 648	
Thermal expansion (CLTE)		$2.11 \cdot 10^{-4}$	in/in/°F	ASTM D 696	
<b>Electrical properties</b>	<b>condition</b>	<b>value</b>		<b>test method</b>	<b>comment</b>
Dielectric strength		450	V/mil	ASTM D 149	
Dissipation factor	@ 10 <sup>6</sup> Hz	0.0006		ASTM D 150	
Dissipation factor	@ 30 ghz	0.0008		ASTM D 150	
Dissipation factor	@ 20 ghz	0.0005		ASTM D 150	
Dielectric constant	@ 10 <sup>6</sup> hertz	3.8		ASTM D 150	
Dielectric constant	@ 30 ghz	4.4		ASTM D 150	
Dielectric constant	@ 20 ghz	4.3		ASTM D 150	
<b>Other properties</b>	<b>condition</b>	<b>value</b>		<b>test method</b>	<b>comment</b>
HZ Technical guidelines	Chemical Resistance	-	description	-	1) (1) data based on resin mfg. Avoid exposure to hot water/steam. Avoid exposure to strong acids and bases. Application testing is strongly advised.