

## Product information

## Increased precision and performance with TECATOR

*In the case of materials in the upper performance range, it is often just a mere nuance which makes the difference in their properties and is yet decisive for the chosen application. TECATOR (PAI) is a high-performance thermoplastic, which excels through its special resilience also in the cryogenic range. In comparison to metallic components, parts made of TECATOR are lighter with comparable properties and are therefore used when weight savings are important.*

### Properties

- Thermally resilient from the cryogenic range up to 270 °C
- Very rigid, high strength coupled with toughness
- High long-term stability and high fatigue strength
- Extremely high creep resistance
- Good chemical resistance towards many conventional solvents and lubricants, fuels and acids
- Highly resistant to high-energy radiation
- Self-extinguishing according to UL 94 V-O
- Easily machined using conventional tools and machinery

### Fields of application

Cryogenics, electrical engineering and electronics, precision engineering, mechanical engineering, medical device technology, vacuum technology, aerospace industry, semiconductor and automotive industries.

### Applications

Switching and plug parts, valve seats, ball bearings and ball valves, bearing sleeves and discs, piston rings, slide-rails, rollers, insulating components, burn-in fasteners, test beds for semiconductors, rotors, casing parts, support rings, mechanically and thermally heavily loaded construction parts.

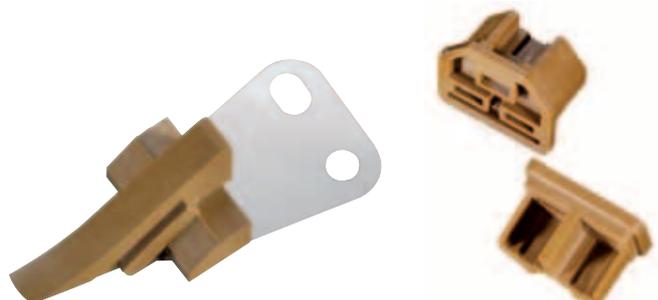
### Types and availability

#### TECATOR 5013

- Yellow-brown, natural type
- Highest compression strength and impact resistance
- Excellent electrical insulation and high dielectric constant
- Plates: In stock: 5/6.25/10/12.5/15/20/25/30 mm  
Upon request: 1/2/7.5/40 mm
- Rods: In stock: 5/6.25/7.5/10/12.5/15/20/25/30 mm  
Upon request: 40/50/60/80/100 mm

#### TECATOR 5031 PVX

- (PAI, 12% graphite, 3% PTFE)
- Black, modified sliding properties
- Low coefficient of friction and high abrasion resistance
- Reduced thermal expansion
- Plates: In stock: 6.25/10/12.5/20 mm  
Upon request: 1/2/5/7.5/15/25/30/40 mm
- Rods: In stock: 6.25/10/12.5/15/20/25 mm  
Upon request: 5/7.5/30/40/50/60 mm



### Technical Properties

Material			TECATOR 5013	TECATOR 5031 PVX
Chemical Designation			PAI	PAI
Density	DIN ISO 1183	[g/cm <sup>3</sup> ]	1,40	1,46
<b>Mechanical properties</b>				
Modulus of elasticity, (tensile test)	50 mm / min, DIN EN ISO 527-2	[MPa]	3800	5900
Tensile strength	50 mm / min, DIN EN ISO 527-2	[MPa]	151	135
Tensile strength at yield	50 mm / min, DIN EN ISO 527-2	[MPa]	151	135
Elongation at break	50 mm / min, DIN EN ISO 527-2	[%]	21	7
Modulus of elasticity, flexural test	2 mm / min, 10 N, DIN EN ISO 178	[MPa]	3900	6200
Impact strength (Charpy)	max. 7,5 J, DIN EN ISO 179-1eU	[kJ/m <sup>2</sup> ]	-	87
Notched impact strength (Charpy)	2 J, DIN EN ISO 179-1eU	[kJ/m <sup>2</sup> ]	13,2	5,6
Ball indentation hardness	ISO 2039-1	[MPa]	240	228
<b>Thermal properties</b>				
Glass transition temperature	DIN 53765	[°C]	280	280
Melting temperature	DIN 53765	[°C]	n.a.	n.a.
Heat distortion temperature	1,82 MPa, ASTM D 648	[°C]	278	279
Service temperature	short term	[°C]	270	270
Service temperature	long term	[°C]	250	250
Thermal expansion (CLTE)	23-55 °C, long., ASTM D 695	[10 <sup>-5</sup> *K <sup>-1</sup> ]	3,1	2,5
Thermal conductivity	ASTM E 1530	[W/(K*m)]	0,29	0,60
<b>Electrical properties</b>				
Surface resistance	ASTM D 257	[Ω]	10 <sup>18</sup>	10 <sup>17</sup>
Volume resistance	ASTM D 257	[Ω*cm]	10 <sup>15</sup>	10 <sup>13</sup>
Dielectric strength	ASTM D 149	[kV/mm]	23	-
<b>Miscellaneous data</b>				
Moisture absorption in standard atmosphere	23 °C, 50% rel. air humidity, DIN EN ISO 62	[%]	2,5	1,9
Flammability (UL94)	corresponding to, DIN IEC 60695-11-10		VO	VO

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).  
Information about exemption from liability and terms and conditions of supply can be found in our semi-finished goods catalogue or at [www.ensinger-online.com](http://www.ensinger-online.com).