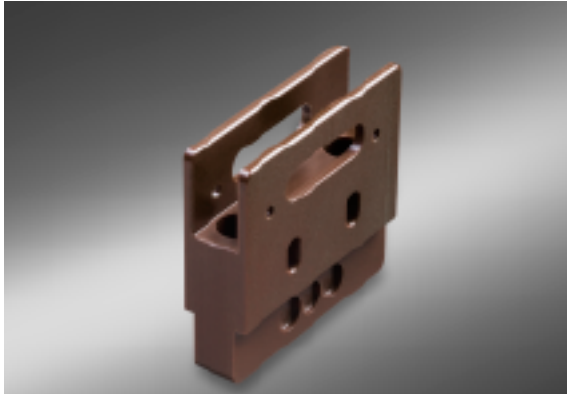


**TECASINT 2000**

Insulating part

**TECASINT 2000** is an amorphous high-temperature polyimide. The material has an outstanding thermal long term durability and a high creep resistance under a mechanical load. Furthermore **TECASINT 2000** surpasses with its high impact resistance, low water absorption and a high modulus of elasticity. Parts produced with **TECASINT 2000** can be precision machined to very precise measurements and tight tolerances.

**TECASINT 2011 (unfilled type)**

Maximum strength and elongation, optimum electrical insulation, highest modulus, minimal thermal conductivity.

**TECASINT 2021 (15% graphite)**

Enhanced wear resistance and thermal ageing, for lubricated and dry applications.

**TECASINT 2031 (40% graphite)**

Reduced thermal elongation, maximum creep strength, for bearings under extreme load, where reduced strength is possible, for parts with tight tolerances.

**TECASINT 2061 (15% graphite + 10% PTFE)**

Lowest static friction, for applications requiring low friction and wear properties at medium temperatures and loads.

**TECASINT 2391 (15% MoS<sub>2</sub>)**

Optimum sliding friction properties and low wear specifically for applications in vacuum or inert gases (techn. dry)  
Low outgassing acc. to ESA test for space exploration.



Cover

**Preferred fields**

Mechanical engineering, automotive, conveyor technology, cryotechnology, aerospace, vacuum technology, precision engineering, hot glass technology, electronic, semiconductor

**Applications**

Sliding rails, chain guides, piston rings, bearing discs, bushes

TECASINT 2011: static seal, insulator

TECASINT 2021: valve seats, friction rings, hot glass grippers

**Properties**

- | High thermal-mechanical load. Non-sensitive under thermo-shock conditions.
- | Very high creep resistance
- | Outstanding sliding-properties and wear resistance
- | Resistant to high energy radiation
- | Low outgassing, high purity
- | Good chemical resistance
- | Inherently flame resistant according to UL94 V-0
- | Easily machinable to tight tolerances

Property values	semi-finished					
		TECASINT 2011	TECASINT 2021	TECASINT 2031	TECASINT 2391	TECASINT 2061
Abbreviation		PI	PI CS15	PI CS 40	PI MoS <sub>2</sub> 15	PI CS15 TF 10
Density (ASTM D 792, DIN EN ISO 1183)	$\rho$ g/cm <sup>3</sup>	1,38	1,45	1,59	1,54	1,52
Tensile strength at break (DIN EN ISO 527)	$\sigma_R$ MPa	118	101	65	95	63
Elongation at break (DIN EN ISO 527, 23 °C)	$\epsilon_R$ %	4,5	3,7	2,1	2,9	2,7
Modulus of elasticity after tensile test (DIN EN ISO 527)	$E_z$ MPa	3700	4400	6300	4400	3900
Flexural strength (DIN EN ISO 178)	$\sigma_B$ MPa	177	145	87,5	137	89
Modulus of elasticity after flexural test (DIN EN ISO 178)	$E_B$ MPa	3600	4300	5207	4136	3490
Hardness (Shore D, DIN 53505)	H	90	87	84	90	84
Impact resistance (DIN EN ISO 179 (Charpy))	$a_n$ kJ/m <sup>2</sup>	87,9	20,6	14,2	-	19,4
Glass transition temperature (DIN EN ISO 3146)	$T_g$ °C	370	370	370	370	370
Thermal conductivity (23°C)	$\lambda$ W/(K·m)	0,22		-	-	
Specific heat (23 °C)	c J/(g·K)	0,925		-	-	
Coefficient of linear thermal expansion (50-200 °C, DIN 53752)	$\alpha$ 10 <sup>-5</sup> 1/K	5,4	4,1	3,0	-	4,0
Volume resistance (DIN IEC 60093, EC 93)	$\rho_D$ Ω cm	8x10 <sup>15</sup>				
Surface resistance (EC 93, DIN IEC 60093)	$R_\Omega$	5 x 10 <sup>15</sup>				
Dielectric constant (10 <sup>6</sup> Hz, DIN 53 483, IE-250)	$\epsilon_r$	4,2				
Dielectric loss factor (27 MHz, DIN 53 483, IE-250)	tan $\delta$	3 x 10 <sup>-3</sup>				
Dielectric strength (DIN ISO 60243-1)	$E_d$ kV/mm	21,8				
Water absorption (24 h, 23 °C, in water, EN ISO 62)	$W_s$ %	0,47	0,44		0,53	0,35
Flammability acc. to UL-Standard 94		V0	V0			

Testing on semi-finished products.

The information corresponds with current knowledge and indicates our products and possible applications. We cannot give you a legally binding guarantee of the physical properties or the suitability for a specific application. Existing commercial patents are to be taken in account.

Please find information concerning the exclusion of liability and Terms and Conditions of Delivery in our Semi-finished products catalogue or at [www.ensinger-online.com](http://www.ensinger-online.com).

All specification without guarantee.

## Stock program

### Rods

**Tolerances:** + 0,2 / + 0,8  
**Diameter:** 6 - 100 mm  
**Stock length:**  
 Ø 6-12 mm: 395 mm  
 Ø 12,7-15 mm: 395 mm, 795 mm  
 ab Ø 16 mm: 395 mm, 795 mm, 1000 mm.

Other delivery lengths possible, also available ground.

### Plates

**Tolerances:**  
 Thickness 5-20 mm: 0 / + 0,8 mm  
 Thickness 20-60 mm: 0 / 1 mm  
 Thickness 65-100 mm: 0 / 1,5 mm.  
**Thickness:** 6 - 100 mm

**Tubes** available on request.

### Widths:

Thickness 5-55 mm: 300 / 395 mm  
 from thickness 60 mm: 300 mm

### Stock length:

Width 300 mm: stock length 1000 mm  
 Width 395 mm: stock length 795 mm

Andere Lieferlängen möglich.