



**Product information**

# TECASINT 4000

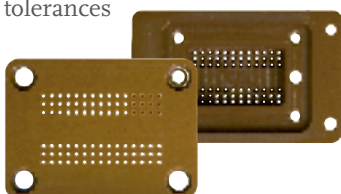
## High-performance for exceptional applications

**TECASINT 4000 offers a number of unique characteristics not supplied by other polyimides. As well as opening up completely new fields of application, the use of this new material is also able to enhance the efficiency of existing applications.**

Compared to other materials in this product line, TECASINT 4000 is characterized by its minimal water absorption and maximum oxidative stability, as well as low friction values and optimum chemical resistance. With its heat resistance of 470°C acc. to HDT/A, TECASINT 4111 opens up whole new scope for extreme high-temperature applications.

**Properties**

- Polyimide with excellent thermal stability
- Extremely high heat resistance acc. to HDT / A  
TECASINT 4111 = 470 °C, highest value of any organic material
- Substantially lower water absorption than other TECASINT polyimides
- Maximum stability against oxidation in air
- Minimal coefficient of friction, excellent tribological characteristics
- Improved chemical resistance
- High resistance to plasma
- Easy machinability to produce components with tight tolerances



**Applications**

- Components with extreme load resistance in the high temperature range
- Production facilities for the semi-conductor industry
- Thermal and/or electrical insulating applications
- Low outgassing components in vacuum (UHV) and in aerospace applications
- Cryogenic applications up to -273 °C
- For tribological applications subject to high degrees of load and / or high sliding speeds (lubricated or unlubricated)
- High-performance seals
- Plasma applications

**Types and availability**

**To address specific market requirements, Ensinger has developed two product lines:**

**1. TECASINT 4011**

*(high elongation at break and toughness)*

HDT / A (1,8 MPa)	360 °C
Tensile modulus of elasticity	4000 MPa
Charpy impact strength	87 J/m <sup>2</sup>
Temperature at 10% weight loss	548 °C

**2. TECASINT 4111 (high flexural modulus)**

HDT / A (1,8 MPa)	470 °C
Tensile modulus of elasticity	7000 MPa
Charpy impact strength	24 J/m <sup>2</sup>
Temperature at 10% weight loss	623 °C

## Product portfolio

### TECASINT 4011 / 4111 unfilled

- Maximum strength and highest modulus
- Minimal thermal and electrical conductivity
- Ultra-pure
- Low outgassing in accordance with ESA standard ECSS-Q-70-20

### Applications

- Components subject to high thermal, mechanical and electrical load - even in vacuum or cryogenic applications

### TECASINT 4021 / 4121 (15 % graphite)

- Standard type for tribological applications
- Improved wear resistance and thermal conductivity
- Self-lubrication

### Applications

- Lubricated and unlubricated friction and sliding applications

### TECASINT 4391 (15 % MoS<sub>2</sub>)

- Optimum friction and wear characteristics in vacuum
- Low outgassing in accordance with ESA standard ECSS-Q-70-20

### Field of application

- In aerospace applications, in vacuum or in inert gases (technically dry)

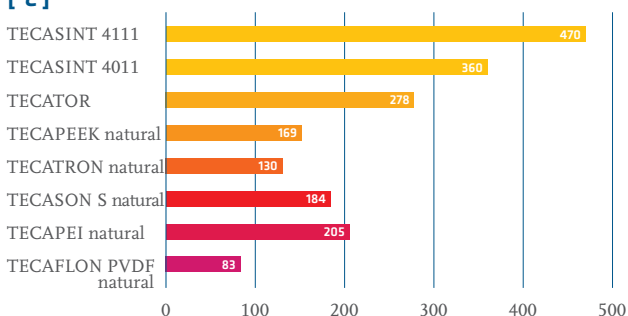
### TECASINT 4051 (30 % glass fibres)

- Reduced thermal expansion
- Wear resistant and dimensionally stable
- High rigidity
- Good electrical insulation

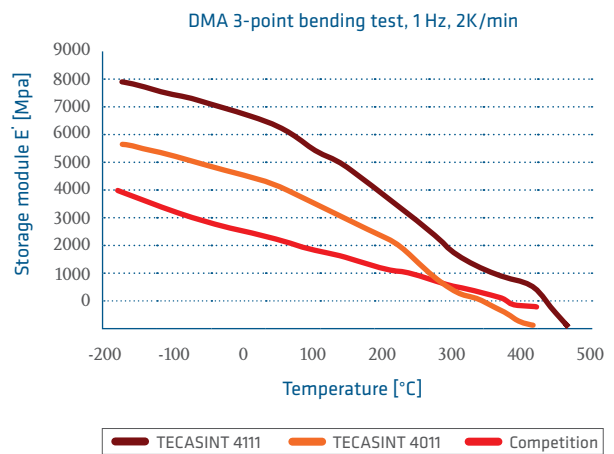
### Applications

- Test sockets
- Semi-conductor industry

## Heat Distortion Temperature HDT A / 1,80 MPa [°C]



## Storage module TECASINT 4011 and 4111



## Stock programme

### TECASINT 4011, 4021, 4051, 4391



#### Rods

Standard lengths [mm]

Ø 5 - 60	250	500	750	1000
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#### Plates

Available dimensions [mm]

5 - 60	300 x250	300 x500	300 x750	300 x1000
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### TECASINT 4111, 4121



#### Rods

Standard lengths [mm]

Ø 5 - 60	250	500
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#### Plates

Available dimensions [mm]

5 - 60	300 x250	300 x500
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Other supply lengths possible, also ground

## On request

- Sheets cut to customer order
- Short tubes