

TECASINT 4011 natural - Stock Shapes (rods, plates, tubes)

Chemical Designation

PI (Polyimide)

Colour

yellow

Density

1.42 g/cm³

Main features

- very high thermal and oxidative resistance
- very low water absorption
- high thermal and mechanical capacity
- high creep resistance
- low outgassing
- good chemical resistance
- resistance against high energy radiation
- sensitive to hydrolysis in higher thermal range

Target Industries

- electronics
- electrical engineering
- conveyor technology
- mechanical engineering
- precision engineering
- semiconductor technology

| Mechanical properties | parameter | value | unit | nom | comment |
|---------------------------------------|----------------------|--------------------|----------------------------------|----------------------|---|
| Tensile strength | 50 mm/min | 130 | MPa | DIN EN ISO 527-1 | (1) eU |
| Modulus of elasticity (tensile test) | 1 mm/min | 4300 | MPa | DIN EN ISO 527-1 | (2) eA |
| Elongation at break (tensile test) | 50 mm/min | 4.5 | % | DIN EN ISO 527-1 | (3) Specimen in 4mm thickness |
| Flexural strength | 10 mm/min | 180 | MPa | DIN EN ISO 178 | (4) Ensinger Standard |
| Modulus of elasticity (flexural test) | 2 mm/min | 4000 | MPa | DIN EN ISO 178 | |
| Elongation at break (flexural test) | 10 mm/min | 6.0 | % | DIN EN ISO 178 | |
| Compression strength | 10mm/min, 10% strain | 185 | MPa | EN ISO 604 | |
| Compression modulus | 1 mm/min | 2100 | MPa | EN ISO 604 | |
| Impact strength (Charpy) | max 7.5 J | 87 | kJ/m ² | DIN EN ISO 179-1 | 1) |
| Notched impact strength (Charpy) | max 7.5 J | 9.6 | kJ/m ² | DIN EN ISO 179-1 | 2) |
| Ball indentation hardness | | 265 | MPa | ISO 2039-1 | 3) |
| Shore hardness | Shore D | 88 | - | - | 4) |
| Thermal properties | parameter | value | unit | nom | comment |
| Glass transition temperature | | 260 | °C | DIN EN ISO 11357 | (1) Thermal expansion XY/Z axis |
| Heat distortion temperature | 1.82 MPa | 360 | °C | ASTM D 648 | (2) Thermal expansion XY/Z axis |
| Thermal expansion (CLTE) | 50-200°C | 4.6 / 5.6 | 10 ⁻⁵ K ⁻¹ | DIN 53 752 | (3) Thermal expansion XY/Z axis |
| Thermal expansion (CLTE) | 200-300°C | 6.2 / 7.6 | 10 ⁻⁵ K ⁻¹ | DIN 53 752 | 2) |
| Thermal expansion (CLTE) | 300-350°C | 8.5 / 11.2 | 10 ⁻⁵ K ⁻¹ | DIN 53 752 | 3) |
| Specific heat | | 1.22 | J/(g*K) | ASTM E1461 | |
| Thermal conductivity | 40°C | 0.4 | W/(K*m) | ASTM E1461 | |
| Electrical properties | parameter | value | unit | nom | comment |
| surface resistivity | 23°C | 10 ¹⁶ | Ω | ASTM D 257 | |
| volume resistivity | 23°C | 10 ¹⁶ | Ω*cm | ASTM D 257 | |
| Electric strength DC | 23°C | 18 | kV*mm ⁻¹ | ASTM D 149 | |
| Dielectric loss factor | 1 kHz | 1*10 ⁻³ | | ASTM D 150 | |
| Dielectric constant | 1 kHz | 3.59 | | ASTM D 150 | |
| Other properties | parameter | value | unit | nom | comment |
| Water absorption | 24 h in water, 23°C | 0.16 | % | DIN EN ISO 62 | (1) Corresponding means no listing at UL (yellow card). |
| Water absorption | 24 h in water, 80°C | 0.6 | % | DIN EN ISO 62 | The information might be taken from resin, stock shape or estimation. |
| Flammability (UL94) | corresponding to | V0 | | DIN IEC 60695-11-10; | 1) Individual testing regarding application conditions is mandatory. |
| Oxygen Index | | 49 | % | EN ISO 4589-2 | |

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