

TECASINT 2011 natural - Stock Shapes (rods, plates, tubes)

Chemical Designation

PI (Polyimide)

Colour

brown

Density

1.38 g/cm³

Main features

- very good thermal stability
- high thermal and mechanical capacity
- low outgassing
- very good electrical insulation
- resistance against high energy radiation
- good chemical resistance
- high creep resistance
- sensitive to hydrolysis in higher thermal range

Target Industries

- mechanical engineering
- precision engineering
- aircraft and aerospace technology
- cryogenic engineering
- electronics
- electrical engineering
- medical technology
- semiconductor technology
- vacuum technology

| Mechanical properties | parameter | value | unit | norm | comment |
|---------------------------------------|----------------------|------------------|----------------------------------|----------------------|---|
| Tensile strength | 50 mm/min | 130 | MPa | DIN EN ISO 527-1 | (1) eU (2) eA |
| Modulus of elasticity (tensile test) | 1 mm/min | 3600 | MPa | DIN EN ISO 527-1 | (3) Specimen in 4mm thickness |
| Elongation at break (tensile test) | 50 mm/min | 8 | % | DIN EN ISO 527-1 | |
| Flexural strength | 10 mm/min | 177 | MPa | DIN EN ISO 178 | |
| Modulus of elasticity (flexural test) | 2 mm/min | 3600 | MPa | DIN EN ISO 178 | |
| Compression strength | 10 mm/min | 470 | MPa | EN ISO 604 | |
| Compression strength | 10mm/min, 10% strain | 170 | MPa | EN ISO 604 | |
| Compression modulus | 1 mm/min | 3430 | MPa | EN ISO 604 | |
| Compressive strain at break | 10 mm/min | 55 | % | EN ISO 604 | |
| Impact strength (Charpy) | max 7.5 J | 87.9 | kJ/m ² | DIN EN ISO 179-1 | 1) |
| Notched impact strength (Charpy) | max 7.5 J | 9.3 | kJ/m ² | DIN EN ISO 179-1 | 2) |
| Shore hardness | Shore D | 90 | | DIN EN ISO 868 | |
| Ball indentation hardness | | 260 | MPa | ISO 2039-1 | 3) |
| Thermal properties | parameter | value | unit | norm | comment |
| Glass transition temperature | | 352 | °C | - | 1) |
| Heat distortion temperature | 1.80 MPa | 319 | °C | DIN 53 461 | (1) DMA, maximum loss factor tan d (2) Thermal expansion XY/Z axis |
| Thermal expansion (CLTE) | 50-200°C | 4.4 / 4.3 | 10 ⁻⁵ K ⁻¹ | DIN 53 752 | 2) |
| Thermal expansion (CLTE) | 200-300°C | 5.1 / 5.1 | 10 ⁻⁵ K ⁻¹ | DIN 53 752 | 3) Thermal expansion XY/Z axis |
| Specific heat | | 0.925 | J/(g*K) | - | |
| Thermal conductivity | 40°C | 0.22 | W/(K*m) | ISO 8302 | |
| Electrical properties | parameter | value | unit | norm | comment |
| surface resistivity | 23°C | 10 ¹⁵ | Ω | DIN IEC 60093 | |
| volume resistivity | 23°C | 10 ¹⁵ | Ω*cm | DIN IEC 60093 | |
| Electric strength DC | 23°C | 34.3 | kV*mm ⁻¹ | ISO 60243-1 | |
| Dielectric constant | 100 Hz | 3.5 | | DIN VDE 0303 | |
| Dielectric constant | 1 kHz | 3.5 | | DIN VDE 0303 | |
| Dielectric constant | 10 kHz | 3.4 | | DIN VDE 0303 | |
| Dielectric constant | 100 kHz | 3.4 | | DIN VDE 0303 | |
| Other properties | parameter | value | unit | norm | comment |
| Water absorption | 24 h in water, 23°C | 0.47 | % | 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. |
| Water absorption | 24 h in water, 80°C | 1.65 | % | DIN EN ISO 62 | |
| Outgassing in high vacuum | | passed | | ECSS-Q-70-02 | |
| Flammability (UL94) | corresponding to | V0 | | DIN IEC 60695-11-10; | 1) |

→ TECASINT 2000 series shows significant water uptake. Parts have to be pre-dried before fast heating to above 200 °C (drying process: 2 h per 3 mm wall thickness at 150 °C).

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