# TECASINT 2031 black - Stock Shapes (rods, plates, tubes)

### Chemical Designation
PI (Polyimide)

### Colour
anthracite

### Density
1.59 g/cm$^3$

### Fillers
40% graphite

### Main features
- high thermal and mechanical capacity
- very good slide and wear properties
- very good thermal stability
- very high creep resistant
- good wear resistance
- low thermal expansion
- resistance against high energy radiation
- sensitive to hydrolysis in higher thermal range

### Target Industries
- automotive industry
- aircraft and aerospace technology
- cryogenic engineering
- conveyor technology
- hot glass technology
- mechanical engineering
- precision engineering

| Mechanical properties | parameter | value | unit | norm | | comment |
|---|---|---|---|---|---|---|
| Tensile strength | 50 mm/min | 52 | MPa | DIN EN ISO 527-1 | | (1) eU<br>(2) eA |
| Modulus of elasticity (tensile test) | 1 mm/min | 5100 | MPa | DIN EN ISO 527-1 | | |
| Elongation at break (tensile test) | 50 mm/min | 1.8 | % | DIN EN ISO 527-1 | | |
| Flexural strength | 10 mm/min | 87 | MPa | DIN EN ISO 178 | | |
| Modulus of elasticity (flexural test) | 2 mm/min | 4800 | MPa | DIN EN ISO 178 | | |
| Elongation at break (flexural test) | 10 mm/min | 2.0 | % | DIN EN ISO 178 | | |
| Compression strength | 10 mm/min | 125 | MPa | EN ISO 604 | | |
| Compression strength | 10mm/min, 10% strain | 120 | MPa | EN ISO 604 | | |
| Compression modulus | 1 mm/min | 1800 | MPa | EN ISO 604 | | |
| Compressive strain at break | 10 mm/min | 12.5 | % | EN ISO 604 | | |
| Impact strength (Charpy) | max 7.5 J | 14.2 | kJ/m$^2$ | DIN EN ISO 179-1 | 1) | |
| Notched impact strength (Charpy) | max 7.5 J | 3.3 | kJ/m$^2$ | DIN EN ISO 179-1 | 2) | |
| Shore hardness | Shore D | 82 | | DIN EN ISO 868 | | |

| Thermal properties | parameter | value | unit | norm | | comment |
|---|---|---|---|---|---|---|
| Glass transition temperature | | 355 | °C | - | 1) | (1) DMA, maximum loss factor tan d<br>(2) Thermal expansion XY/Z axis<br>(3) Thermal expansion XY/Z axis |
| Heat distortion temperature | 1.8 MPa | 325 | °C | DIN 53 461 | | |
| Thermal expansion (CLTE) | 50-200°C | 3.0 / | $10^{-5}$ K$^{-1}$ | DIN 53 752 | 2) | |
| Thermal expansion (CLTE) | 200-300°C | 3.8 / | $10^{-5}$ K$^{-1}$ | DIN 53 752 | 3) | |

| Other properties | parameter | value | unit | norm | | comment |
|---|---|---|---|---|---|---|
| Water absorption | 24 h in water, 23°C | 1.2 | % | 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 | 2.2 | % | DIN EN ISO 62 | | |
| Flammability (UL94) | corresponding to | V0 | | DIN IEC 60695-11-10; | 1) | |

- TECASINT 2000 series show 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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