# TECASINT 1021 black - Stock Shapes (rods, plates, tubes)

**Chemical Designation**
PI (Polyimide)

**Colour**
black

**Density**
1.41 g/cm$^3$

**Fillers**
15% graphite

**Main features**
- very good slide and wear properties
- very good thermal stability
- good wear resistance
- good chemical resistance
- high thermal and mechanical capacity
- resistance against high energy radiation
- high creep resistance
- 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 | 97 | MPa | DIN EN ISO 527-1 | | (1) eU<br>(2) eA |
| Modulus of elasticity (tensile test) | 1 mm/min | 4000 | MPa | DIN EN ISO 527-1 | | |
| Elongation at break (tensile test) | 50 mm/min | 3.2 | % | DIN EN ISO 527-1 | | |
| Flexural strength | 10 mm/min | 150 | MPa | DIN EN ISO 178 | | |
| Modulus of elasticity (flexural test) | 2 mm/min | 4000 | MPa | DIN EN ISO 178 | | |
| Elongation at break (flexural test) | 10 mm/min | 4.0 | % | DIN EN ISO 178 | | |
| Compression strength | 10 mm/min | 210 | MPa | EN ISO 604 | | |
| Compression strength | 10mm/min, 10% strain | 175 | MPa | EN ISO 604 | | |
| Compression modulus | 1 mm/min | 1880 | MPa | EN ISO 604 | | |
| Compressive strain at break | 10 mm/min | 20.1 | % | EN ISO 604 | | |
| Impact strength (Charpy) | max 7.5 J | 34 | kJ/m$^2$ | DIN EN ISO 179-1 | 1) | |
| Notched impact strength (Charpy) | max 7.5 J | 3.7 | kJ/m$^2$ | DIN EN ISO 179-1 | 2) | |
| Shore hardness | Shore D | 88 | | DIN EN ISO 868 | | |

| *Thermal properties* | *parameter* | *value* | *unit* | *norm* | | *comment* |
|---|---|---|---|---|---|---|
| Glass transition temperature | | 353 | °C | - | 1) | (1) DMA, maximum loss factor tan d<br>(2) Thermal expansion XY/Z axis |
| Thermal expansion (CLTE) | 50-200°C | 3.8 / | $10^{-5}$ K$^{-1}$ | DIN 53 752 | 2) | |
| Specific heat | | 1.16 | J/(g*K) | - | | |
| Thermal conductivity | 40°C | 0.80 | W/(K*m) | ISO 8302 | | |

| *Other properties* | *parameter* | *value* | *unit* | *norm* | | *comment* |
|---|---|---|---|---|---|---|
| Water absorption | 24 h in water, 23°C | 0.78 | % | 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 | 1.57 | % | DIN EN ISO 62 | | |
| Flammability (UL94) | corresponding to | V0 | | DIN IEC 60695-11-10; | 1) | |

- TECASINT 1000 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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