# TECASINT 4121 black - Stock Shapes (rods, plates, tubes)

**Chemical Designation**
PI (Polyimide)

**Colour**
anthracite

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

**Fillers**
15% graphite

**Main features**
- very high thermal and oxidative resistance
- very good slide and wear properties
- high thermal and mechanical capacity
- very low water absorption
- high creep resistance
- good chemical resistance
- resistance against high energy radiation
- sensitive to hydrolysis in higher thermal range

**Target Industries**
- automotive industry
- conveyor technology
- hot glass technology
- mechanical engineering
- precision engineering

| Mechanical properties | condition | value | unit | test method | | comment |
|---|---|---|---|---|---|---|
| Tensile strength | 50 mm/min | 93 | MPa | DIN EN ISO 527-1 | | (1) eU<br>(2) eA |
| Modulus of elasticity (tensile test) | 1 mm/min | 6600 | MPa | DIN EN ISO 527-1 | | |
| Elongation at break (tensile test) | 50 mm/min | 1,6 | % | DIN EN ISO 527-1 | | |
| Flexural strength | 10 mm/min | 113 | MPa | DIN EN ISO 178 | | |
| Modulus of elasticity (flexural test) | 2 mm/min | 6100 | MPa | DIN EN ISO 178 | | |
| Elongation at break (flexural test) | 10 mm/min | 1.8 | % | DIN EN ISO 178 | | |
| Compression strength | 10 mm/min | 200 | MPa | EN ISO 604 | | |
| Compression strength | 10mm/min, 10% strain | 183 | MPa | EN ISO 604 | | |
| Compressive strain at break | 10 mm/min | 15 | % | EN ISO 604 | | |
| Compression modulus | 1 mm/min | 2200 | MPa | EN ISO 604 | | |
| Impact strength (Charpy) | max 7.5 J | 11 | kJ/m$^2$ | DIN EN ISO 179-1 | 1) | |
| Notched impact strength (Charpy) | max 7.5 J | 1.4 | kJ/m$^2$ | DIN EN ISO 179-1 | 2) | |
| Shore hardness | Shore D | 87 | | DIN EN ISO 868 | | |

| Thermal properties | condition | value | unit | test method | | comment |
|---|---|---|---|---|---|---|
| Glass transition temperature | | n.a. | °C | DIN EN ISO 11357 | | (1) Thermal expansion XY/Z axis<br>(2) Thermal expansion XY/Z axis<br>(3) Thermal expansion XY/Z axis |
| Thermal expansion (CLTE) | 50-200°C | 3.3 / 5.0 | $10^{-5}$ K$^{-1}$ | DIN 53 752 | 1) | |
| Thermal expansion (CLTE) | 200-300°C | 4.2 / 6.6 | $10^{-5}$ K$^{-1}$ | DIN 53 752 | 2) | |
| Thermal expansion (CLTE) | 300-400°C | 6.0 / 9.7 | $10^{-5}$ K$^{-1}$ | DIN 53 752 | 3) | |

| Other properties | condition | value | unit | test method | | comment |
|---|---|---|---|---|---|---|
| Water absorption | 24 h in water, 23°C | 0.08 | % | 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 | 0.38 | % | DIN EN ISO 62 | | |
| Flammability (UL94) | corresponding to | V0 | | DIN IEC 60695-11-10; | 1) | |



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