

## TECAPEEK MT black - Stock Shapes (rods, plates, tubes)

### Chemical Designation

PEEK (Polyetheretherketone)

### Colour

black opaque

### Density

1.31 g/cm<sup>3</sup>

### Main features

- very good stress cracking resistance
- hydrolysis and superheated steam resistant
- good machinability
- very good chemical resistance
- high creep resistance
- resistance against high energy radiation
- very good sterilisable

### Target Industries

- medical technology
- food technology
- mechanical engineering

| Mechanical properties                 | parameter                     | value            | unit                             | norm                 | comment                                                                                                                                                                                         |
|---------------------------------------|-------------------------------|------------------|----------------------------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tensile strength                      | 50mm/min                      | 114              | MPa                              | DIN EN ISO 527-2     | (1) For tensile test: specimen type 1b                                                                                                                                                          |
| Modulus of elasticity (tensile test)  | 1mm/min                       | 4200             | MPa                              | DIN EN ISO 527-2     | (2) For flexural test: support span 64mm, norm specimen.                                                                                                                                        |
| Tensile strength at yield             | 50mm/min                      | 114              | MPa                              | DIN EN ISO 527-2     | (3) Specimen 10x10x10mm                                                                                                                                                                         |
| Elongation at yield (tensile test)    | 50mm/min                      | 5                | %                                | DIN EN ISO 527-2     | (4) Specimen 10x10x50mm, modulus range between 0.5 and 1% compression.                                                                                                                          |
| Elongation at break (tensile test)    | 50mm/min                      | 13               | %                                | DIN EN ISO 527-2     | (5) For Charpy test: support span 64mm, norm specimen.                                                                                                                                          |
| Flexural strength                     | 2mm/min, 10 N                 | 171              | MPa                              | DIN EN ISO 178       | n.b. = not broken                                                                                                                                                                               |
| Modulus of elasticity (flexural test) | 2mm/min, 10 N                 | 4100             | MPa                              | DIN EN ISO 178       |                                                                                                                                                                                                 |
| Compression strength                  | 1% / 2% / 5%<br>5mm/min, 10 N | 23/44/105        | MPa                              | EN ISO 604           | (3)                                                                                                                                                                                             |
| Compression modulus                   | 5mm/min, 10 N                 | 3400             | MPa                              | EN ISO 604           | (4)                                                                                                                                                                                             |
| Impact strength (Charpy)              | max. 7.5J                     | n.b.             | kJ/m <sup>2</sup>                | DIN EN ISO 179-1eU   | (5)                                                                                                                                                                                             |
| Notched impact strength (Charpy)      | max. 7.5J                     | 5                | kJ/m <sup>2</sup>                | DIN EN ISO 179-1eA   |                                                                                                                                                                                                 |
| Shore hardness                        | D                             | 89               |                                  | DIN EN ISO 868       |                                                                                                                                                                                                 |
| Thermal properties                    | parameter                     | value            | unit                             | norm                 | comment                                                                                                                                                                                         |
| Glass transition temperature          |                               | 151              | °C                               | DIN EN ISO 11357     | (1) Found in public sources.                                                                                                                                                                    |
| Melting temperature                   |                               | 341              | °C                               | DIN EN ISO 11357     | (2) Found in public sources.                                                                                                                                                                    |
| Service temperature                   | short term                    | 300              | °C                               |                      | Individual testing regarding application conditions is mandatory.                                                                                                                               |
| Service temperature                   | long term                     | 260              | °C                               |                      |                                                                                                                                                                                                 |
| Thermal expansion (CLTE)              | 23-60°C, long.                | 5                | 10 <sup>-5</sup> K <sup>-1</sup> | DIN EN ISO 11359-1;2 |                                                                                                                                                                                                 |
| Thermal expansion (CLTE)              | 23-100°C, long.               | 5                | 10 <sup>-5</sup> K <sup>-1</sup> | DIN EN ISO 11359-1;2 |                                                                                                                                                                                                 |
| Thermal expansion (CLTE)              | 100-150°C, long.              | 7                | 10 <sup>-5</sup> K <sup>-1</sup> | DIN EN ISO 11359-1;2 |                                                                                                                                                                                                 |
| Specific heat                         |                               | 1.1              | J/(g*K)                          | ISO 22007-4:2008     |                                                                                                                                                                                                 |
| Thermal conductivity                  |                               | 0.3              | W/(K*m)                          | ISO 22007-4:2008     |                                                                                                                                                                                                 |
| Electrical properties                 | parameter                     | value            | unit                             | norm                 | comment                                                                                                                                                                                         |
| surface resistivity                   |                               | 10 <sup>14</sup> | Ω                                | DIN EN 62631-3-1     | (1) Due to the black colourant and moisture uptake of the material the electrical insulation properties cannot be 100% guaranteed, despite single measurements suggesting otherwise.            |
| volume resistivity                    |                               | 10 <sup>14</sup> | Ω*cm                             | DIN EN 62631-3-1     | (1)                                                                                                                                                                                             |
| Other properties                      | parameter                     | value            | unit                             | norm                 | comment                                                                                                                                                                                         |
| Water absorption                      | 24h / 96h (23°C)              | 0.02 / 0.03      | %                                | DIN EN ISO 62        | (1) Ø ca. 50mm, h=13mm                                                                                                                                                                          |
| Resistance to hot water/ bases        |                               | +                | -                                |                      | (2) + good resistance                                                                                                                                                                           |
| Resistance to weathering              |                               | -                | -                                |                      | (3) - poor resistance                                                                                                                                                                           |
| Flammability (UL94)                   | corresponding to              | V0               |                                  | DIN IEC 60695-11-10; | (4) 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. |

→ TECAPEEK products are based on Victrex® PEEK polymer.

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