

## TECASINT 5051 grey-green - Stock Shapes

### Chemical Designation

PAI (Polyamidimide)

### Colour

dark brown

### Density

1.57 g/cm<sup>3</sup>

### Fillers

30% glass fibres

### Main features

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

### Target Industries

- aircraft and aerospace technology
- cryogenic engineering
- electronics
- electrical engineering
- mechanical engineering
- nuclear and vacuum technology

| Mechanical properties                 | parameter           | value              | unit                             | norm                 | comment  |
|---------------------------------------|---------------------|--------------------|----------------------------------|----------------------|--|
| Modulus of elasticity (tensile test)  | 1 mm/min, 23°C      | 5800               | MPa                              | DIN EN ISO 527-1     | (1) Specimen in 4 mm thickness   |
| Tensile strength                      | 50 mm/min, 23°C     | 94                 | MPa                              | DIN EN ISO 527-1     |  |
| Elongation at break                   | 50 mm/min, 23°C     | 3.4                | %                                | DIN EN ISO 527-1     |  |
| Elongation at break                   | 10 mm/min, 23°C     | 3.1                | %                                | DIN EN ISO 178       |  |
| Flexural strength                     | 10 mm/min, 23°C     | 163                | MPa                              | DIN EN ISO 178       |  |
| Modulus of elasticity (flexural test) | 2 mm/min, 23°C      | 6625               | MPa                              | DIN EN ISO 178       |  |
| Compression strength                  | 10 mm/min, 23°C     | 260                | MPa                              | EN ISO 604           |  |
| Compressive strain at break           | 10 mm/min, 23°C     | 72                 | %                                | EN ISO 604           |  |
| Compression modulus                   | 1 mm/min, 23°C      | 2590               | MPa                              | EN ISO 604           |  |
| Impact strength (Charpy)              | max 7.5 J, 23°C     | 27.3               | kJ/m <sup>2</sup>                | DIN EN ISO 179-1eU   |  |
| Notched impact strength (Charpy)      | max 7.5 J, 23°C     | 5.1                | kJ/m <sup>2</sup>                | DIN EN ISO 179-1eA   |  |
| Shore hardness                        | Shore D, 23°C       | 92                 | D                                | DIN 53505            |  |
| Ball indentation hardness             |                     | 360                | MPa                              | ISO 2039-1           | 1)   |
| Thermal properties                    | parameter           | value              | unit                             | norm                 | comment  |
| Glass transition temperature          |                     | 340                | °C                               | -                    | 1)   |
| Service temperature                   | short-term          | 300                | °C                               | -                    | 2)   |
| Thermal expansion (CLTE)              | 23-100°C            | 2.4 / -            | 10 <sup>-5</sup> K <sup>-1</sup> | DIN 53 752           | 3)   |
| Thermal expansion (CLTE)              | 50-200°C            | 2.6 / -            | 10 <sup>-5</sup> K <sup>-1</sup> | DIN 53 752           | 4)   |
| Thermal expansion (CLTE)              | 100-150°C           | 2.5 / -            | 10 <sup>-5</sup> K <sup>-1</sup> | DIN 53 752           | 5)   |
| Specific heat                         |                     | 1.20               | J/(g*K)                          | -                    | (4) Thermal expansion XY/Z axis  |
| Thermal conductivity                  | 40°C                | 0.4                | W/(K*m)                          | -                    | (5) Thermal expansion XY/Z axis  |
| Electrical properties                 | parameter           | value              | unit                             | norm                 | comment  |
| Specific surface resistance           | 23°C                | > 10 <sup>14</sup> | Ω                                | DIN IEC 60093        |  |
| Specific volume resistance            | 23°C                | > 10 <sup>14</sup> | Ω*cm                             | DIN IEC 60093        |  |
| Dielectric constant                   | 1 kHz, 23°C         | 3.59               |                                  | DIN IEC 60250        |  |
| Other properties                      | parameter           | value              | unit                             | norm                 | comment  |
| Water absorption                      | 24 h in water, 23°C | 0.53               | %                                | DIN EN ISO 62        | (1) Corresponding means no listing at UL (yellow card).  |
| Flammability (UL94)                   | corresponding to    | V0                 |                                  | DIN IEC 60695-11-10; | 1) The information might be taken from resin, stock shape or estimation. Individual testing regarding application conditions is mandatory. |

→ TECASINT 5000 series show significant water uptake. Parts have to be pre-dried before fast heating to above 200 °C (drying process: 24 h per 3 mm wall thickness at 150 °C).

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