

TECAFIL PPSU MT XRO yellow - 1.75 mm - Filament

Chemical Designation

PPSU (Polyphenylsulfone)

Colour

yellow opaque

Density

1.34 g/cm³ (*2)

Fillers

barium sulfate

Main features

- x-ray opaque
- very good sterilisable
- good chemical resistance
- high gamma radiation resistance
- good heat deflection temperature
- high thermal and mechanical capacity
- hydrolysis and superheated steam resistant

Target Industries

- medical technology

| General material information | parameter | value | unit | norm | comment |
|------------------------------|----------------|---------------|------|------|-----------------------------|
| Diameter | | 1,75 +/- 0,05 | mm | - | (1) standard spool body |
| Spool measurements | holder | Ø 52 | mm | - | (2) do not dry spool >120°C |
| Spool measurements | width | 55 | mm | - | (3) Ø 1,75mm |
| Spool measurements | outer diameter | Ø 200 | mm | - | 1) |
| Spool Material | | Polycarbonate | | - | 2) |
| Filament Load per Spool | | 500 | g | - | |
| Filament Length per Spool | | 146 | m | - | 3) |

| Mechanical properties | parameter | value | unit | norm | comment |
|---------------------------------------|-------------------------|----------|------|------------------|---------------------|
| Tensile strength | 5mm/min, Orientation XY | 63,5 | MPa | DIN EN ISO 527-2 | 1) (1) (*5), (*6) |
| Tensile strength | 5mm/min, Orientation XZ | 68,0 | MPa | DIN EN ISO 527-2 | 2) (2) (*5), (*6) |
| Tensile strength | 5mm/min, Orientation ZX | 65,9 | MPa | DIN EN ISO 527-2 | 3) (3) (*5), (*6) |
| Modulus of elasticity (tensile test) | 5mm/min, Orientation XY | 2243,0 | MPa | DIN EN ISO 527-2 | 4) (4) (*5), (*6) |
| Modulus of elasticity (tensile test) | 5mm/min, Orientation XZ | 2364,0 | MPa | DIN EN ISO 527-2 | 5) (5) (*5), (*6) |
| Modulus of elasticity (tensile test) | 5mm/min, Orientation ZX | 2336,7 | MPa | DIN EN ISO 527-2 | 6) (6) (*5), (*6) |
| Elongation at yield (tensile test) | 5mm/min, Orientation XY | 7,5 | % | DIN EN ISO 527-2 | 7) (7) (*5), (*6) |
| Elongation at yield (tensile test) | 5mm/min, Orientation XZ | 7,1 | % | DIN EN ISO 527-2 | 8) (8) (*5), (*6) |
| Elongation at yield (tensile test) | 5mm/min, Orientation ZX | 6,7 | % | DIN EN ISO 527-2 | 9) (9) (*5), (*6) |
| Elongation at break (tensile test) | 5mm/min, Orientation XY | 69,1 | % | DIN EN ISO 527-2 | 10) (10) (*5), (*6) |
| Elongation at break (tensile test) | 5mm/min, Orientation XZ | 82,7 | % | DIN EN ISO 527-2 | 11) (11) (*5), (*6) |
| Elongation at break (tensile test) | 5mm/min, Orientation ZX | 8,7 | % | DIN EN ISO 527-2 | 12) (12) (*5), (*6) |
| Elongation at yield (flexural test) | 2mm/min, Orientation XY | 7,3 | % | DIN EN ISO 178 | 13) (13) (*5), (*6) |
| Elongation at yield (flexural test) | 2mm/min, Orientation ZX | 7,4 | % | DIN EN ISO 178 | 14) (14) (*5), (*6) |
| Flexural strength | 2mm/min, Orientation XY | 105,0 | MPa | DIN EN ISO 178 | 15) (15) (*5), (*6) |
| Flexural strength | 2mm/min, Orientation ZX | 101,0 | MPa | DIN EN ISO 178 | 16) (16) (*5), (*6) |
| Modulus of elasticity (flexural test) | 2mm/min, Orientation XY | 2300,0 | MPa | DIN EN ISO 178 | 17) (17) (*5), (*6) |
| Modulus of elasticity (flexural test) | 2mm/min, Orientation ZX | 2130,0 | MPa | DIN EN ISO 178 | 18) (18) (*5), (*6) |
| Elongation at break (flexural test) | 2mm/min, Orientation XY | no break | % | DIN EN ISO 178 | 19) (19) (*5), (*6) |
| Elongation at break (flexural test) | 2mm/min, Orientation ZX | no break | % | DIN EN ISO 178 | 20) (20) (*5), (*6) |

| Thermal properties | parameter | value | unit | norm | comment |
|------------------------------|------------|-------|----------------------------------|----------------------|-------------|
| Glass transition temperature | | 218 | °C | ASTM D 3418 | 1) (1) (*2) |
| Melting temperature | | - | °C | DIN EN ISO 11357 | 2) (2) (*2) |
| Deflection temperature | HDT-A | 207 | °C | ISO-R 75 Method A | 3) (3) (*2) |
| Service temperature | short term | 190 | °C | - | 4) (4) (*2) |
| Service temperature | long term | 170 | °C | - | 5) (5) (*2) |
| Thermal expansion (CLTE) | | 5,6 | 10 ⁻⁵ K ⁻¹ | DIN EN ISO 11359-1;2 | 6) (6) (*2) |

| Other properties | parameter | value | unit | norm | comment |
|-----------------------|-------------|---------|----------|-----------------|-------------|
| Moisture absorption | | 0,37 | % | DIN EN ISO 62 | 1) (1) (*2) |
| Melt flow index (MFI) | 365°C / 5kg | 12 - 17 | g/10 min | DIN EN ISO 1133 | 2) (2) (*2) |

| Processing parameter | parameter | value | unit | norm | comment |
|---------------------------|-----------|-----------|------|------|--------------|
| Nozzle temperature | | 380 - 420 | °C | - | (1) required |
| Max. melt temperature | | 450 | °C | - | |
| Print bed temperature | | 160 - 230 | °C | - | |
| Build chamber temperature | | 160 - 210 | °C | - | 1) |
| Nozzle diameter | | 0,4 | mm | - | |
| Print speed | | 30 - 40 | mm/s | - | |
| Fan speed | | 0 | % | - | |

| Predrying | parameter | value | unit | norm | comment |
|--------------------|-----------|-------|------|------|-------------|
| Drying temperature | | 120 | °C | - | 1) (1) (*4) |

Drying time 6 h -

→ To achieve optimum mechanical properties, it is recommended to pre-dry the material with the above mentioned parameters.

- (*1) Values measured on injection moulded test specimens
- (*2) Values measured on the raw material
- (*3) The exact parameters depend on the printer used.
- (*4) Do not exceed maximum drying temperature of 120°C
- (*5) Properties tested on printed specimens
- (*6) Specimens printed on Kumovis R1

→ The filament should preferably be stored in dry, normal temperature rooms and protected from direct sunlight.

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