

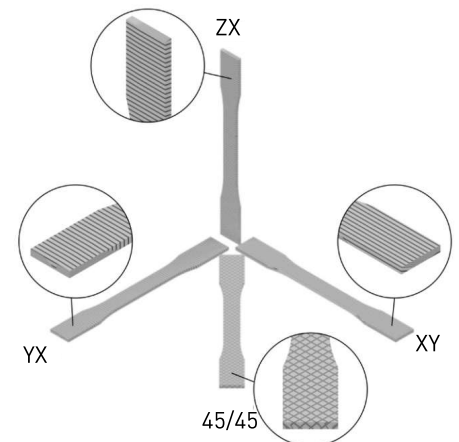
**LUVOCOM® 3F PPS CF 50899 BK****Polyphenylene Sulfide PPS****10 % carbon fiber reinforced, black****Description**

LUVOCOM 3F PPS CF 50899 BK is a carbon fiber reinforced polyphenylene sulfide (PPS) with 10 weight-% carbon fiber concentration, specifically developed for 3D printing. PPS is a semi-crystalline high-performance polymer with very good mechanical, thermal, and chemical resistance properties: a rigid-stiff material for structural components, high temperature resistance, inherently flame-resistant (UL94 certificates available upon request), dimensionally stable due to very low moisture absorption. There is no solvent known that can attack PPS up to 200 °C. Despite carbon fiber reinforcement, the material is electrically insulating and therefore poses no risk of contact corrosion. The filament can be printed at high speeds and does not require a heated build chamber when sufficient hot end power is available.

| MECHANICAL PROPERTIES |                   |           |       |                    |      |      |
|-----------------------|-------------------|-----------|-------|--------------------|------|------|
|                       | Unit              | Standard  | XY    | Print Orientations |      |      |
|                       |                   |           |       | 45/45              | YX   | ZX   |
| Tensile Strength      | MPa               | ISO 527-2 | 76    | 61                 | 66   | 46   |
| Tensile Modulus       | GPa               | ISO 527-2 | 10,20 | 5,90               | 5,75 | 3,15 |
| Elongation @ Break    | %                 | ISO 527-2 | 0,9   | 1,3                | 1,4  | 1,7  |
| Flexural Strength     | MPa               | ISO 527   | 129   | 113                | 96   | 76   |
| Flexural Modulus      | GPa               | ISO 527   | 6,75  | 4,6                | 3,98 | 2,86 |
| Impact Strength 1eU   | kJ/m <sup>2</sup> | ISO 180   | 15    | 11                 | 13   | 11   |

Results on Bambu Lab H2D at 200 mm/s print speed (parameter set „LEHVOSS Serie“). 0,6 mm nozzle. 100 % infill.  
Non-annealed samples. Qualified filament from supplier 3D-Druck Matt

| MATERIAL PROPERTIES       |                      |           |                     |
|---------------------------|----------------------|-----------|---------------------|
|                           | Unit                 | Standard  | Value               |
| Spec. Density             | [g/cm <sup>3</sup> ] | ISO 1183  | 1,51                |
| Moisture Uptake           | [%]                  | ISO 62    | < 0,05              |
| HDT @ 0,45 MPa            | [°C]                 | ISO 75    | 239                 |
| HDT @ 1,8 MPa             | [°C]                 | ISO 75    | 233                 |
| Melting Point             | [°C]                 | ISO 11357 | 280                 |
| Glass Transition Temp.    | [°C]                 | ISO 11357 | 92                  |
| Decomposition Temp.       | [°C]                 | ISO 11358 | 450                 |
| Continuous Use Temp.      | [°C]                 | ISO 3167A | 220                 |
| Volume resistance (500 V) | [Ω]                  | EN 62631  | 1·10 <sup>11</sup>  |
| Surface Resistance        | [Ω]                  | EN 62631  | >1·10 <sup>12</sup> |
| Flame resistance          |                      | UL94      | V0                  |

**Properties**

- Stiff and strong
- High temperature resistance
- Excellent chemical resistance
- Flame resistance
- Excellent surface quality
- No heated Build chamber needed
- Cost-effective PEAK alternative

**Material Twin**

The corresponding injection molding material is LUVOTECH® eco PPS GFM65 BK. This material twin exhibits a performance profile that leads to comparable results in injection molding as in 3D printing.

**LUVOCOM® 3F PPS CF 50899 BK****Polyphenylene Sulfide PPS****10 % carbon fiber reinforced, black****Material handling and drying****Drying**

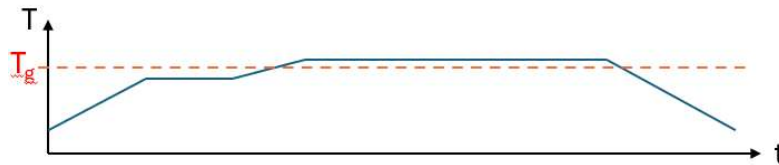
To remove residual moisture, the filament should be dried before processing. We recommend a convection oven with uniform temperature distribution. Duration: at least 24 hours. Temperature: 90 °C.

**Stay dry**

To avoid moisture condensation on the filament surface, we recommend using a dry box. Temperature 80 °C.

**Annealing**

For printers with an unheated build chamber, it is advisable to anneal the components to relieve stresses and ensure full crystallinity, high strength, and temperature resistance of the material. For this, the component must be heated and cooled to and from a temperature above the glass transition temperature in a controlled way:



1) Heating from room temperature to 80 °C, 2) Holding at 80 °C, 3) Heating to 95 °C, 4) Holding at 95 °C (1 hour per mm wall thickness), 5) Cooling to room temperature. We recommend using programmable drying cabinets, such as those from the manufacturer Memmert.

**Processing****Print parameters**

Depending on the printer and equipment: Temperature: 300 to 350 °C, flow: 0.95 to 1, nozzle diameter (hardened): 0.4 to 0.6 mm (0.6 mm recommended for process reliability), layer thickness: 0.2 to 0.4 mm. Print parameter sets for different platforms are available upon request.

**Print plate**

We recommend printing plates from the manufacturer 3D-MATT. The use of adhesives is not necessary. The component separates after cool down. As a standard build plate: PEI structured.

**Support material**

The material is compatible with PPS CF BAW, supplier 3D-Druck Matt.

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