

Product Specification Sheet

Luvocom 3F PAHT KK 50056 BK FR

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Product specifications

Luvocom 3F PAHT KK 50056 BK FR filament is a PA6 filament filled with ceramic microspheres. It has the highest flame retardant rating and produces low smoke. By that, this filament complies with the fire behavior norms for the railway industry.

- UL-94 V-0 flame retardant rating
- EN 45545 (fire behavior of materials in trains)
 - ISO 4589-2 OI (oxygen Index) R22 + R23 - HL1, HL2, HL3
 - ISO 5659-2 Ds (smoke density) R22 + R23 - HL3

Printed parts are stiff, strong, and temperature resistant up to 160C.

Your parts can operate in high temperature conditions and resist high temperature fluctuations.

Luvocom 3F PAHT KK 50056 BK FR is an excellent material for electrical insulation.

Important key features

- UL-94 V-0 flame retardant rating
- Complies with EN 45545 fire behavior norms for trains
- Heat resistant up to 160 °C.
- Electrical insulator.
- Halogen free

Suitable applications

- High performance end-use parts.
- Replacement parts in trains.
- Applications that require fire resistance.
- Printing electrical insulating parts.
- Small scale productions.

Recommended print settings

Nozzle temp: ± 270 - 300°C

Print speed: ± 30 - 70 mm/s

Drying: ≥12 hours at 80°C

Experience level: Expert

Heat bed: ± 90 - 110°C

Nozzle: ≥ 0.5mm

Drybox: Recommended

Fan speed: ± 0 - 25%

Buildplate adhesion: EasyFix Nr. VI

Enclosure: Recommended

Material properties

Specific gravity

Typical value

1.49 g/cm³

Test Method

ISO 1183-3

Water absorption (23°C / 24h)

<0,3%

ISO 62

Linear mould shrinkage

0,0-0,1%

DIN 16742

Mechanical properties at 23°C / 50% rh

Tensile strength (dry, @50 mm/min)

55 MPa

ISO 527

Elongation at maximum force (dry, @50 mm/min)

1.2%

ISO 527

Modulus of elasticity (dry, @1 mm/min)

6 GPa

ISO 527

Thermal properties

HDT A

90°C

ISO 75

Continuous service temperature (20.000 h)

120°C

IEC 60216

Service temperature (during lifetime max. 200h)

160°C

Electrical properties

Insulation resistance strip electrode (R25)

>10⁹ Ω

DIN IEC 60167

Surface resistance (ROB)

>10⁹ Ω

DIN IEC 60093

Flammability properties

Flammability behavior (1/16")

VO

UL 94

Enclosure recommended

We recommend to 3D print Luvocom 3F PPS CF 9938 BK on printers with a closed chamber. A heated build chamber is not an absolute requirement, but can improve material properties for large(r) prints.



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Drying Recommendations

Luvocom 3F PAHT KK 50056 BK FR is a hygroscopic filament and therefore it is necessary to pre-dry the filament in a blast drying oven at below settings:

- Temperature: 80°C
- Duration: ≥12 hours

For optimal print results we recommend to print the pre-dried Luvocom 3F PAHT KK 50056 BK FR filament from a drying box to avoid that the material can accumulate humidity from the environment.

Buildplate adhesion

For optimal buildplate adhesion we recommend to set your buildplate temperature at 90°C - 110°C and to use a dedicated polyamide (PA) buildplate adhesive.

Abrasiveness

Please be aware that ceramic microsphere reinforced filaments contain a relatively high concentration of extremely hard ceramic microspheres, which have an abrasive nature. In general these ceramic fillers will accelerate the nozzle-wear of brass nozzles, much faster than unfilled filaments. We recommend to use ruby nozzles or hardened steel nozzles.

Storage and handling

Filament should be stored at room temperature in a dry and dark place with humidity below 15%. Recommended storage temperature is ca. 18-25°C (64.4 - 77.0°F). Keep out of moisture, sunlight and direct heat. When stored properly, product has a shelf life of 24 months. To obtain the best parameters of the printed object, it is recommended to dry the material prior to usage and to 3D print it directly from a dry box.

Product export information

HS Code	Description	Origin
39169090	Monofilament for 3D printing	European Union

Disclaimer

The product- and technical data provided in this datasheet is correct to the best of FormFutura BV's knowledge and are intended for reference and comparison purposes only. Actual values may vary according to printing conditions, model complexity, environmental conditions, etcetera. Typical values are indicative only and are not to be construed as being binding specifications. All other information supplied, including that herein, is considered accurate but is furnished upon the express condition that the customer shall make its own assessment to determine a product's suitability for a particular purpose. We make no warranty, express or implied, including regarding any information supplied or the data upon which it is based or the results to be obtained from the use of such products or information, or concerning product, whether of satisfactory quality, merchantability, fitness for any particular purpose or otherwise, or with respect to intellectual property infringement as a result of use of information or products, and none shall be implied.

