

## LUVOCOM® 3F PET CF 9780 BK Printing Guidelines

LUVOCOM® 3F PET CF 9780 BK is our entry product based on a polyethylene terephthalate material. It is the easiest fiber-filled material to print on the market. There are no issues with retraction and no need for a heating chamber. It exhibits a superb surface finish straight from the printer, thus reducing the need for post-processing. It can be post-treated to enhance its mechanical properties. A special point of attention is the abrasive nature of the carbon fibers. In general these fibers will accelerate the nozzle-wear of brass nozzles, much faster than unfilled filaments. LEHVOSS Group recommends the use of a  $\varnothing > 0.5$  mm abrasion resistant nozzle and layer thicknesses  $\geq 0.2$  mm.

### Safety

For the safety properties of the material, please refer to our SDS. During practical operation wear personal safety protections for hand/eye/body. Prior start printing you should read the entire document.

### Support Material Compatibility

LUVOCOM® 3F PET CF 9780 BK is fully compatible with water soluble supports such as PVA, PVOH, BVOH. Also it is fully compatible with breakaway supports such as HIPS.

### Startup/Shut Down

Before the production start feed it with dried material and extrude at least 50 mm of new filament through the nozzle to make sure any residue from previous prints are removed. Be sure to have a levelled build plate. Prior to applying an adhesive promotor, any surface must be free from dirt and grease. Therefore cleaning with ethanol or IPA is recommended. Remove the filament from the machine before shutting down the printer, and store the unused filament properly. Clean the build plate after each printing.

**Production Breaks:** If there are production interruptions exceeding a few minutes, purge the nozzle adequately.

### Generic Machinery Settings

LUVOCOM® 3F PET CF 9780 BK has been tested using various 3D printers, which has resulted in the following recommended settings. Geometrical requirements of the application or the printer used could make adjustments necessary to obtain the best result. Common fused filament fabrication (FFF) equipment should work with LUVOCOM® 3F filaments, direct drive as well as bowden type extruders. Typical settings for any slicing software (e.g. Cura, Simplify3D) are listed below. These generic settings are established for a 0.6mm Nozzle Diameter and a Glass Build Plate surface with an adhesion promotor (Magigoo®).

**Note:** Different nozzle diameters and/or a different build plate surface, the settings should be changed accordingly.

- Nozzle:  $\varnothing > 0.5$  mm abrasion resistant nozzle
- Print speed: 40 - 60 mm/s, layer height: Layers:  $\geq 0.2$  mm, brim/skirt: 02 outlines with 1 layer
- Extrusion temperatures: 260°C - 280°C, build plate temperature:  $< 80^\circ\text{C}$ .

**Note:** prior to removing the printed part from the bed, the bed temperature should be lowered to ambient to avoid deformation of the part. Build plate adhesion: The material has been tested on buildTak®, glass bed and aluminium bed. When printing on glass and aluminium bed we advise using Magigoo® to obtain better adhesion to the plate. Cooling fan: A 50% fan speed as default. Use less fan speed if the print geometry allows for this.

### Troubleshooting

Most common issues:

- First layer not sticking / parts coming loose: Check bed levelling and first layer thickness, increase size of brim, add appropriate adhesion promotor (Magigoo®) to the build plate.
- Oozing/Stringing: Enable retraction, or increase the retraction length and/or speed. If that doesn't improve make sure that the material is completely dried.
- Filament grinding: Remove the damaged filament and start again, reduce printing speed, reduce retraction speed and length. Increase the extruder temperature.
- Warping: Check bed levelling and first layer thickness. Increase the Brim and/or print the part in another direction.

### Filament Handling

**Storage:** In order to prevent moisture pick up and contamination, supplied packaging should be kept closed and undamaged. For the same reason, partially used bags should be re-sealed before storage. Allow the material that has been stored elsewhere to adapt to the temperature in the processing room while keeping the bag closed.

**Packaging:** LUVOCOM® 3F PET CF 9780 BK is supplied in vacuum re-sealable aluminium moisture-proof packaging.

Moisture content as delivered: LUVOCOM® 3F PET CF 9780 BK is packaged at a moisture level  $< 300$  ppm.

**Drying:** In case the filament has become wet, it should be dried. Using a hot dry air oven at 80°C for at least 12h is recommended.

# 3D PRINTING MATERIALS

Experience the 3Difference

## LUVOCOM® 3F FILAMENT

Additive manufacturing solutions

- Extrusion based processes
- Product: filaments
- Carbon fiber reinforced and unreinforced materials

## LUVOCOM® 3F

Additive manufacturing solutions

- Extrusion based processes
- Product: pellets
- Composite materials (CF, GF), tribological, electrically and thermally conductive

## LUVOSINT®

Additive manufacturing solutions

- Powder fusion processes
- Product: powder
- Nano-filled materials

Europe & Head Office  
Lehmann&Voss&Co. KG  
Alsterufer 19  
20354 Hamburg  
Germany  
Tel +49 40 44 197 250  
E-mail [luvocom@lehvoss.de](mailto:luvocom@lehvoss.de)

North America  
LEHVOSS North America, LLC  
185 South Broad Street  
Pawcatuck, CT 06379  
USA  
Tel +1 855 681 3226  
E-mail [info@lehvoss.us](mailto:info@lehvoss.us)

Asia  
LEHVOSS (Shanghai) Chemical Trading Co., Ltd  
Unit 4805 Maxdo Centre  
8 Xingyi Road Changning District  
Shanghai 200336  
China  
Tel +86 21 6278 5181  
E-mail [info@lehvoss.cn](mailto:info@lehvoss.cn)



[www.luvocom3F.com](http://www.luvocom3F.com)

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