

# Proto-pasta

Technical Data Sheet Rev 1.

## Matte Fiber HTPLA

Made with plant fibers, but reminiscent of Ceramic, Marble, or Limestone, White Matte Fiber HTPLA brings a superb finish to both artistic and technical parts with no special hardware required. Based on Proto-pasta HTPLA, this Matte Fiber version can be heat treated to retain more stiffness to higher temperatures.

Dimensional stability is improved compared to HTPLA without fibers. The plant-based fibers improve the adhesion of glues and coatings. Performance is similar to Carbon Fiber HTPLA but the processing of Matte Fiber does NOT require a wear-resistant nozzle.

## Material Properties

Properties	Value/Description
Base material	Heat treatable PLA w/ high temp resistance
Characteristics	low odor, non-toxic, renewably sourced
Molecular structure	Amorphous or partially crystalline ( <i>Amorphous as printed, part crystalline when heat-treated</i> ) ( <i>Melting resets crystalline structure to amorphous state</i> )
Additives	Minimal color added
Max particle size	0.1 mm (may limit resolution)
Density	approx. 1.14 g/cc
Length	approx. 388 m/kg (1.75 mm) & 146 m/kg (2.85 mm)
Min bend diameter	35 mm (1.75 mm) & 55 mm (2.85 mm)
Glass transition (Tg) onset	approx. 60 deg C (140 deg F)
Melt point (Tm) onset	approx. 155 deg C (310 deg F)
Max use	Tg for amorphous, Tm for crystalline

*Use limit is geometry, load & condition dependent*

## Print Settings

(Based on Ultimaker s5 .15mm Profile)

Setting	Value
Nozzle Temperature [°C]	195
Heated Bed Temperature [°C]	60
Print Speed [mm/s]	25-45
Flow Rate/Extrusion Multiplier [%]	96
Extrusion Width [mm]	.45 (.05mm larger than nozzle size)
Volume Flow Rate [mm <sup>3</sup> /s]	2-3

## Heat Treating (for heat-treating only)

HTPLA is a semi-crystalline grade of PLA optimized for heat-treating for higher temperature use. Prior to printing, HTPLA parts should be scaled in the slicer to compensate for shrinkage when heat treating.

**(Please note that all values for heat-treating are process dependent and may vary between users)**

Part Axis	Percentage
Scale Values (x/y-axis)	101.1%
Scale Values (z-axis)	99%

**(a large range of temperatures & times can yield acceptable results)**

Typical Heat Treat Temperature	Typical Heat Treat Time
95-110 °C	10+ minutes

**For a more in-depth look at heat treating please view [proto-pasta.com/mattefiber](http://proto-pasta.com/mattefiber)**

*Results may vary based on print settings as well as print quality*