

Proto-pasta

Technical Data Sheet Rev. 1

Translucent / Sparkly (HTPLA)

Proto-pasta's 2 main HTPLA categories are Translucent and Sparkly. All materials in these categories print similar to standard PLA but can be heat treated for higher temperature resistance. This durable PLA has a theoretical Heat Deflection Temperature (HDT) of more than 140C (285F) after heat treating. This means HTPLA parts maintain strength and form too much higher temperatures than PLA, ABS, or Polyesters like PET which loose structure as soon as 55C and by 100C.

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. 1.24 g/cc
Length	approx. 346 m/kg (1.75 mm) & 130 m/kg (2.85 mm)
Min bend diameter	15 mm (1.75 mm) & 40 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]	206
Heated Bed Temperature [°C]	60
Print Speed [mm/s]	25-45
Flow Rate/Extrusion Multiplier [%]	100
Extrusion Width [mm]	.45 (.05mm larger than nozzle size)
Volume Flow Rate [mm³/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)	102.2%
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/translucent and proto-pasta.com/sparkly

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