

Its full term is Poly-Lactic Acid and it is a thermoplastic polymer. Because it is derived from natural sources like corn and sometimes sugarcane, PLA is sometimes referred to a bioplastic. The majority of other thermoplastics are distilled from nonrenewable resources like petroleum.

In addition, because it is a natural product, it is also long-term biodegradable. This means that when discarded into a composting system, PLA will naturally break down into its constituent parts typically within a few years.

#### Pros

- Can be printed on a cold surface
- more environmental-friendly
- shinier and smoother appearance
- More detail

#### Cons

- Can deform because of heat
- Less sturdy

#### Uses

- Prototyping
- Scale Models
- Indoor end use products

### 1. Identification of the material

Trade name:	HotOrange3D
Chemical name:	Poly-Lactic Acid
Use:	3D printing
Origin:	HotOrange3D – Netherlands

*Disclaimer: The technical data contained on this data sheet is furnished without charge or obligation and accepted at the recipient's sole risk. This data should not be used to establish specifications limits or used alone as the basis of design. The data provided is not intended to substitute any testing that may be required to determine fitness for any specific use.*

## 2. Printer settings

Printer:	Desktop FFF printer		
Nozzle:	0.4	mm	A2 hardened
Layer height:	0.2	mm	
Infill:	100	%	±45
Extrusion Temperature:	190 - 220	°C	
Bed temperature:	46 - 60	°C	
Bed preparation:	Kapton tape, Glass, 3D laque		
Print speed:	20-40	mm/sec	
Requirements:	Cooling fan		

## 3. Material properties

Melt temperature:	145-160	°C	ASTM D3418
Glass transition temperature:	55-60	°C	ASTM D3419
Heat distortion temperature HDTB (0,45 MPa):	56	°C	ISO 75
Vicat Softening Temperature:	60	°C	ASTM D1525
Met Flow Rate (210 C/2.16 kg):	9,56	g	ASTM D1238
Density:	1.24	g/cm <sup>3</sup>	ASTM D790
Water absorption, 24 u:	0.1	%	ASTM D570
Shrink rate:	0.5 - 0.7	%	ASTM D955

## 4. Mechanical properties

Tensile Strength (break, 3.20 mm/50 mm/min):	52	Mpa	ISO 527
Tensile Modulus (3.20 mm/1.0 mm/min):	1320	MPa	ISO 527
Tensile elongation, (break, 3.20 mm/50 mm/min):	5	%	ISO 527
Flexural Modulus (3.20 mm/15 mm/min):	3600	MPa	ISO 178
Flexural Strength (3.20 mm/15 mm/min):	108	MPa	ISO 178
Rockwell hardness (R-scale):	95	ASTM	D785

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