

## TECHNICAL DATA SHEET

### 3D3 TOUGH PLA

<b>Product code:</b>	<b>Revision Number :</b>	<b>Revision date:</b>	<b>TDS No.:</b>
Tough PLA	01	14/08/2019	KT04.012.0123

#### Characteristic:

Higher toughness | no buckling deformation | lower shrinkage

#### IDENTIFICATION OF THE MATERIAL

<b>Trade name</b>	Tough PLA
<b>Chemical name</b>	Polylactic Acid
<b>Use</b>	3D Printing
<b>Origin</b>	3D3

#### GUIDELINE FOR PRINT SETTINGS

<b>Nozzle temperature</b>	200~230°C
<b>Bed temperature</b>	30~60°C
<b>Bed modification</b>	NO
<b>Active cooling fan</b>	ON
<b>Layer height</b>	0.2mm
<b>Shell thickness</b>	≥0.8mm
<b>Print speed</b>	40~80mm/s

Settings are based on a 0.4mm nozzle.

#### MATERIAL PROPERTIES

		Test Method
<b>Melt temperature</b>	~160°C	ISO 11357
<b>Melt flow rate (MFR) <sup>1</sup></b>	5~6 g/10min	ISO 1133
<b>Heat deflection temperature(HDT)<sup>2</sup></b>	54°C	ISO 75
<b>Vicat softening temperature(VST)<sup>3</sup></b>	59°C	ISO 306
<b>density</b>	1.20 g/cm <sup>3</sup>	ISO 1183
<b>Odor</b>	Odorless	/
<b>Solubility</b>	Insoluble in water	/

1. test conditions: T= 190°C; m=2.16kg.

2. test conditions:0.45MPa;120°C/h.

3. test conditions:10N; 120°C/h.

**MECHANICAL PROPERTIES|TENSILE TEST**

**Test Method ISO 527**

All test specimens were printed using an Megamaker S1 , under the following conditions :  
 Printing temperature: 210°C

Heated bed temperature : 50°C  
 Print speed : 45mm/s  
 Shell thickness : 0.8mm  
 Infill under 45°



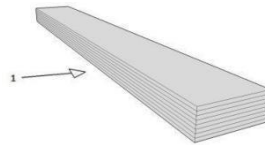
Infill	100%
Tensile strength (Mpa)	34~38
Elongation at break (%)	10~15

**MECHANICAL PROPERTIES|IMPACT TEST**

**Test Method ISO 179**

The same conditions as tensile test.

1→impact direction



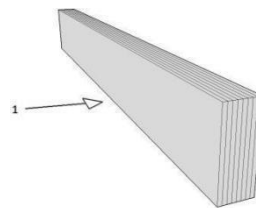
Infill	100%
Impact strength (KJ/m <sup>2</sup> )	65~100
Notch impact strength <sup>1</sup> (KJ/m <sup>2</sup> )	25~35

**MECHANICAL PROPERTIES |FLEXURAL TEST**

**Test Method ISO 178**

The same conditions as tensile test.

1→bending direction



Infill	100%
Maximum force (Mpa)	60~65
Flexural modulus (Mpa)	2100~2400

1. notch type: type A

<b>FILAMENT SPECIFICATION</b>		<b>Test Method</b>
Diameter 1.75mm	1.75±0.03mm	EX1125
Diameter 2.85mm	2.85±0.03mm	EX1125
Diameter 3.00mm	3.00±0.03mm	EX1125
Max roundness deviation (1.75)	0.03mm	EX1125
Max roundness deviation (2.85)	0.03mm	EX1125
Max roundness deviation (3.00)	0.03mm	EX1125
Net weight on reel	1kg	EX1125