UK PLA – TECHNICAL DATA SHEET

26/01/21

3DTomorrow's UK PLA is a PLA (Polylactic Acid) filament manufactured in the UK from NatureWorks virgin pellets. The range is aimed at users who want a high quality product that supports the UK industry and also reduces their carbon footprint (vs alternative filament providers).

High quality: The UK PLA range delivers bold colours from the RAL standard, consistent finishes and high tolerances. Due to the grade of PLA (4043D), UK PLA requires a higher nozzle temperature than some PLA filaments on the market; this is also due to the absence of admixtures that some manufacturers use to alter properties or reduce cost. We have developed a custom masterbatch for UK PLA to ensure a pure product that contains only PLA + colourant.

Eco footprint: every purchase of our UK PLA supports over 10 UK businesses through our supply chain. A centralised supply chain reduces the carbon footprint of the product associated with the transport. In addition, our 100% recyclable cardboard spools and packaging help to encourage zero waste.

UK PLA is suitable for all types of FDM/FFF 3D Printer.

OVERVIEW	
Trade Name	3DTomorrow UK PLA
Chemical Name	Polylactic Acid
Available Colours	Zinc Yellow RAL 1018, Pastel Orange RAL 2003, Ruby Red RAL 3003, Ultramarine Blue RAL 5002, Leaf Green RAL 6002, Signal Grey RAL 7004, Anthracite Grey RAL 7016, Jet Black RAL 9005, Traffic White RAL 9016
Available Sizes	1.75mm

FILAMENT SPECIFICATION		
Size	**Ø Tolerance**	**Roundness**
1.75mm	± 0.03mm (3σ)	≥ 95%

MATERIAL PROPERTIES		
Description	**Typical**	**Test Method**
Density	1.24g/cm³	ASTM D792
Melt Flow Index	12g / 10 minutes	ASTM D1238
Melting Temperature	170 - 180°C	ASTM D3418
Glass Transition Temperature	60°C	ASTM D3418
Print Temperature	205-235°C	Observation and NatureWorks recommendation
Tensile Strength, vertical print (z axis)	21.1 - 22.0 MPa	ISO 527
Tensile Strength, horizontal print (x/y axis)	46.9 - 48.2 MPa	ISO 527
Force at break, vertical print (z axis)	20.5 - 21.2 MPa	ISO 527
Force at break, horizontal print (x/y axis)	9.2 - 9.5 MPa	ISO 527
Elongation at break, vertical print (z axis)	0.9 - 1%	ISO 527
Elongation at break, horizontal print (x/y axis)	18.7 - 21.2%	ISO 527
Impact Strength, vertical impact	18.9 - 20.8 KJ/m²	ISO 179
Impact Strength, horizontal impact	20.0 - 20.8 KJ/m²	ISO 179
Flexural Modulus, vertical bend	2721 - 2973 MPa	ISO 178
Flexural Modulus, horizontal bend	2251 - 2461 MPa	ISO 178

Test specimen print settings. Extruder temperature: 215°C; bed temperature: 50°C; infill: 100%; print speed: 40 mm/s.