



Nanodiamond Reinforced PLA 3D Filament

Product description

Nanodiamond reinforced PLA (polylactic acid) 3D filament is intended for use in consumer and industrial FDM/FFF 3D printers. It contains spherical functionalized nanodiamond particles which offer printed parts with increased strength, stiffness, higher heat deflection temperature and higher thermal conductivity compared to unfilled PLA. The spherical nanodiamonds are less abrasive compared to irregular particle shapes, leading to lower nozzle wear and offer significantly enhanced printing speeds (50-500 mm/s). Printed parts can easily sanded to final finish.

Characteristics

- Higher strength and stiffness
- Higher heat distortion temperature (HDT)
- Higher dimensional stability
- Recommended printing temperature 220 – 250 °C (up to 270 °C in some cases)
- No need for a heated bed (Or Bed temperature 0 °C – 50 °C)

Product Range

Catalogue number	Colour	Diameter	Reel weight
ME355918	Natural	1.75 mm	~308 m (1 kg)
ME355919	Natural	1.75 mm	~708 m (2.3 kg)
ME355928	Natural	2.85 mm	~116 m (1 kg)
ME355929	Natural	2.85 mm	~267 m (2.3 kg)

TYPICAL PROPERTIES

Property	Unit	Value	Test Method
Specific gravity at 23 °C	g/cm ³	1.35	ISO 1183
Glass transition temperature (T _g)	°C	49.7 – 55.2	DSC, 10 °C/min
Heat deflection temperature (HDT)	°C	47.7	ISO75-2:2013, 120 °C/hr
Moisture content*	%	< 0.1	Thermogravimetric
Melt Temperature	°C	171.6 – 182	DSC
Odour		Almost odourless	
Thermal conductivity at 23°C	W/m-K	0.38	Hot disk method
Water solubility		Insoluble	
Young's modulus	GPa	6.3	ISO 527
Tensile strength	MPa	43.5	ISO 527
Elongation at break	%	3.2	ISO 527

* All test specimens were printed by Mass Portal, using Mass Portal Pharaoh XD20 (SN: 150633) under the following conditions: printing temperature = 270°C, printing speed = 60 mm/s, bed temperature = 30°C.

Properties shown are typical values, they are not absolute material properties, and should be used for guidance only. It is recommended that materials and components are tested for their suitability for a specific application. For more information and advice please discuss your application with our sales staff.

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