

Creating Material Change



SynerG Super Tough PLA Technical Data Sheet



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Graphene Enhanced Super Tough PLA

Haydale's SynerG graphene-enhanced polylactic acid (PLA) filaments for 3D printing are improving the speed, strength, print quality and accuracy.

- Faster and better print quality
- Improved dimensional stability
- Excellent first layer and z-axis bonding
- Easy to post process

Product Information:

Filament diameter
1.75mm

Package size
400g reel

Typical Physical Data*

Properties	Units	Average Value	Method
Specific gravity at 20°C	g/cm ³	1.24	Internal
Glass transition temperature (T _g)	°C	67	DMA, ASTM D406512, 5°C/min, tan delta peak
Heat deflection temperature (HDT)	°C	47.7	ISO75-2:2013, 120°C/hour
Melt flow index (MFI)	g/10 mins	5.81	ISO1113-1:2001 Procedure A, 190°C, 2.16kg
Thermal conductivity at 23°C	W/m.K	0.40	Internal method using Modified Transient Plane Source
Volume electrical conductivity at 23°C	S/m	1.3E-14	ASTM D257
Odour	-	Almost odourless	Internal
Water solubility	-	Insoluble in water	Internal

Typical Mechanical Data*

Properties	Units	Average Value	Method
Tensile modulus at 23°C (filament, diameter 1.75mm)	MPa	2850	Internal using capstan grips
Tensile strength at 23°C** (filament, diameter 1.75mm)	MPa	52	Internal using capstan grips
Tensile elongation at break at 23°C (filament, diameter 1.75mm)	%	6	Internal using capstan grips
Flexural modulus at 23°C (injection moulded specimens)	MPa	2545	ISO178
Flexural strength at 23°C** (injection moulded specimens)	MPa	76	ISO178
Flexural modulus at 23°C (printed specimens)	MPa	2133	ISO178
Flexural strength at 23°C** (printed specimens)	MPa	67	ISO178

* Typical properties only, not to be construed as specifications

** Based on maximum measured stress

PROCESSING INFORMATION

SynerG PLA can be processed on all FDM/ FFF type 3D printers. SynerG PLA is typically extruded using a nozzle temperature of 200°C and a heated bed temperature of 58°C is recommended for good first layer adhesion in 3D printing. SynerG PLA can be extruded from 170 °C, but processing temperatures must never exceed 220 °C.

STORAGE

PLA is a biodegradable thermoplastic polyester and will absorb moisture over time which can affect product performance. To ensure a good shelf life before use the 3D printing filament and pellets are packaged under a controlled vacuum and sealed to prevent moisture ingress. It is recommended that filament and pellets be kept in cool and dry conditions before use in 3D print melt extrusion and processing.

The content supplied in this technical data sheet ("Information") supersedes all previous versions supplied. Version 3, July 2019

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