MINGDA

Technical Data Sheet

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WELCOME

Company Introduction

About us

Shenzhen MINGDA Technology Co., Ltd. was founded in 2012, which is a professional 3D printer research and development manufacturer in China and a national high-tech enterprise.

The Company's business focuses on the development, production and sales of high performance extruded 3D printing materials. With formulation development as its core competence, the Company is committed to solving the Fused Deposition Modeling process from the material side, reducing the hardware requirements of materials for printing equipment, and achieving the goal of printing high-performance composite materials with low-cost printers.

The Company is committed to providing customers with industry-leading 3D printing materials and total solutions from printing process to printing equipment, and has the ability to quickly customize materials to meet customer application requirements.

Superiority

• With a deep understanding of the FDM process, all product lines and materials are optimized for the FDM process.
• Relying on the strong strength in material modification development, we can provide customized material development services according to customer application requirements.
• The unique product line of support materials fits perfectly with high-performance printing materials to form a complete industrial-grade printing solution, thus closing the loop of the printing process.
• High-performance online production monitoring equipment and mature production processes can ensure the stable quality of FDM materials.

Contact us

For any inquiries or technical support,please contact:**support@3dmingda.com**

PET-GF

15% chopped glass fiber reinforced Polyethylene Terephthalate 3D printing material.

Product Description

MINGDA PET-GF is specially developed for FDM 3D printing process, and its substrate material is PET engineering plastic with low moisture absorption, high strength, creep resistance, excellent chemical resistance and high heat resistance. With good dimensional stability, no warpage and no shrinkage and no smell, no heating chamber are required during the printing process. It can be used with MINGDA Support F-Green Quick-Remove Support Material to solve the problem of poor molding effect of supporting surface of complex model.

Product Advantages

• Smart Fiber Reinforced Technology

MINGDA controls the dispersion and distribution of reinforced carbon fibers in the material matrix during the extrusion process, thus the fibers form a mesh skeleton structure within the material and bear most of the load transferred by the material matrix. Smart Fiber Reinforced Technology greatly improves the mechanical properties and heat resistance of the material, and releases the internal stress during the printing process through the reinforced fiber mesh structure, so that the print has good dimensional stability and no warpage problem.

• Low creep

The molecular chain structure of PET is highly regular and has a rigid benzene ring structure, so that PET has better mechanical properties and less deformation under long-term load. Compared with PA and PC materials, PET has better creep-resistance.

Available

Colors	Natural Grey Black Red
Diameter	1.75mm/2.85mm
Net weight	1kg/2.5kg

Material Properties

Property	Testing method	Typical value
Density	ISO 1183	1.35 g/cm³
Water absorption	ISO 62: Method1	0.5 %
Melting Temperature	ISO 11357	251°C
Melt index	270°C, 2.16kg	10
Determination of temperature	ISO 75: Method A	99.1°C（1.80MPa）
	ISO 75: Method B	120.3°C（0.45MPa）
Tensile strength(X-Y)	ISO 527	65.05 ± 0.56 MPa
Young's modulus(X-Y)		3732.63 ± 57.85 MPa
Elongation at break (X-Y)		3.18 ± 0.14 %
Bending strength (X-Y)	ISO 178	103.48 ±1.91 MPa
Bending modulus (X-Y)		3596.25 ± 209.23 MPa
Charpy impact strength (X-Y)	ISO 179	7.0 ± 0.82 KJ/m2
Tensile strength(Z)	ISO 527	22.77 ± 1.54 MPa
Young's modulus(Z)		2924.41 ± 94.91 MPa
Elongation at break (Z)		0.85 ± 0.08 %

Specimen printing parameters:
Nozzle size 0.4mm, Nozzle temp 320℃, Build plate temp 80℃, Print speed 45mm/s, Infill percentge 100%, (X-Y) specimen infill angle: ±45°, (Z) specimen infill pattern: Concentric.

Specimen post-processing:
100℃ annealing 8 hours.

Recommended printing conditions

Nozzle temperature	280-320°C
Recommended nozzle diameter	0.4-1.0mm
Recommended build plate material	PEI Film or Coating with PVP Glue
Build plate temperature	70-90°C
Raft separation distance	0.08-0.12mm
Cooling fan speed	Off
Print speed	30-90 mm/s
Retraction distance	1-3 mm
Retraction speed	1800-3600 mm/min
Recommended support material	Support F-Green Quick-Remove Support Material

***Additional Suggestions*:**

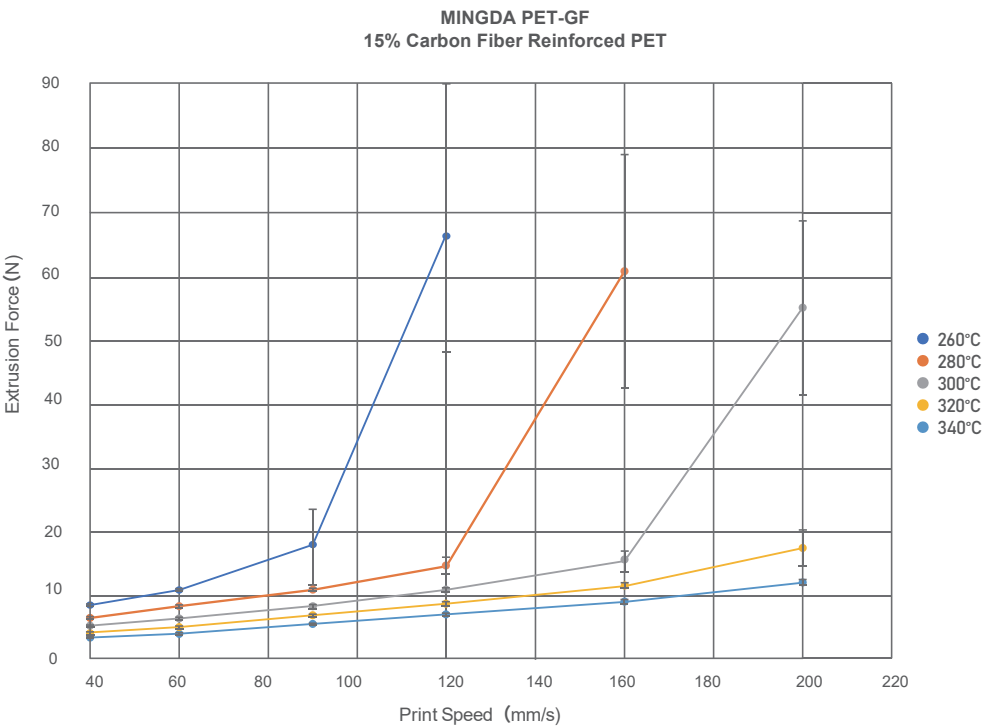
1.Although the moisture absorption of PET material is very low, it is very sensitive to moisture. Printing after absorbing moisture will result in ozzing, extruding with bubbles and rough surface appearance, thus reducing print quality. It is recommended that put the filament into a dry box (humidity below 15%) immediately after opening the MINGDA PET-GF vacuum foil bag for printing. Please put the unused filament back into the original aluminum foil bag for sealed storage.

2.After the material is damp, there will be more printing ozzing, bubbles extruded and rough printing surface. Please dry the filament in an oven at 100-120℃ for 4-6h to restore the printing quality of MINGDA PET-GF.

3.Hradened steel nozzles shall be selected, which can effectively improve the print quality. Besides, it is recommended that the thickness of the heating block should no less than 12mm.

4.After the printing, the printed part can be annealed to further improve the strength of MINGDA PET-GF print part. Annealing conditions: place the printed part at 80-100℃ for 4-8 hours and cool to room temperature naturally.

Extrusion Force vs Print Speed Test



Test parameters: 12mm length brass heat block, BMG extruder, Hardened Steel Nozzle, Nozzle size 0.4mm, Layer Height 0.2mm.

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