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**

HtPA-CF

High temperature Polyamide based filled with 15% chopped carbon fiber FDM material.

Product Description

MINGDA HtPA-CF is specially developed for FDM 3D printing process, and its substrate material is high temperature nylon, which has low density, low moisture absorption, high strength, high abrasion resistance, excellent chemical resistance and high heat resistance.

It also has good dimensional stability, no warpage and no shrinkage during the printing process, and can be used with MINGDA Support F-Green Quick-Remove Support material to solve the problem of poor molding effect on the support surface of complex models.

Product Advantages

· Smart Fiber Reinforced Technology
MINGDA controlling the dispersion and distribution of chopped carbon fibers within the material matrix during the extrusion process, 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 fiber mesh structure, resulting in good dimensional stability of the printed part and no warpage.

· Low Mositure Sensitivity
MINGDA HtPA-CF based on modified high temperature nylon, whose saturated moisture absorption rate is only one tenth of ordinary PA6, completely solving the defects of the mechanical properties and dimensional stability of nylon materials that change greatly after absorbed moisture.

· Super Abrasive Resistance
MINGDA HtPA-CF has a low coefficient of friction, self-lubricating properties and excellent wear resistance, which can easily meet all kinds of high-strength gears or industrial applications with high wear requirements.

Availabe

Colors	■ Black
Diameter	1.75mm/2.85mm
Net weight	500g/1kg/2.5kg

Material Properties

Property	Testing method	Typical value
Density	ISO 1183	1.15 g/cm³
Water absorption	ISO 62: Method1	0.6 %
Melting Temperature	ISO 11357	231°C
Melt index	280°C, 2.16kg	10.78
Determination of temperature	ISO 75: Method A ISO 75: Method B	117°C (1.80MPa) 178°C (0.45MPa)
Tensile strength(X-Y) Young's modulus(X-Y) Elongation at break (X-Y)	ISO 527	102.59 ± 2.61 MPa 7506.14 ± 355.60 MPa 1.66 ± 0.08%
Bending strength (X-Y) Bending modulus (X-Y)	ISO 178	153.18 ± 4.44 MPa 6848.20 ± 441.33 MPa
Charpy impact strength (X-Y)	ISO 179	6.36 ± 0.26 KJ/m²
Tensile strength(Z) Young's modulus(Z) Elongation at break (Z)	ISO 527	36.56 ± 1.03 MPa 3147.78 ± 272.68 MPa 1.36 ± 0.07 %

Specimen printing parameters:
Nozzle size 0.4mm, Nozzle temp 320℃,Build plate temp 80℃, Print speed 45mm/s, Infill percentage100%, (X-Y) specimen infill angle: ±45°, (Z) specimen infill pattern: Concentric.
Specimen post-processing:
100℃ annealing 8 hours.

Recommended printing conditions

Nozzle Temperature	300-320℃
Recommended Nozzle Diameter	0.4-1.0mm
Recommended build surface treatment	PEI Film or Coating with PVP glue
Build plate temperature	70-80℃
Raft separation distance	0.12-0.16mm
Cooling fan speed	Off
Print speed	30-120 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*:**

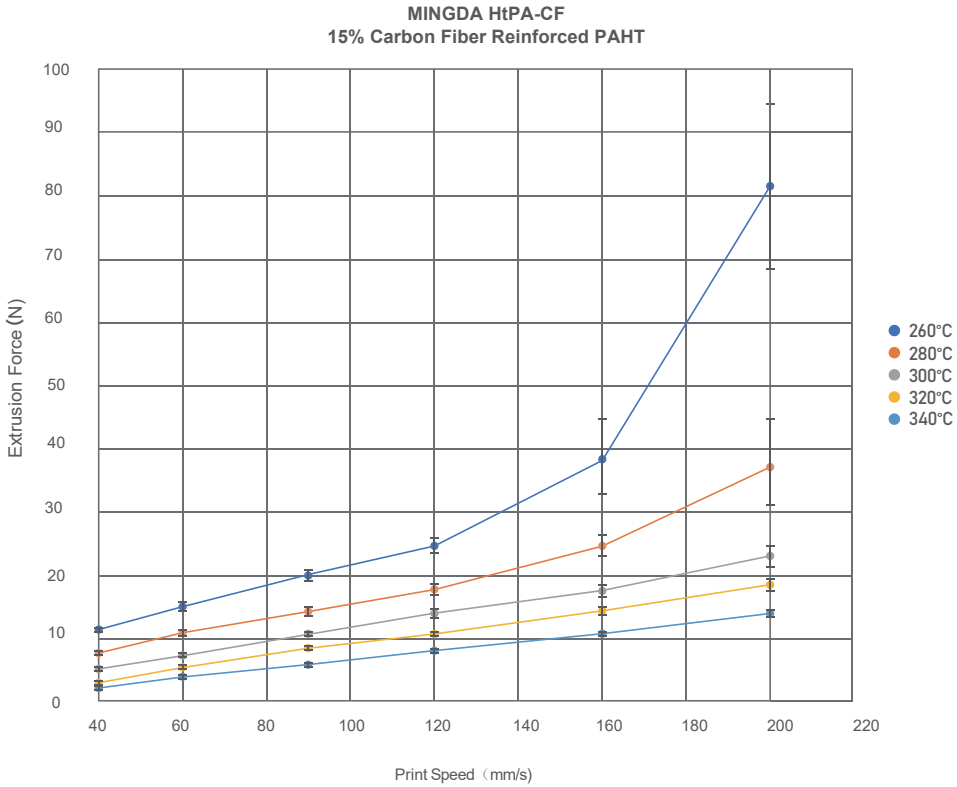
1.Nylon material is very easy to absorb moisture within the environment, and printing after absorbing moisture will result ozzing, extruding with bubbles and rough surface appearance, thus reducing print quality. It is recommended that put the filament into a dry box (humidity below 15%) immediately after opening the MINGDA HtPA-CF 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 80-100℃ for 4-6h to restore the printing quality of MINGDA HtPA-CF.

3.Hradened hardened 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 is completed, the printed part can be annealed to further improve the strength of print part. Annealing conditions: leave printing part in an oven at 80-100℃ for 4 to 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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