



MINGOA

## Technical Data Sheet

# WELCOME

[www.3dmingda.com](http://www.3dmingda.com)

# 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](mailto:support@3dmingda.com)



## MINGDA ABS-GF25

MINGDA ABS-GF25 is one type 3D printing ABS filament with co-extrusion skin-core structure and 25% glass fiber to improve its mechanical properties.

### Product Description

MINGDA ABS-GF25 is a glass fiber reinforced ABS material with a skin-core structure. The inner core is ABS reinforced with 25% chopped glass fiber, and the outer shell is unfilled ABS resin with high bond strength.

The polymer fluid is always in a laminar flow state in the throat and nozzle so the skin-core structure of filaments can be maintained even after being extruded through the nozzle. This skin-core structure not only contributes to the low shrinkage, warpage resistance and excellent mechanical properties which ordinary fiber-reinforced materials have, but stronger interlayer bonding performance for printed parts as well. It has fixed the defect that the ordinary fiber-reinforced material will lose the bonding strength between layers. Meanwhile, there is no floating fiber on the surface of the printed part, and the surface presents a bright matte texture.



# Product Advantages

- Co-extrusion 'skin-core' structure

This is a new generation of industrial 3D printing filament with a skin-core structure by using multi-layer co-extrusion technology. The outer 'skin' of the filament is a modified resin with high layer adhesion, and the inner core is reinforced resin containing high chopped fiber content. The co-extrusion skin-core technology has greatly increased fiber content while maintaining the toughness of the filament and thus improved the mechanical properties as well as heat resistance of printed parts.

- Excellent layer adhesion

MINGDA 3D printing filaments have taken advantage of the laminar flow of polymeric fluids during the extrusion process and maintain the stable skin-core structure even after the filament passes through the nozzle of the printer. Among many other fiber-reinforced filaments, Z-axis layer adhesion loss is always a common issue during printing. However, for MINGDA 3d printing filaments, the interlayer adhesion in Z-axis comes from the adhesion between the resin of the outer shell and this can completely avoid the layer adhesion loss caused by the fibers added. In addition, after being extruded through the nozzle, the inner core and outer layer of the filament are heated, melted and bonded together again. In this way, the adhesion between the core and skin can reach the optimal level and the fibers of the inner core can effectively withstand the force from outer layer resin in Z-axis. With these advantages, the Z-axis interlayer adhesion of the parts printed with MINGDA is further improved compared with those printed with pure resin filaments.

- Reducing nozzle abrasive wear

During the extrusion process, the MINGDA can greatly reduce the wear of the nozzle. The material that slides against the inner wall of the nozzle is made of pure resin, which greatly limits the contact between the reinforcing fibers and the nozzle. At the same time, the skin-core structured filament can also help to avoid contact between the reinforcing fibers of the filament and extruders or throats, which prolongs the service life of the entire extrusion parts of the 3D printer.

# Available

Colors	■ Natural ■ Grey ■ Black ■ Red ■ Green ■ Army Green ■ Yellow ■ Blue ■ Purple ■ Orange
Diameter	1.75 mm
Net weight	500g / 1kg

## Material Properties

Property	Testing method	Typical value
Density	ISO 1183	1.15 g/cm <sup>3</sup>
Glass transition temperature	ISO 11357	101 °C
Melt index	250°C, 2.16kg	4.2 g/10min
Vicat softening temperature	ISO 306	/ °C
Heat deflection temperature	ISO 75: Method A	93 °C (1.8MPa)
	ISO 75: Method B	97 °C (0.45MPa)
Tensile breaking strength (X-Y)		48.48 ± 0.61 MPa
Elongation at break (X-Y)	ISO 527	2.10 ± 0.10 %
Young's Modulus (X-Y)		3752.13 ± 68.39 MPa
Tensile breaking strength (Z)		30.48 ± 0.47 MPa
Young's Modulus (Z)	ISO 527	2843.56 ± 69.90 MPa
Elongation at break (Z)		2.20 ± 0.44 %
Bending strength (X-Y)		78.80 ± 1.26 MPa
Bending Modulus (X-Y)	ISO 178	3531.71 ± 75.79 MPa
Charpy impact strength	ISO 179	8.91 ± 0.63 KJ/m <sup>2</sup>

Specimens printed under the following conditions: Nozzle size 0.4mm, Nozzle temp 250°C, Bed temp 100°C, Print speed 50mm/s, Infill 100%, Infill angle ±45°

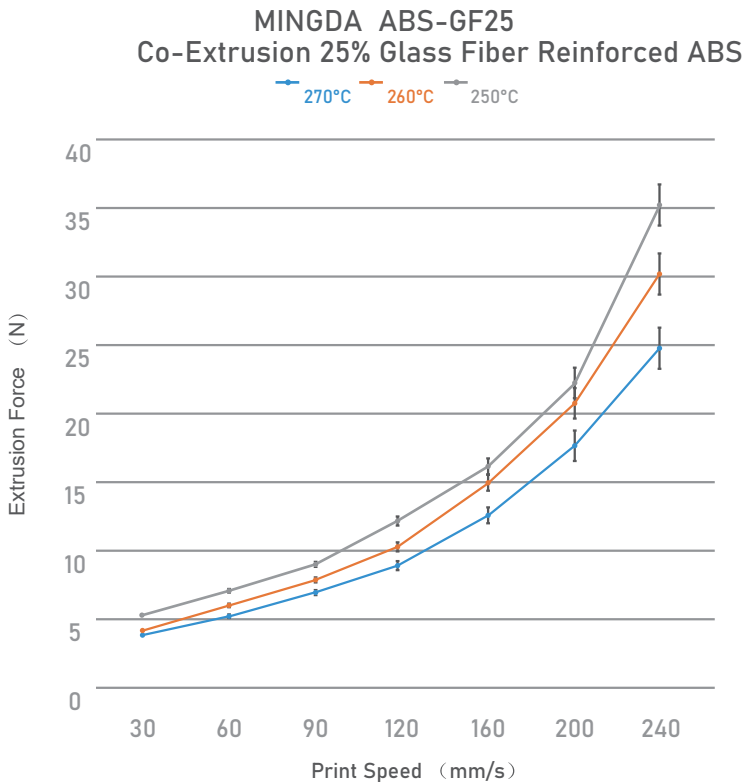
## Recommended printing conditions

Nozzle temperature	250-270°C
Recommended nozzle diameter	≥ 0.2 mm
Recommended build surface	Glass、PEI Film or PC Film
Build plate temperature	100-110 °C
Raft separation distance	0.18-0.2 mm
Cooling fan speed	0%-20%
Print speed	30-120 mm/s
Retraction distance	1-3 mm
Retraction speed	1800-3600 mm/min
Recommended support material	MINGDA S-Multi Quick-Remove Support Material

### Additional Suggestions

1. MINGDA ABS-GF25 has a higher fiber content compared with ordinary ABS-GF. This technology further improves the warping resistance and rigidity of ABS materials, so the chamber temperature can be properly reduced to achieve energy saving.
2. If the filament has been opened for a long time and problems such as air bubbles and stringing appear during the printing process, please dry the filament at 60-70°C for 4-6 hours.
3. It is recommended to place the printer in a well-ventilated environment when printing with ABS material.
4. MINGDA ABS-GF25 can maintain a core-skin structure when extruded from the nozzle.  
It is based on the mechanism that the melt polymer is in a laminar state when it flows stably. However, when the printing speed is too high, the melt flow state will become unstable, and the filaments extruded from the nozzle will no longer have the skin-core structure anymore, which can cause the rough surface of the printed part. When this phenomenon occurs, it is recommended to increase the printing temperature or reduce the extrusion speed.
5. It is recommended to use Phaetus hardened steel nozzles or nozzles with greater abrasion resistance, which can effectively improve the printing quality. The thickness of the heating block is recommended to be no less than 12mm.

# Extrusion Force vs Print Speed Test







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