Phaetus® FDM Printing Material
Technical Data Sheet

aeWorthy™ ABS-GF

10% Chopped glass fiber reinforced ABS-GF 3D Printing Material

10%短切玻璃纤维增强 ABS 3D 打印材料

Product Advantages

产品亮点

aeWorthy™ ABS-GF is an ABS-based filament specially developed for 3D printing and it is reinforced with 10% glass fiber. Compared with other ABS filaments, it has a much lower odor and excellent dimensional stability.

aeWorthy™ ABS-GF 是一款专门为 3D 打印开发的 ABS 类耗材，同时加入了 10%质量分数的玻璃纤维进行增强，与同类产品相比具有更低的气味性和优秀的尺寸稳定性。

Product Description

产品介绍

aeWorthy™ ABS-GF is a high-strength ABS-based 3D printing filament with outstanding mechanical properties. Due to the addition of chopped glass fibers, the tensile strength of its 3D printed parts in the XY axis direction can be close to 40MPa. The glass fiber has also improved its dimensional stability. Therefore, aeWorthy™ ABS-GF is ideal for printing functional prototypes, jigs and low-volume production parts.

The main raw material of aeWorthy™ ABS-GF is an ABS resin synthesized by continuous bulk polymerization technique. Thanks to this advanced production process, the residual amount of solvents and monomers used in the production process in the final ABS product is so low that the filament has a low odor during printing.

aeWorthy™ ABS-GF can be used together with aeSupport™ S-Multi Quick-Remove Support Material to solve the poor surface of complex model above supports.

aeWorthy™ ABS-GF 是一款高强度的 ABS 类 3D 打印耗材，具有突出的机械性能，其 3D 打印的制件在 XY 轴方向拉伸强度可接近 40MPa，由于短切玻纤的加入，其尺寸稳定性也有一定提升。适合用于功能性原型，夹具和小批量生产零件。

aeWorthy™ ABS-GF 选用的主要原料是一款由连续本体法合成的 ABS 树脂，得益于这种先进的生产工艺，生产过程中使用的溶剂和单体在最终 ABS 成品中的残留量极低，因此耗材在打印过程中具有较低的气味性。

aeWorthy™ ABS-GF 可以与 aeSupport™ S-Multi Quick-Remove Support Material 快速易剥离支撑材料配合使用，解决复杂模型支撑面成型效果差的难题。

Available

产品详情

Color： Black/ Red/ Yellow/ Orange/ Blue/ Grey/ Green/ Army Green/ Purple

Diameter： 1.75mm

Net Wet： 1KG, 2.5KG, 3KG

Material Properties

物性表

测试项目 Property	测试方法 Testing method	典型值 Typical value
密度 Density	ISO 1183	1.08 g/cm³
玻璃化转变温度 Glass transition temperature	ISO 11357	101°C
熔融指数 Melt index	250℃， 2.16kg	4 g/10min
维卡软温度 Vicat softening temperature	ISO 306	106°C
热变形温度 Determination of temperature	ISO 75： Method A ISO 75： Method B	92°C (1.8MPa) 96°C (0.45MPa)
拉伸断裂强度（X-Y） Tensile breaking strength	ISO 527	43.44±0.86 MPa
断裂伸长率（X-Y） Elongation at break		2.80±0.21 %
杨氏模量（X-Y） Young's Modulus		3213±82.78 MPa
拉伸断裂强度（Z） Tensile breaking strength	ISO 527	19.02±0.9 MPa
杨氏模量（Z） Young's Modulus		2331±130 MPa

断裂伸长率（Z） Elongation at break		1.28±0.32 %
弯曲强度（X-Y） Bending strength	ISO 178	66.21±0.42 MPa
弯曲模量（X-Y） Bending Modulus		2681±24.99 MPa
缺口冲击强度（X-Y） Charpy impact strength	ISO 179	8.17±0.66 KJ/㎡

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°

试样打印参数：喷嘴大小 0.4mm，喷嘴温度 250° C，底板加热 100° C，打印速度 50mm/s，填充率 100%，填充角度±45

Recommended printing conditions

建议打印参数

喷头温度 Nozzle temperature	250-270°C
建议喷嘴大小 Recommended nozzle diameter	≥0.2 mm
建议底板材质 Recommended build surface	玻璃、PEI 膜或 PC 膜 Glass、PEI Film or PC Film
底板温度 Build plate temperature	100-110°C
Raft 间距 Raft separation distance	0.16-0.18 mm
冷却风扇 Cooling fan speed	0-30%
打印速度 Print speed	30-120 mm/s
回抽距离 Retraction distance	1-5 mm
回抽速度 Retraction speed	1800-3600 mm/min

建议支撑材料 Recommended Support Material	aeSupport™ S-Multi Quick-Remove Support

Additional Suggestions：

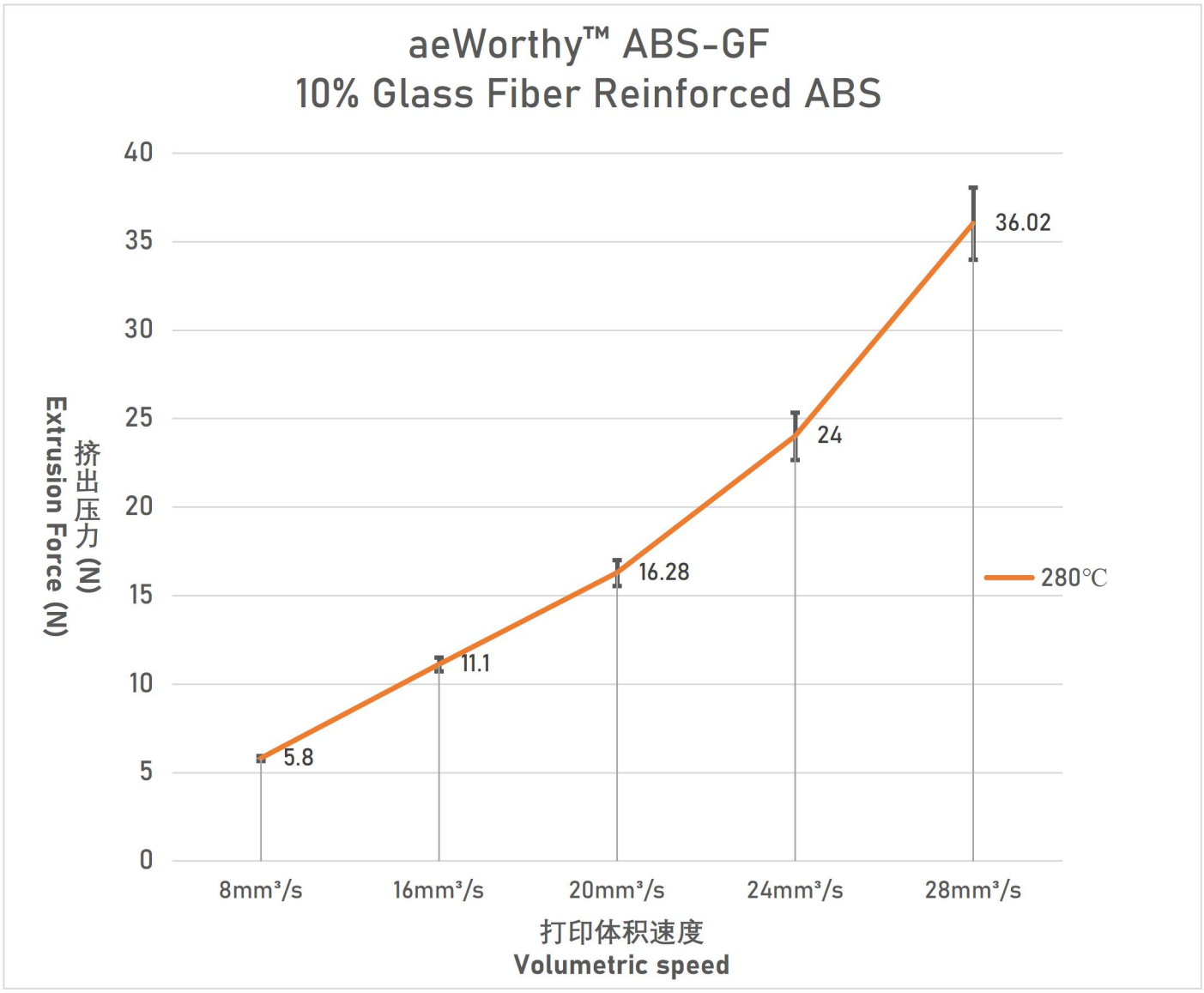
1. Compared with PLA, PETG and other materials, ABS materials need a higher chamber temperature to help release the residual stress during the printing process. Please keep the printer chamber closed during the printing process. It can effectively avoid printed parts from warping and cracking. If the device has a heated chamber, it is recommended to set the temperature of heated chamber between 60-80°C.
2. If the ABS-GF filament has been unpacked for a long time and the printing quality starts to degrade during the printing process, please dry the filament at 70-80°C for 4-6 hours before printing.
3. Although aeWorthy™ ABS-GF has much less odor compared with similar products, it is still recommended to place the printer in a well-ventilated area during printing.

其他建议：

1. ABS 类材料相比 PLA，PETG 等材料在打印过程中需要有较高的环境温度来帮助释放零件成型过程中的残余应力，在打印过程中请将打印机保持封闭状态，可以有效避免打印零件出现翘曲和开裂现象。如果设备具有加热腔功能，建议将加热腔温度设置在 60-80° C 之间。
2. 长期打开包装后的 ABS-GF 线材，如打印过程中发现打印质量下降，请将线材置于 70-80℃条件下干燥 4-6h。
3. 虽然 aeWorthy™ ABS-GF 与同类产品相比气味更小，但仍然建议在打印时将打印机放置在通风环境中。

Extrusion Force vs Print Volumetric Speed Test

挤出压力与打印流量速度测试



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

测试参数：12mm 长度铜制加热块，BMG 挤出机，Phaetus 硬化钢喷头，喷嘴大小 0.4mm，层高 0.2mm。