# Phaetus™ FDM Printing Material
# Technical Data Sheet

## aeWorthy™ PETG-CF

PETG based with chopped carbon fiber reinforced FFF material

短切碳纤维填充的 PETG 材料

## Product Description

## 产品介绍

aeWorthy™ PETG-CF is a PETG based with chopped carbon fiber reinforced FFF material that improves warping resistance, reduces size shrinkage during printing and improves overhang surface quality while giving the material a frosted surface texture.

aeWorthyTM PETG-CF 是一款短切碳纤维填充的 PETG 材料，提高了耗材的抗翘曲性能，减少了打印过程中的尺寸收缩，并使悬垂面表面质量得到提高，同时也赋予了材料磨砂的表面质感。

## Available

## 产品详情

Color： Black

Diameter: 1.75mm/ 2.85mm

Net Weight： 1kg， 3kg

## Material Properties

## 物性表

| 测试项目<br>Property | 测试方法<br>Test method | 典型值<br>Typical value |
|---|---|---|
| 密度<br>Density | ISO 1183 | 1.30 g/cm³ |
| 玻璃化转变温度<br>Glass transition temperature | ISO 11357 | 80°C |

| | | |
|---|---|---|
| 熔融指数<br>Melt index | 230℃，2.16kg | 4.5 g/10min |
| 热变形温度<br>Determination of temperature | ISO 75：Method A<br>ISO 75：Method B | 74°C (1.8MPa)<br>77°C (0.45MPa) |
| 拉伸屈服强度<br>Tensile Yield Strength | ISO 527 | 46.11±0.75 MPa |
| 屈服点伸长率<br>Elongation at Yield | | 3.56±0.05 % |
| 杨氏模量（X-Y）<br>Young's Modulus | | 2616±25 MPa |
| 拉伸断裂强度（X-Y）<br>Tensile breaking strength | | 41.70±0.98 MPa |
| 断裂伸长率（X-Y）<br>Elongation at break | | 5.53±0.22 % |
| 拉伸断裂强度（Z）<br>Tensile breaking strength | ISO 527 | 25.1±1.9 MPa |
| 断裂伸长率（Z）<br>Elongation at break | | 1.81±0.3 % |
| 杨氏模量（Z）<br>Young's Modulus | | 1856±41 MPa |
| 弯曲强度（X-Y）<br>Bending strength | ISO 178 | 66.80±1.32 MPa |
| 弯曲模量（X-Y）<br>Bending Modulus | | 2291±42 MPa |
| 缺口冲击强度（X-Y）<br>Charpy impact strength | ISO 179 | 5.11±1.01 KJ/㎡ |

**Specimens printed under the following conditions: Nozzle size 0.4mm，Nozzle temp 250°C, Bed temp 75°C, Print speed 40mm/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 75° C，打印速度 40mm/s，填充率 100%，填充角度±45°

**Recommended printing conditions**

**建议打印参数**

| | |
|---|---|
| 喷头温度<br>Nozzle temperature | 240-260°C |
| 建议喷嘴大小<br>Recommended nozzle diameter | 0.4-1.0mm |
| 建议底板材质<br>Recommended build surface | 玻璃、PEI 膜或涂抹 PVP 固体胶<br>Glass、PEI Film or Coating with PVP glue |
| 底板温度<br>Build plate temperature | 70-80°C |
| Raft 间距<br>Raft separation distance | 0.2-0.25mm |
| 冷却风扇<br>Cooling fan speed | ≤50% |
| 打印速度<br>Print speed | 30-120 mm/s |
| 回抽距离<br>Retraction distance | 2-5 mm |
| 回抽速度<br>Retraction speed | 1800-2400 mm/min |

**Additional Suggestions：**

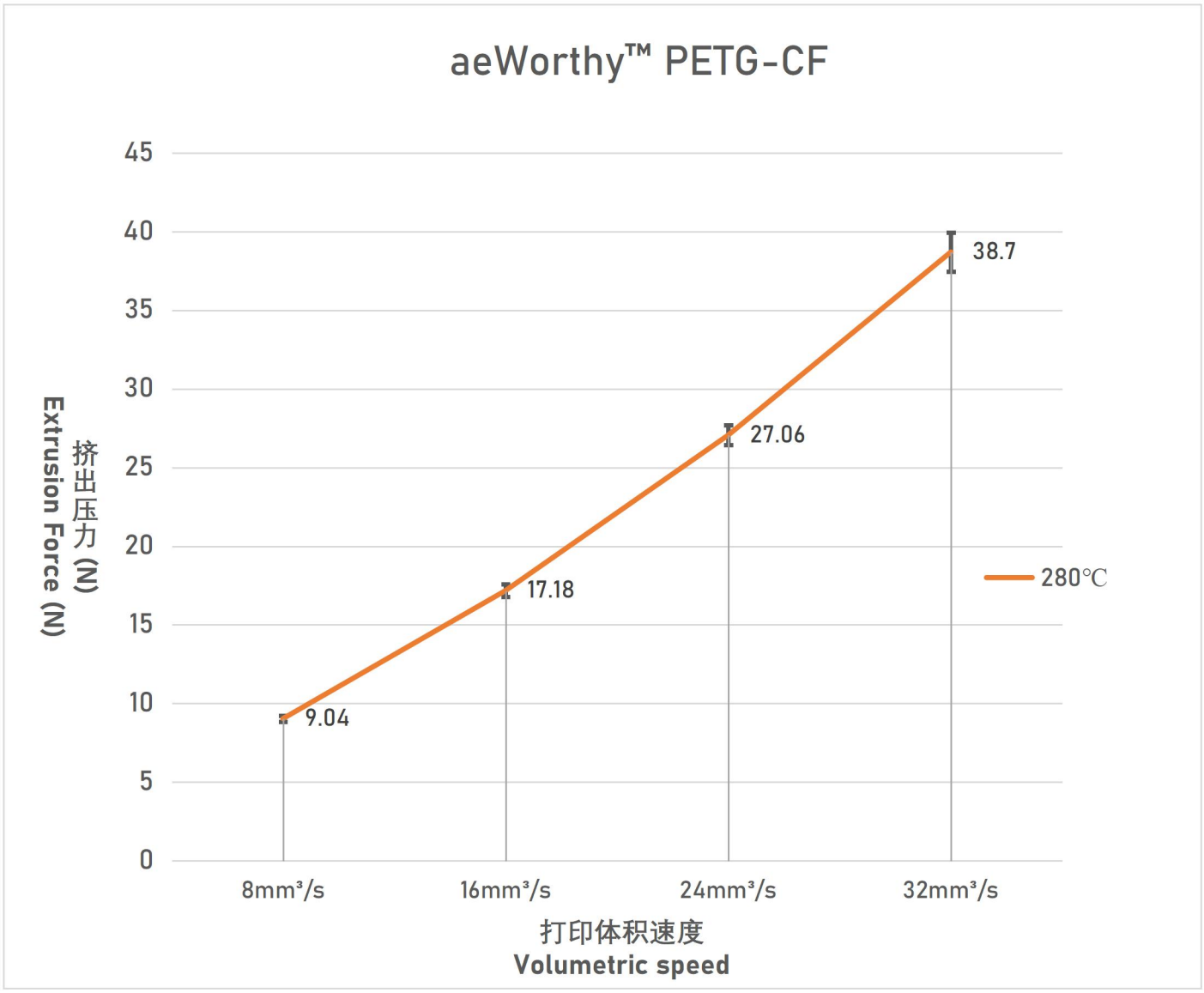
1. The wear resistance of copper nozzle is poor. It is recommended to use stainless steel or hardened steel nozzle to print, which can effectively improve the printing quality.
2. Please put filament into a dry box, which can effectively reduce the oozing, rough surface and so on.

**其他建议：**

1. 纯铜喷嘴耐磨性较差，建议选用不锈钢或硬化钢喷嘴打印，可以有效提高打印质量。
2. 在打印过程中将线材放入干燥盒内，可以有效减少拉丝，表面粗糙等现象。

**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。