

# CFsys<sup>™</sup> FDM Printing Material

## Technical Data Sheet

### CFsys<sup>™</sup> A ABS

低气味ABS 3D打印材料

Odorless ABS 3D Printing Material

### 产品介绍 Product Description

CFsys<sup>™</sup> A ABS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轴方向拉伸强度可达40MPa，Z轴方向打印层间粘结强度也有较强的提高。适用于功能性原型，夹具和小批量生产零件。

CFsys<sup>™</sup> A ABS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的具有较低的气味性。

CFsys<sup>™</sup> A ABS同时具有较低的水分敏感性，耗材开封后无需特殊的防潮措施，线材暴露在空气中打印也不会出现明显的拉丝现象。并且可以与CFsys<sup>™</sup> S-Multi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。

CFsys<sup>™</sup> A ABS is a high-strength ABS-based 3D printing filament with outstanding mechanical properties. The tensile strength of its 3D printed parts in the XY axis direction can be close to 40MPa. Therefore, CFsys<sup>™</sup> A ABS is ideal for printing functional prototypes, jigs and low-volume production parts.

The main raw material of CFsys<sup>™</sup> A ABS 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.

CFsys<sup>™</sup> A ABS can be used together with CFsys<sup>™</sup> S-Multi Quick-Remove Support Material to solve the poor surface of complex model above supports.

## 产品亮点 Product Advantages

- 低气味

CFsys™ A ABS是一款专门为3D打印开发的ABS类耗材,与同类产品相比具有更低的气味性和更强的机械性能。

- Low Odor

CFsys™ A ABS is an ABS-based filament specially developed for 3D printing. Compared with other ABS filaments, it has a much lower odor and excellent mechanical properties.

## 产品详情 Available

**颜色 Color:** 本色Natural/白色White/黑色Black/红色Red/橙色Orange/灰色Grey/黄色Yellow/紫色Purple/绿色Green/军绿色Army Green/ 蓝色Blue/棕色Brown/肤色Skin/银色Silver

**线径 Diameter:** 1.75mm

**净重 Net Wet:** 1kg

## 物性表 Material Properties

测试项目 Property	测试方法 Test Method	典型值 Typical value
密度 Density	ISO 1183	1.05 g/cm <sup>3</sup>
玻璃化转变温度 Glass transition temperature	ISO 11357	101°C
熔融指数 Melt index	250°C, 2.16kg	7.8 g/10min
维卡软化点 Vicat softening temperature	ISO 306	103°C
热变形温度 Determination of temperature	ISO 75: Method A ISO 75: Method B	86°C (1.8MPa) 92°C (0.45MPa)
拉伸屈服强度 Tensile yield strength (X-Y)	ISO 527	38.96±0.33 MPa
拉伸屈服伸长率 Tensile Yield elongation (X-Y)		2.32±0.02 %
拉伸模量 Young's Modulus (X-Y)		2384.22±20.0 MPa
拉伸断裂强度 Tensile breaking strength (X-Y)		33.36±0.53 MPa
断裂伸长率 Elongation at break (X-Y)		5.77±0.84 %
拉伸强度 Tensile breaking strength (Z)	ISO 527 (无保温环境/开放式打印机) (Without chamber temp)	26.16±1.73 MPa
拉伸模量 Young's Modulus (Z)		1967.57±119.93 MPa
断裂伸长率 Elongation at break (Z)		1.62±0.14 %
拉伸强度 Tensile breaking strength (Z)	ISO 527 (密闭打印机, 腔体温度约55°C) (Chamber Temp: 55°C)	32.25±0.72 MPa
拉伸模量 Young's Modulus (Z)		2201.74±74.91 MPa
断裂伸长率 Elongation at break (Z)		2.70±0.59 %
弯曲强度 Bending strength (X-Y)	ISO 178	67.81±0.54 MPa
弯曲模量 Bending Modulus (X-Y)		2400±79.69 MPa
缺口冲击强度 Charpy impact strength (X-Y)	ISO 179	20.03±1.32 KJ/m <sup>2</sup>

试样打印参数: 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°

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

## 建议打印参数 Recommended printing conditions

喷头温度 Nozzle Temperature	240-260°C
建议喷嘴大小 Recommended Nozzle Diameter	≥0.2 mm
建议底板材质 Recommended build surface treatment	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	Off-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	CFSYS™ S-Multi Quick-Remove Support

### 其他建议:

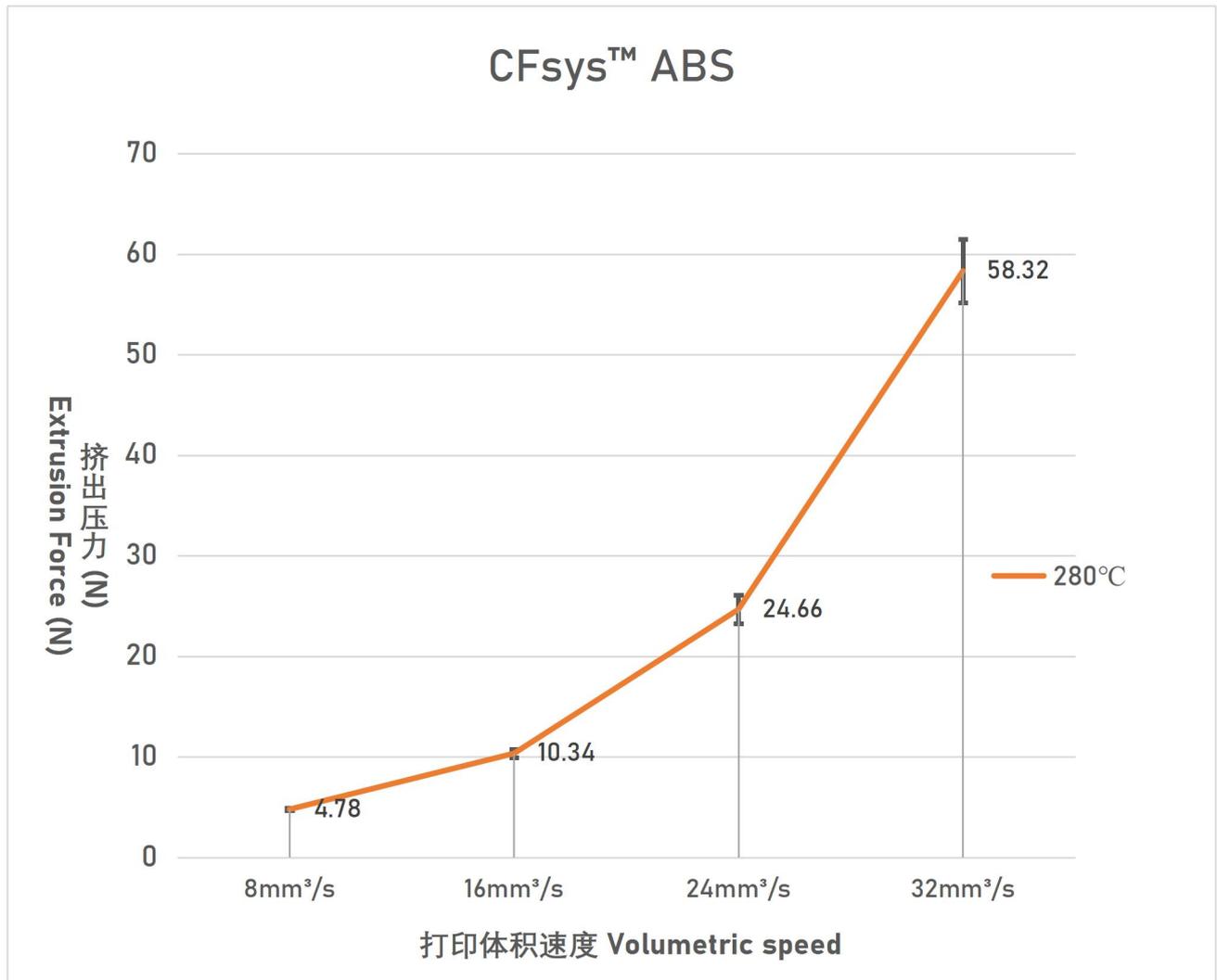
1. ABS材料相比PLA, PETG等材料在打印过程中需要有较高的环境温度来帮助释放零件成型过程中的残余应力, 在打印过程中请将打印机保持封闭状态, 可以有效避免打印零件出现翘曲和开裂现象。如果设备具有加热腔功能, 建议将加热腔温度设置在60-80°C之间。
2. 长期打开包装后的ABS线材, 如打印过程中发现打印质量下降, 请将线材置于70-80°C条件下干燥4-6h。
3. 虽然CFSYS™ ABS与同类产品相比气味更小, 但仍然建议在打印时将打印机放置在通风环境中。

### 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 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 CFSYS™ ABS has much less odor compared with similar products, it is still recommended to place the printer in a well-ventilated area during printing.

### 挤出压力与打印流量速度测试

### Extrusion Force vs Print Volumetric Speed Test



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

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