ePLA-LW (light weight PLA)

Technical Data Sheet

A material specially developed for aeromodelling. The interlayer bonding is stable, and the foaming rate and strength can be controlled by adjusting the printing temperature. Using active foaming technology to achieve lightweight, low-density PLA parts, the foaming volume ratio is 220%, and the density is as low as 0.54g/cm3. Foaming makes the layered pattern almost invisible, and the surface of the printed item is matte and delicate. Under the same model and at the same speed, the lightweight PLA enables the model aircraft to have a lighter wing load and a lower stall speed, which can greatly improve the performance of the model aircraft.

Material Status	Mass Production
Characteristics	• Density as low as 0.54g/cm3 • Foaming volume ratio 220% • Free adjustment of strength and foaming ratio • Excellent matte surface effect • Good interlayer adhesion • Easy to paint • Excellent printability
Applications	• Model airplane • Cosplay • Ship model
Form	• Filament
Processing method	• 3D Print, FDM Print

	Testing method	Typical value
Physical Properties		
Density	GB/T 1033	1.2 g/cm³
Melt Flow Index	GB/T 3682	8.1 (190°C/2.16kg)
Mechanical Properties		
Tensile Strength	GB/T 1040	32.2 MPa
Elongation at Break	GB/T 1040	68.9 %
Flexural Strength	GB/T 9341	41.31 MPa
Flexural Modulus	GB/T 9341	1701 MPa
IZOD Impact Strength	GB/T 1843	8.58 (kJ/㎡)
Thermal Properties		
Heat distortion Temperature	GB/T 1634	53 (°C,0.45MPa)
Continuous Service Temperature	IEC 60216	N/A
Maximum (short term) Use Temperature		N/A
Electrical Properties		
Insulation Resistance	DIN IEC 60167	N/A
Surface Resistance	DIN IEC 60093	N/A

Wuhan University Building A403-I,A901,No.6 Yuexing 2 Road,Nanshan District,Shenzhen,Guangdong

China

Tel +86 755 86581960
fax +86 755 26031982
Email: bright@brightcn.net

www.esun3d.net

Recommended printing parameters

Extruder Temperature	190-270°C
Build Platform Temperature	45-60°C
Fan Speed	100%
Printing Speed	40 - 100mm/s

Based on 0.4 mm nozzle and Simplify 3D v.4.1.2. Printing conditions may vary with different nozzle diameters

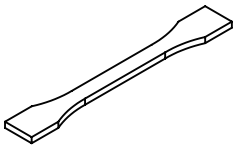
Drying Recommendations

N/A

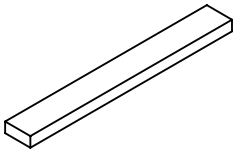
Notes

1. Note that the first layer speed setting is consistent with the actual printing speed, set to 100% of the actual printing speed, turn off the first layer, small area printing speed reduction function, the first layer extrusion rate is consistent with the actual foaming extrusion rate, such as 270 degrees Set to 45% of the first layer extrusion rate; if the bottom plate adhesion is too strong, you can set the bottom valve when printing.
2. Pay attention to the maximum operating temperature of the printer. Most Teflon tube printers cannot be operated for a long time above 250°C. Long-term printing above this temperature may cause blockages. If the temperature exceeds 250°C, high temperature printers such as metal hoses are required for printing.
3. Yellowing of printed parts after high temperature foaming is a normal phenomenon, and lowering the printing temperature can alleviate it.
4. Since the lightweight PLA foams continuously in the melting cavity of the high-temperature nozzle, the retraction basically does not work. It is normal to print and draw the filament. It is recommended to print the vase mode airplane model drawings to reduce the effect of the drawing on the model.
5. Foaming ratio is related to temperature, printing speed, nozzle melting cavity size, pay attention to compare model design wall thickness according to your own printing situation, adjust extrusion rate, temperature, speed and other parameters.

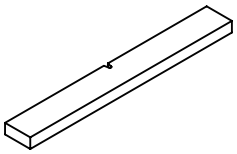
Mechanical Properties



Tensile testing specimen GB/T 1040



Flexural testing specimen GB/T 9341



Impact testing specimen GB/T 1043

The physical properties, mechanical properties, thermal properties, and electrical properties of the filament are obtained based on the injection molding spline test.

Print test condition：

Extruder Temperature	190-280°C
Build Platform Temperature	45°C
Outline/Perimeter Shells	4
Top/Bottom Layers	4
Infill Percentage	20%
Fan speed	100%
Printing speed	40mm/s

Based on 0.4 mm nozzle and Simplify 3D v.4.1.2.

Notice

Wuhan University Building A403-I,A901,No.6 Yuexing 2 Road,Nanshan District,Shenzhen,Guangdong

China

Tel +86 755 86581960
fax +86 755 26031982
Email: bright@brightcn.net

www.esun3d.net