

# MINGDA FDM Printing Material

## Technical Data Sheet

### MINGDA PLA-Aero

A foamed PLA 3D printing consumable

### Product Highlights

**MINGDA PLA-Aero** is a PLA filament that is foamed during the printing process, with a maximum foaming ratio of 200%

### Product Description

**MINGDA PLA-Aero** is specially developed for aircraft model, ship model, UAV and other fields, providing a lightweight 3D printing consumable. PLA-Aero controls the foaming ratio of the material by adjusting the temperature during the printing process, so that the density of the consumables extruded by the nozzle can be adjusted within a certain range, reducing the weight of the model, and in the best case, it can be reduced to 50% of the ordinary PLA printing model; The matte texture of the printed surface can also reduce the layering phenomenon to a certain extent.

### Product Details

**Color: White / Red/ Yellow/ Grey**

**Wire diameter: 1.75mm**

**Net weight: 1KG**

### Consumables (unfoamed) physical property table

Test items	Test method	Typical value
Density	ISO 1183	1.1g/cm <sup>3</sup>
Glass transition temperature	ISO 11357	60°C
Melt Index	200°C, 2.16kg	10g/10min
Vicat Soft Temperature	ISO 306	65°C

### Mechanical properties after printing

Tensile yield strength (X-Y)	ISO 527	10.37±0.08MPa
Elongation at Yield (X-Y)		2.06±0.04%
Tensile breaking strength (X-Y)		10.76±0.19MPa
Elongation at break (X-Y)		16.87±2.11%
Young's modulus (X-Y)		893±18MPa
Tensile breaking strength (Z)	ISO 527	3.57±0.24MPa
Young's modulus (Z)		254±23MPa
Elongation at break (Z)		10.91±1.11MPa
Notched Impact Strength (X-Y)	ISO 179	2.64±0.19KJ/m <sup>2</sup>

Specimens printed under the following conditions: Nozzle size 0.4mm, Nozzle temp 230°C, Bed temp 50°C, Print speed 45mm/s, Infill 100%, Infill angle ±45°

## Recommended printing parameters

Nozzle temperature	180-250°C
optimum foaming temperature	220-230°C
Recommended nozzle size	≥0.4 mm
Recommended base material	Glass, PEI film, PC film or apply PVP solid glue
Bottom plate temperature	50°C
Raft Spacing	0.2mm
Cooling fan	turn on
Printing speed	30-90 mm/s

### Other suggestion:

1. Since PLA-Aero adopts the "on-line foaming" technology, the consumables will continue to expand and extrude the nozzle after being heated inside the nozzle during the printing process, resulting in unavoidable wire drawing. It is recommended to turn off the retraction setting.

## Temperature-expansion ratio relationship table





