



PolySupport™ for PA12

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# Printing with PolySupport™ for PA12

## 1) Prepare the gcode

Load the stl file in your favorite slicer.

Enter the correct settings for PolySupport™ for PA12;

Property	Value
Nozzle temperature	270°C - 300°C
Bed temperature	50°C - 80°C
Nozzle speed	30mm/s - 60mm/s
Cooling fan	ON
Z gap	0mm
X-Y gap	0.5mm

Before we discuss the printing settings for **PolySupport™ for PA12**, it is important that we identify the two different types of support structures. Generally speaking, we classify support structures into two categories: open support and closed support.

**Open support:** Support that does not enclose any portion of the model. Open support can usually be removed in a single piece.

**Closed support:** Support that encloses some portion of the model. In this case the support must be broken apart and separated in order to be removed from the finished part.

### **Open support**

- Support density: Since open support can be removed in a single piece, we recommend a high support density (40% or more) with 2 layers of solid interface to obtain better surface finish.
- Threshold overhang angle: Most 3D printers can print overhang angles up to  $45^\circ$ , so it is recommended that the threshold overhang angle be set at  $45^\circ$ .
- Support infill pattern: For open support, since the support structure can be removed relatively easily, perpendicular infill is generally recommended.

### **Closed support**

- Support density: It is recommended that a support density in the range of 15% - 30% is used for closed support for easy removal.
- Threshold overhang angle: similar with open support, a threshold overhang angle of  $45^\circ$  is generally recommended.
- Support infill pattern : It is recommended that the infill always be parallel for closed support to better break it away.

Note: A dense support interface between the model and the support can also be used to improve the surface quality of the supported face. We recommended 2 dense layers at 90% infill.

# PolySupport™ for PA12

**PolySupport™ for PA12** is a break away support for Polymaker PA12 and other long-chain nylon based filaments. It has a perfect interface with PA12 and other long-chain nylon based material, strong enough to support it and easily removable by hand.

Available colors: 

## Physical properties

Property	Testing method	Typical value
Density	ASTM D792 (ISO 1183, GB/T 1033)	1.29 (g/cm <sup>3</sup> at 23 °C)
Melt index	260 °C, 2.16 kg	12 (g/10 min)

## Mechanical properties

Material	Combination	
PLA based material from Polymaker's portfolio	NA	++ : support the model very well
PETG based material from Polymaker's portfolio	NA	+ : generally support the model depending on its geometry
ABS based material from Polymaker's portfolio	NA	- : generally don't support the model depending on its geometry
PC based material from Polymaker's portfolio	NA	- - : do not support the model
PVB based material from Polymaker's portfolio	NA	
TPU based material from Polymaker's portfolio	NA	
Short-chain Nylon based material from Polymaker's portfolio	NA	
Long-chain Nylon based material from Polymaker's portfolio	++	

### Drying settings

80 °C for 8h

### Diameter accuracy (2.85/1.75 mm):

70%	is within	+/- 0.01
97%	is within	+/- 0.02
99%	is within	+/- 0.03
99.9%	is within	+/- 0.04

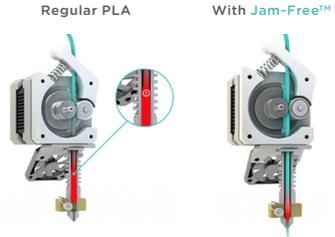
### Weight accuracy:

600g	+/-	20g
750g	+/-	20g
1000g	+/-	30g
3000g	+/-	60g

# Technologies

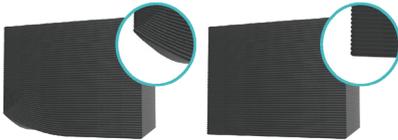
## JAM-FREE™

Jam-Free™ technology improves the heat stability of Polymaker's PLA filaments with softening temperatures over 140 °C. As a result, Polymaker's PLA filaments show minimal softening in the "cold end" and can melt rapidly once entering the heating zone, leading to excellent printing quality with zero risk of nozzle jams.



Regular Nylon

With Warp-Free™



## WARP-FREE™

Warp-Free™ technology enables the production of Nylon-based filaments that can be 3D printed with excellent dimensional stability and near-zero warpage. This is achieved by the fine control of micro-structure and crystallization behavior of Nylon, which enables the material to fully release the internal stress before solidification.

Without Ash-Free™

Ash content: 0.5%



With Ash-Free™

Ash content: 0.003%

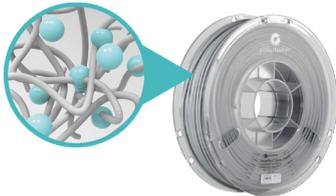


## ASH-FREE™

Ash-Free™ technology allows Polymaker's filament which has been designed for investment casting to burn off cleanly without any residue, enabling defect-free metal parts. 3D printing has been used to produce investment casting patterns as it cuts down both the cost and lead time for small-volume production runs.

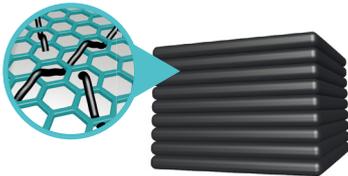
## LAYER-FREE™

Layer-Free™ technology involves exposing a 3D printed part to an aerosol of micro-sized alcohol droplets, generated by a rapidly vibrating, perforated membrane called the nebulizer. The aerosol will then be adsorbed by the surface of the 3D printed part and render it smooth and layer-free.



## STABILIZED FOAMING™

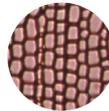
Stabilized Foaming™ technology is used to produce foamed filaments, whose foam structure can survive the printing process and be inherited by the printed parts. This enables light weight 3D printed parts with unprecedented surface finish.



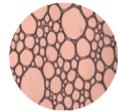
## NANO-REINFORCEMENT

Nano-reinforcement technology is applied to produce filaments with excellent mechanical properties and printing quality. It dramatically improves the toughness of the material by increasing its impact resistance.

Wood



Stabilized Foaming™



## FIBER ADHESION™

Fiber Adhesion™ technology improves the layer adhesion of fiber reinforced materials, by optimizing the surface chemistry of the fibers to achieve better dispersion and bonding to the matrix. This results in better strength along the Z-axis and reduced mechanical anisotropy.

# About Polymaker

## Our Values



Customer  
Oriented



Responsible



Entrepreneurial



Embracing  
Innovation

## Mission

Polymaker is committed to lowering the barriers to innovation and manufacturing, by continuously developing advanced 3D printing material technologies for industries and consumers.

# Contact us

For any inquiries or technical support,  
please contact: [support@polymaker.com](mailto:support@polymaker.com)

The information provided in this document is intended to serve as basic guidelines on how particular product can be used. Users can adjust the printing conditions based on their needs and actual situations. It is normal for the product to be used outside of the recommended ranges of conditions. Each user is responsible for determining the safety, lawfulness, technical suitability, and disposal/recycling practices of Polymaker materials for the intended application. Polymaker makes no warranty of any kind, unless announced separately, to the fitness for any particular use or application. Polymaker shall not be made liable for any damage, injury or loss induced from the use of Polymaker materials in any particular application

