

PolySupport™

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[www.polymaker.com](http://www.polymaker.com)

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# Printing with PolySupport™

## 1) Prepare the gcode

Download the MyFirstPrint.stl on [www.polymaker.com](http://www.polymaker.com)

Load the stl file in your favorite slicer.

**Enter the correct settings for PolySupport™;**

Property	Value
Nozzle temperature	220°C - 230°C
Bed temperature	25°C - 60°C
Nozzle speed	20mm/s - 40mm/s
Cooling fan	ON
Z gap	0.1mm
X-Y gap	0.5mm

Before we discuss the printing settings for **PolySupport™**, 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.

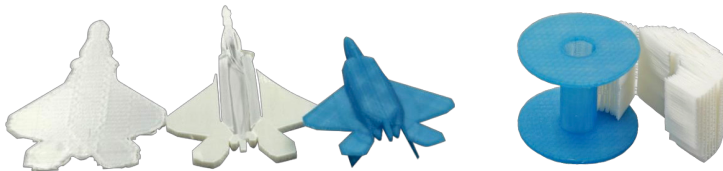
**Closed support:** Support that encloses some portion of the model. In this case the support must be broken apart and separated in order to be removed from the finished part.

## 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™

**PolySupport™** is a break away support for Polymaker PLA based filaments. It has a perfect interface with PLA, 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)	1.22 (g/cm <sup>3</sup> at 21.5 °C)
Melt Index	220 °C, 2.16 kg	3-6 (g/10 min)

## Mechanical properties

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

### Drying settings

80 °C for 8h

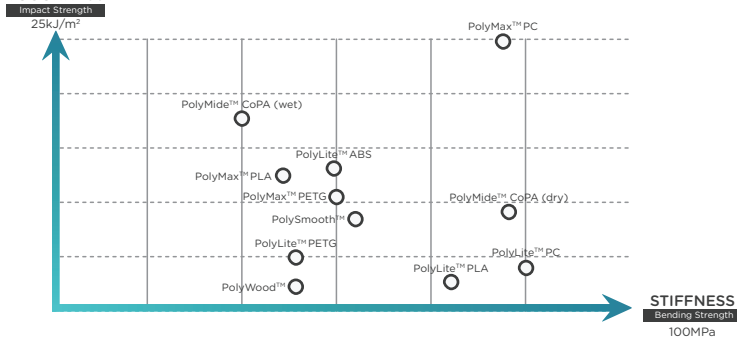
### Diameter accuracy (2.85/1.75 mm):

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

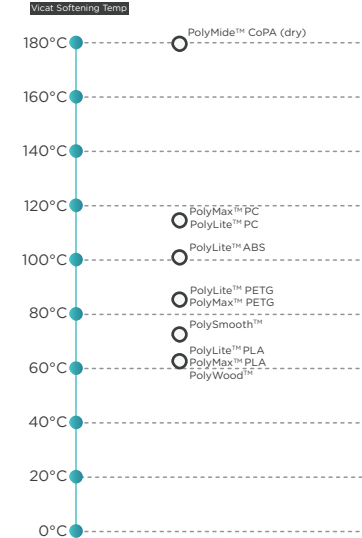
## TOUGHNESS



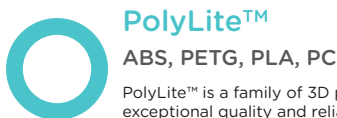
## STRENGTH



## HEAT RESISTANCE



# Product Families



## PolyLite™

ABS, PETG, PLA, PC

PolyLite™ is a family of 3D printing filaments made with the best raw materials to deliver exceptional quality and reliability. PolyLite™ covers the most popular 3D printing materials to meet your everyday needs in design and prototyping.



## PolyMax™

PLA, PC, PETG

The PolyMax™ is a family of advanced 3D printing filaments produced with Polymaker's Nano-reinforcement technology, to deliver exceptional mechanical properties and printing quality.



## PolyFlex™

TPU95

PolyFlex™ is a family of high-quality flexible materials. It provides the perfect solution for applications where high flexibility and durability are required.





## PolyMide™

### CoPA

PolyMide™ is a family of Nylon/polyamide based filaments. Produced with Polymaker's Warp-Free™ technology, PolyMide™ filaments deliver engineering properties intrinsic to Nylon and ease of printing.



## PolyDissolve™

### S1

PolyDissolve™ is a family of dissolvable support filaments. This family offers support solution for our portfolio of filaments. It enables a greater design freedom.



## Specialty

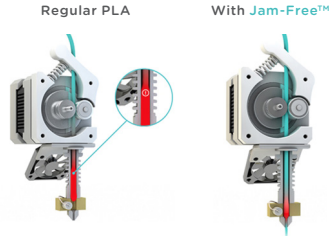
### PolyWood™, PolySupport™, PolySmooth™, PolyCast™

The Specialty family provides unique filaments from Polymaker to unlock new 3D printing applications.

# Technologies

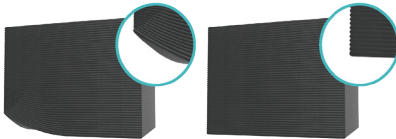
## JAM-FREE™

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%

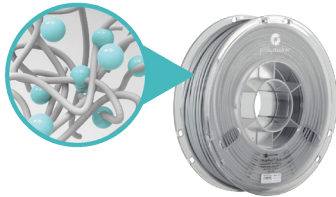


## ASH-FREE™

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.



Rough surface



With Layer-Free™



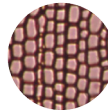
## NANO-REINFORCEMENT

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.

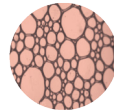
## STABILIZED FOAMING™

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.

Wood



Stabilized Foaming™



# Hardware

Polymaker offers 3D printing accessories to optimize the user experience with their filaments.

## PolyBox™

PolyBox™ is a dry storage box designed to provide the optimum environment for 3D printing filaments. The PolyBox™ is compatible with all 3D printers and can house two 1kg spools or one 3kg spool.



## Polysher™

The Polysher™ is a desktop post processing unit designed to remove layer lines from PolySmooth™ and PolyCast™ prints. The Polysher™ uses Polymaker's Layer-Free™ technology to create a fine mist of alcohol which evenly smooths the model.



# About Polymaker

## Who We Are?

Polymaker is an international team passionate about 3D printing. We produce the very best 3D printing materials by controlling every stage of production. With a diverse portfolio of materials ranging from high performance plastics to unique aesthetic solutions, Polymaker will continue to add cutting edge materials to its ever-growing portfolio.

## Mission & Vision

Our mission is to create the best in class when it comes to 3D printing materials. We believe that materials are the enabling factor which will realise 3D printing as a final production tool. Our high performance materials offer solutions that will develop 3D printing into a mainstream manufacturing method.

## Locations

Polymaker is a global company head-quartered in Shanghai. With distribution centers located in North America, Europe & Asia, our materials have penetrated every corner of the globe. Our worldwide presence is closely managed through our relationships with our local distributors and resellers. Polymaker is a regular exhibitor at 3D printing exhibitions on 4 continents.

## Research & Development

At the core of Polymaker is our research & development laboratory, this is where all our materials are formulated and fine-tuned from the ground up to create the best in class 3D printing materials. Our precision testing equipment combines the latest advancements in technology to ensure we are ahead of the game.

## Quality Control

Polymaker implements a rigorous quality control check on all materials. Utilizing our state of the art technology, we measure both the roundness and diameter of our filaments many thousand times a second, monitoring our processes with strict tolerances. We also have a number of processes and technologies that set apart Polymaker materials.

# 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

