

3D

,

3D

PRINT

,

.

가

,

.

가

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가

,

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II 3D

III

이

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IV

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본 자료의 일부는 forum.simplify3d.com 및 [jinschoi.github.io/ simplify3d-docs](https://github.com/jinschoi/simplify3d-docs) 에서
번역 및 재구성하였음을 밝

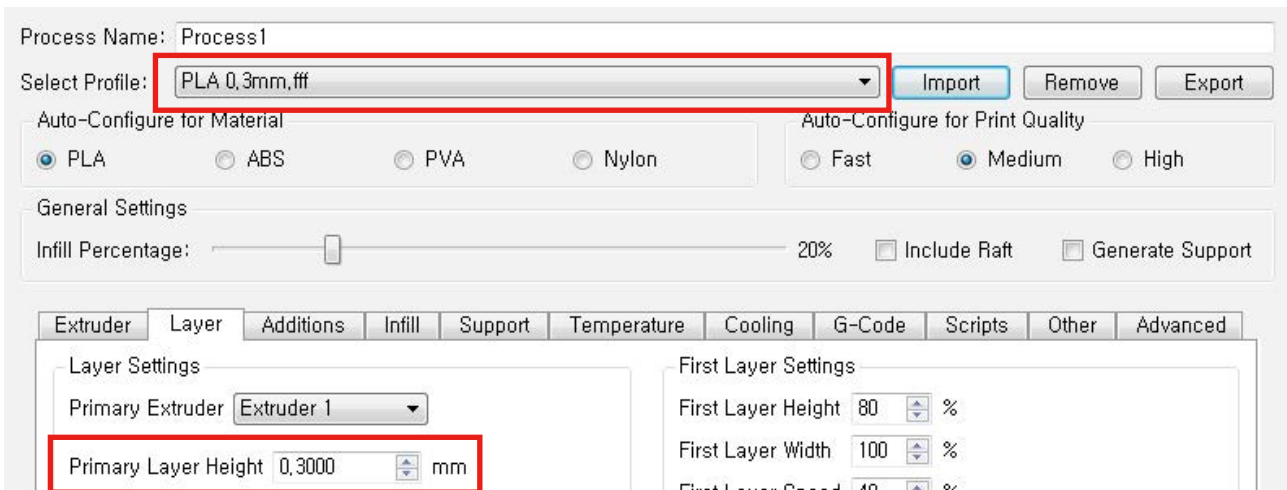
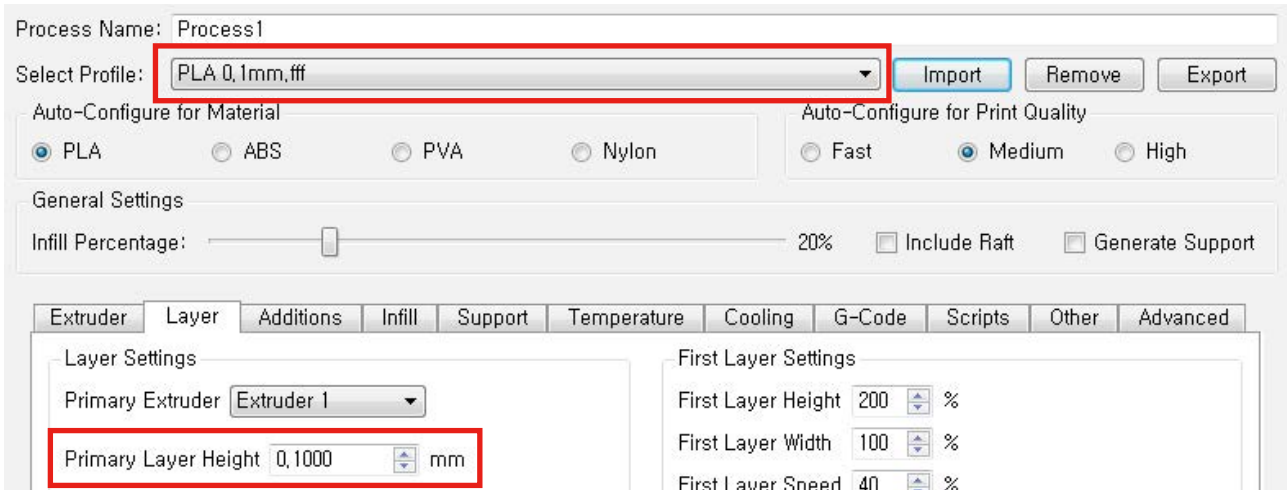
1.

SD

(fff) Simplify3D

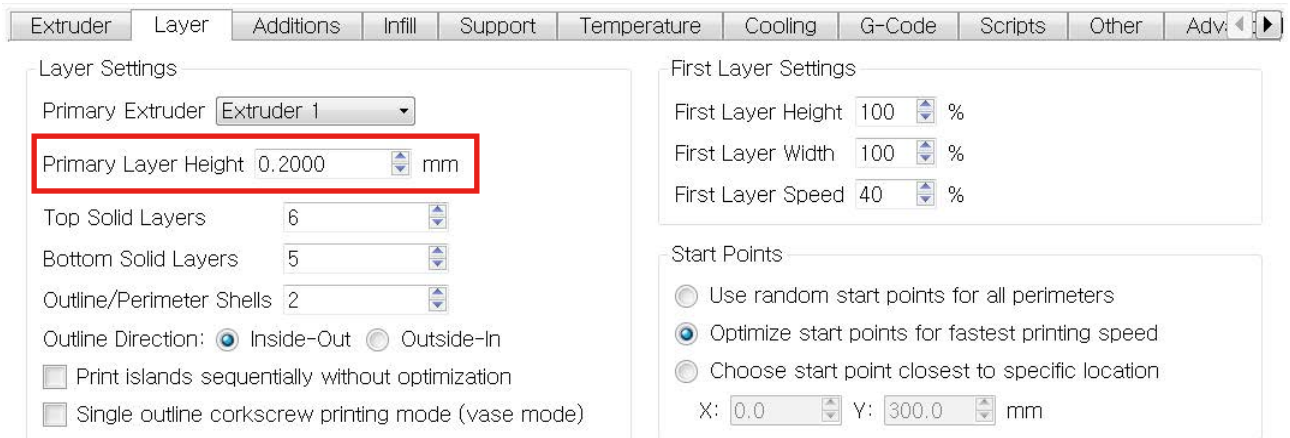
(import)

. 0.1 / 0.2 / 0.3mm



| | | | |
|--|------------|------------|------------|
| | | | |
| | 0.3mm | 0.2mm | 0.1mm |
| | 7200mm/min | 4800mm/min | 3600mm/min |
| | 20% | 20% | 20% |

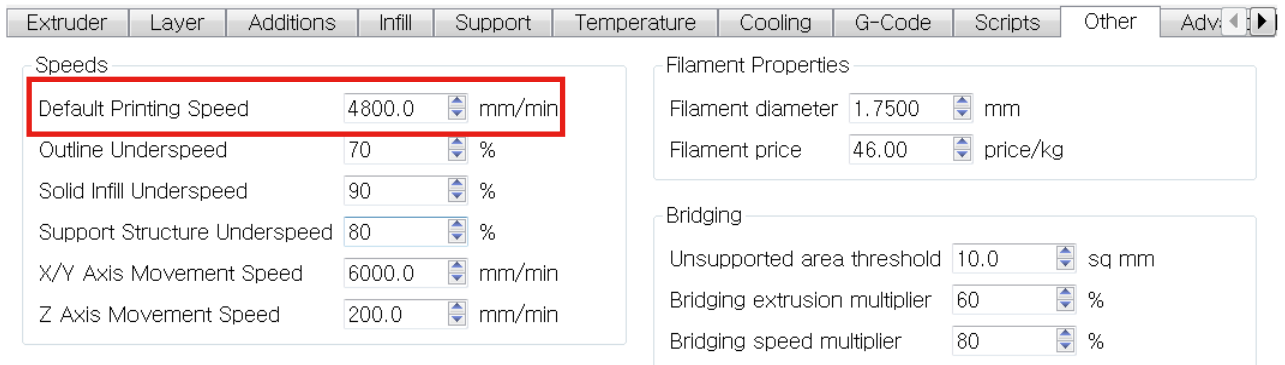
1)



FFF 3D

가

2)



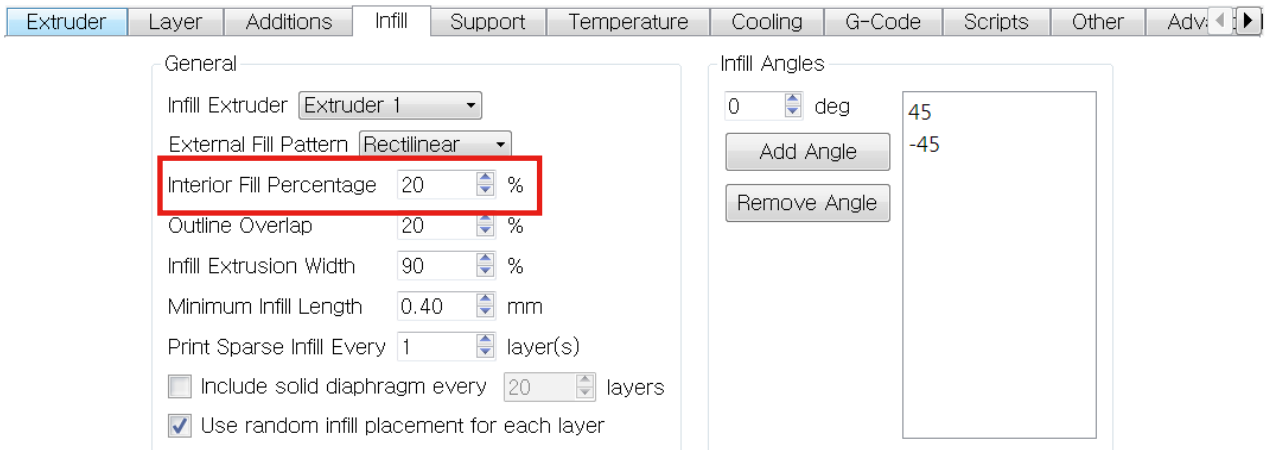
가

가

(mm/min.),

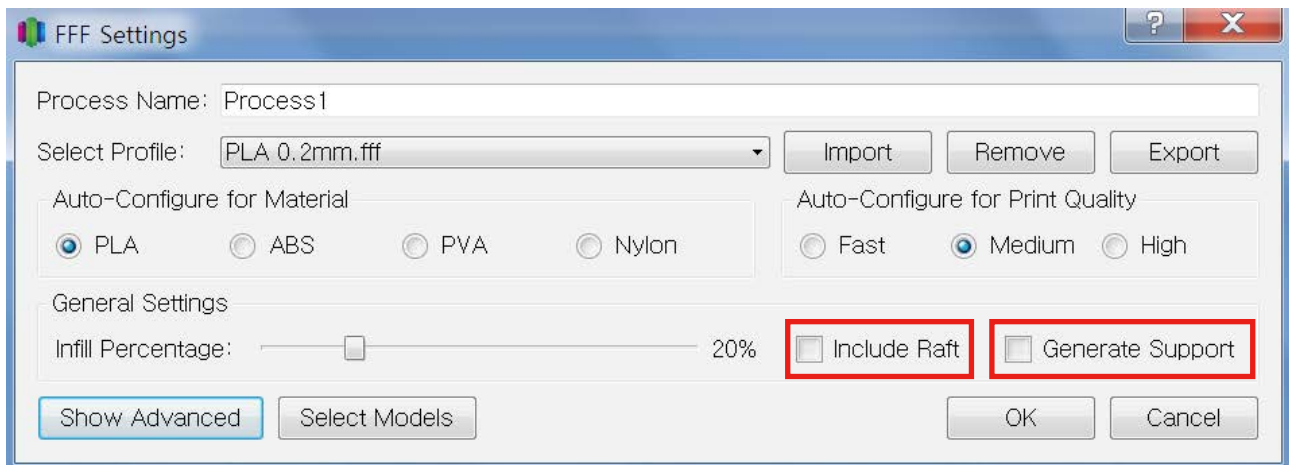
. 1

3)



ABS , 100 , 0 , PLA/
가 , 100 , 0 , PLA/
15-30%
10-15%

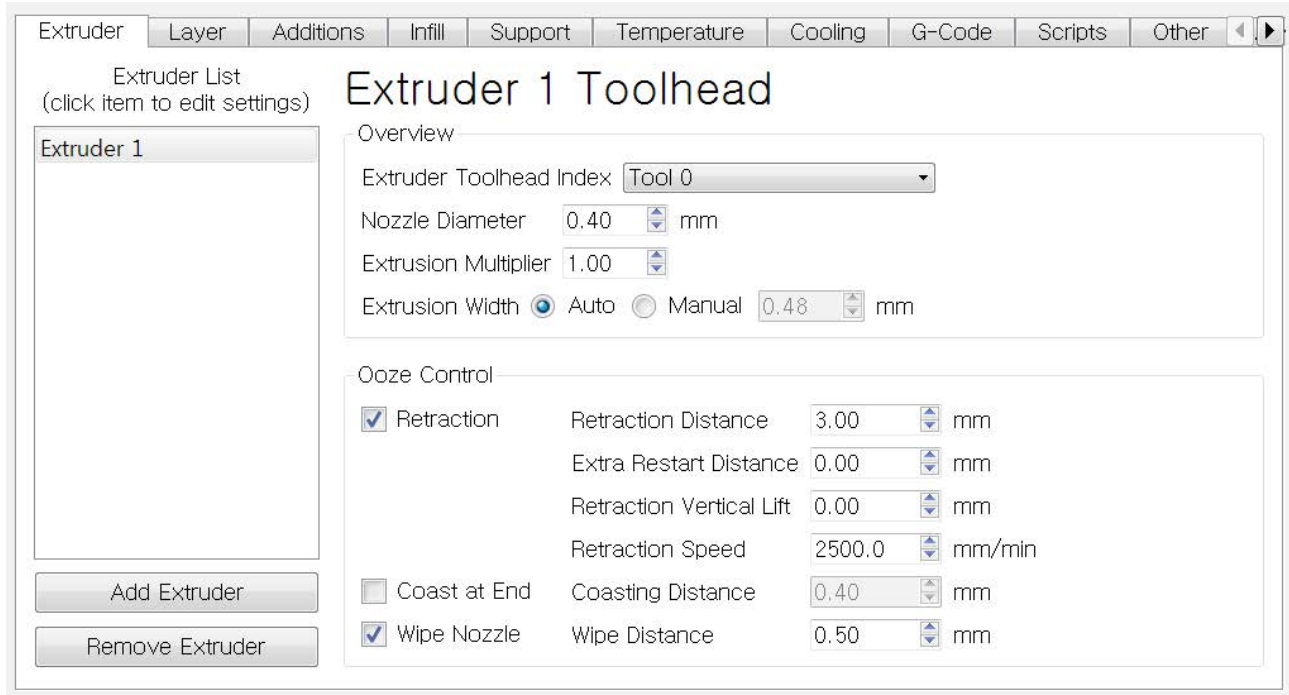
4)



III

2.

1) Extruder



Extrusion Multiplier

:

· , , , , , 1.0

*

가 (Top Layer) 100%
가 100% , Layer Top Solid Layers
가 Extrusion Multiplier 1.1 1.2

Extrusion Width

:
가 0.4mm , 0.5mm
Auto 1.2
0.48mm 가 가

Retraction Distance

: 3.0mm
* , 가
가

Extra Restart Distance

:
Extra Restart Distance
().
가 , -0.1~0.2mm Extra

Restart Distance

Retraction Vertical Lift

:
-
X, Y

Coast at End

: ,
100% . 100mm , 5mm 95mm
5mm 가 5mm .
가 .

* Coast at End

0.4mm ,



< Coast at End >



< Coast at End >

Wipe Nozzle

:

가 , 가 . , .

Coast at End

, Coast at End

가

Wipe

Nozzle

100%

.

*

1)

2) (Coast at End 0.4mm)

0.4mm

3)

, 3mm

4)

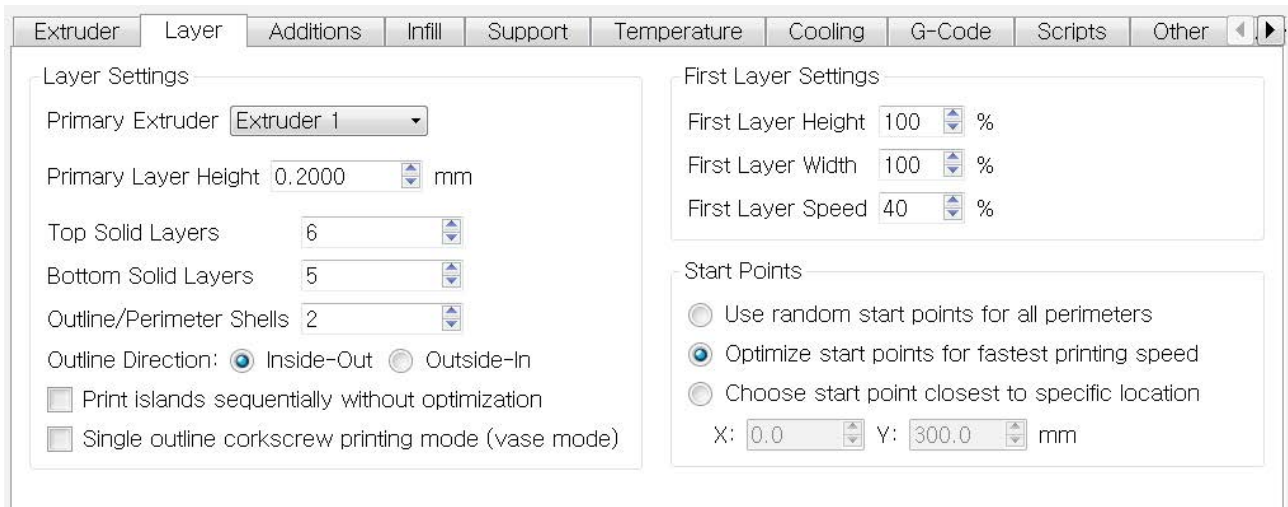
0.5mm

5)

6)

3mm + Extra Restart Distance

2) Layer



Primary Extruder

: . 가 .

Primary Layer Height

: . , 가 .

Top Solid Layers

: 100% .
100% 가

6~10 가 ,

Extruder Extrusion Multiplier 1.1~1.2 .

Bottom Solid Layers

: 가 100% , 가 100%

Outline/Perimeter Shells

: ,

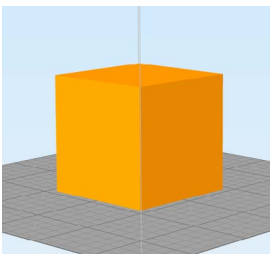
Outline Direction; Inside-Out

: , 38

Outline Direction; Outside-In

: ,

*

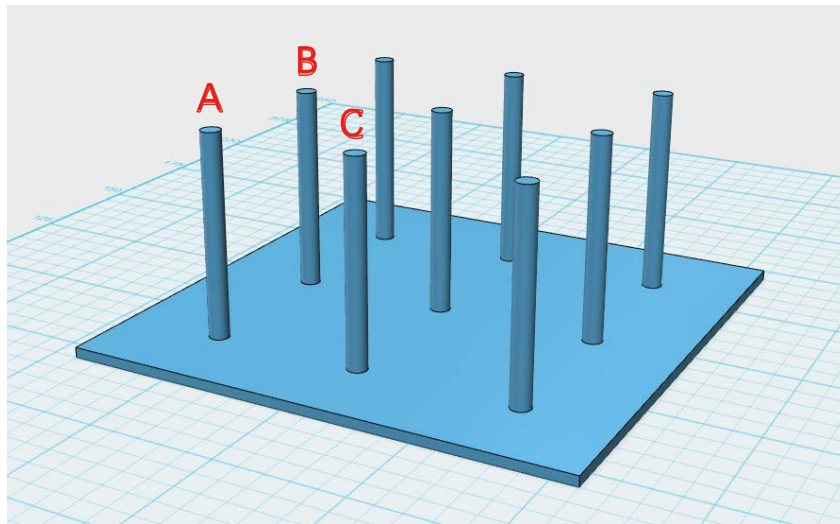


50 X 50 X 50mm

| | | | | |
|----------|--------|--------|--------|-------------------------|
| | 0.1mm | 0.2mm | 0.3mm | : 7200mm/min : 20% |
| | 2h 17m | 1h 12m | 0h 50m | |
| | 20% | 50% | 80% | : 7200mm/min : 0.2mm |
| | 1h 12m | 2h 0m | 2h 53m | |
| (mm/min) | 3600 | 4800 | 7200 | : 20% : 0.2mm |
| | 2h 13m | 1h 40m | 1h 12m | |

Print Islands Sequentially without optimization

: , A B
 , C A 가 .
 A-B-C A-B-A-C
 , A 가 .



First Layer Height

: 0.1mm ,
 200% , 0.2mm . 0.2mm
 가 0.1mm, 0.2mm, 0.3mm
 0.2mm .

First Layer Width

: .

First Layer Speed

:
가
4-50%

Use Random Start Points for all perimeters

:

Optimize Start points for fastest printing speed

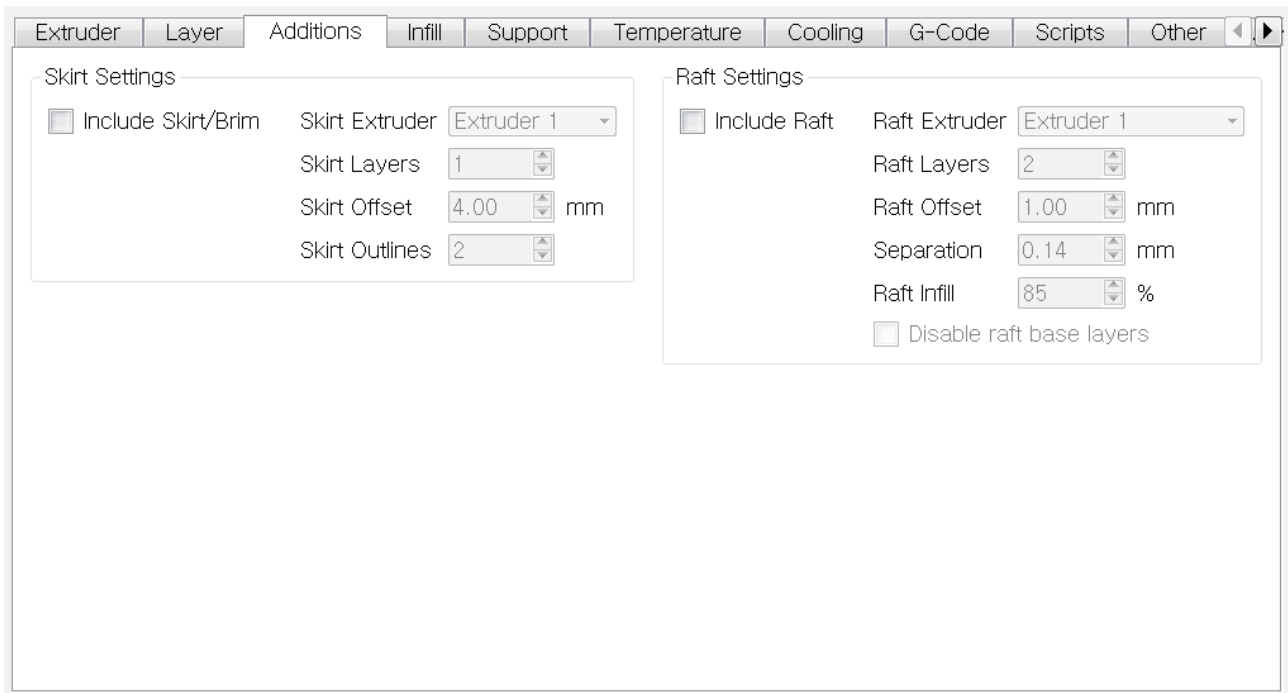
:
가 가
. Prepare to Print!

Choose start points closest to specific location

:
가

* : 가

3) Additions



Skirt

: “Include Skirt/Brim”

Skirt Layers

: 1 ~ 99999
가

Skirt Offset

: . 4mm 4mm
, 0 ,
가

Skirt Outlines

:

Raft

: 가
,
, PLA ABS

Raft Layers

:

Raft Offset

: 가

Separation

:

Raft Infill

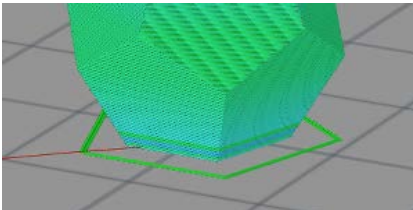
:

85%

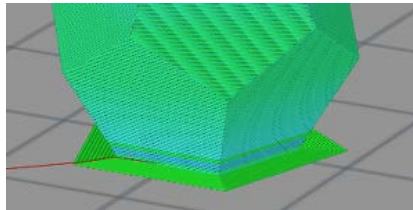
Disable Base Layers

:

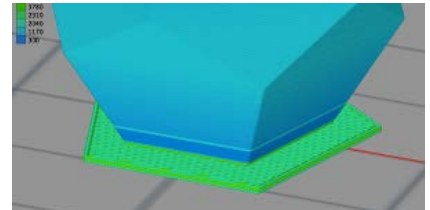
가



< >

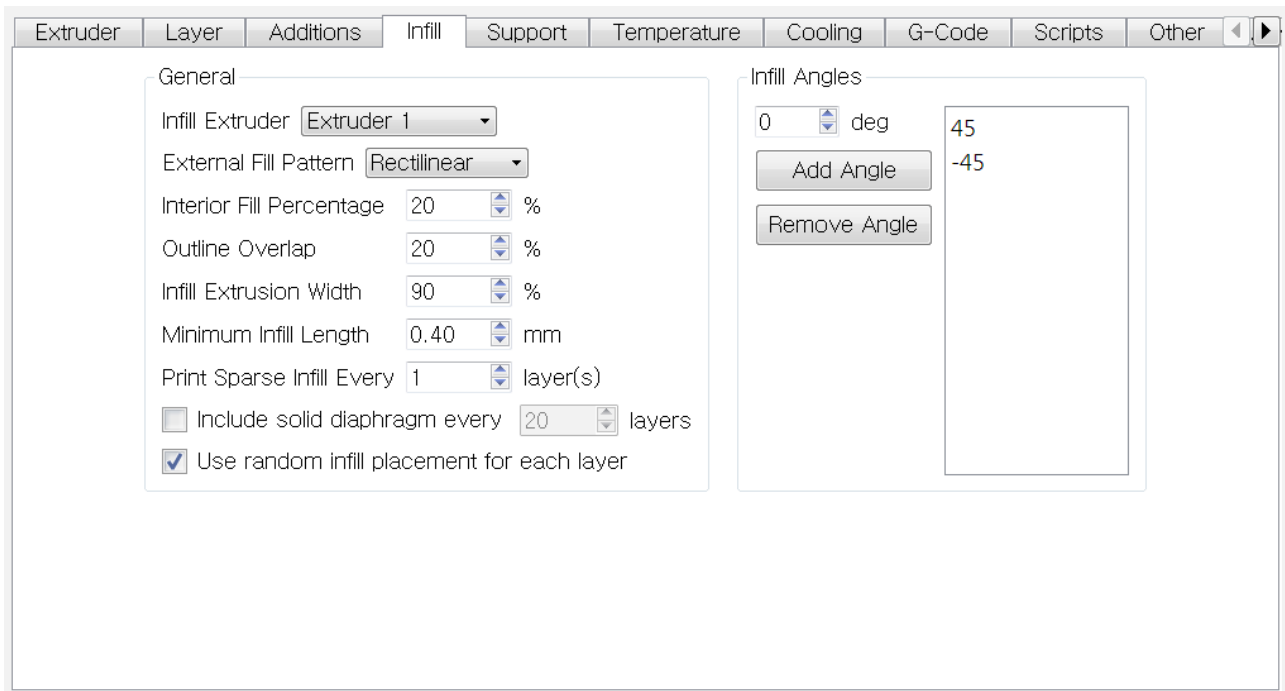


< >



< >

4) Infill



External Infill Pattern

: .
 Concentric , Rectilinear
 Rectilinear 가 .

Interior Fill Percentage

: .

Outline Overlap

: .
 20 .

Infill Extrusion Width

: . 90% ,
0.4mm 90% 0.36mm .

Minimum Infill Length

: 가 . 가
0.4mm 가 . 0.4mm

Print Sparse Infill Every ___ layer(s)

: 가 . 2

Use random Infill placement for each layer

: ,
가 .

Infill Angles

: . 45 가 ,
가 .



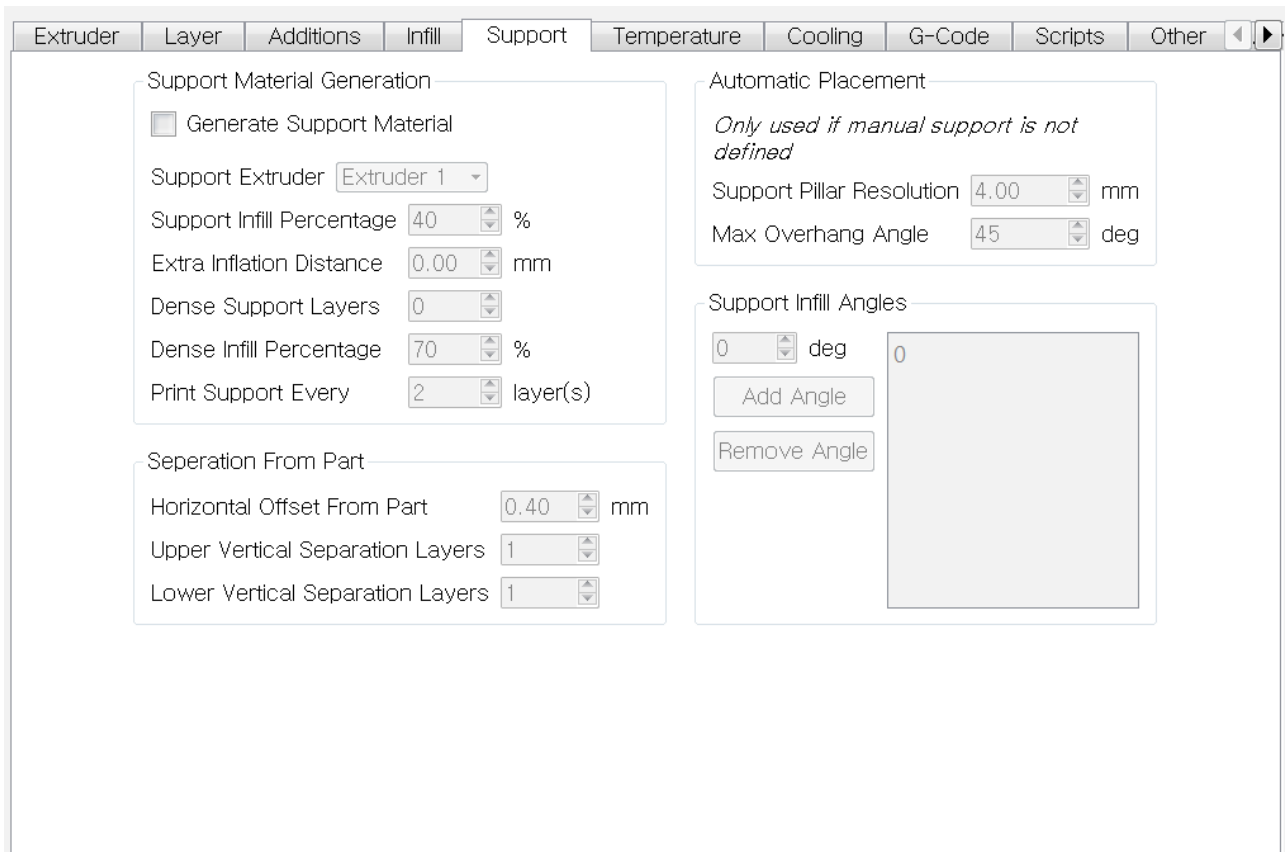
< 0% >

< 30% >

< 60% >

< 100% >

5) Support



Support Infill Percentage

:

Extra Inflation Distance

:

가

Dense Support Layers

: 2

, 가

40

.

0

가

가 40%

Dense Infill Percentage

: 가

Print Support Every ___ Layers

: 2

Horizontal Offset From Part

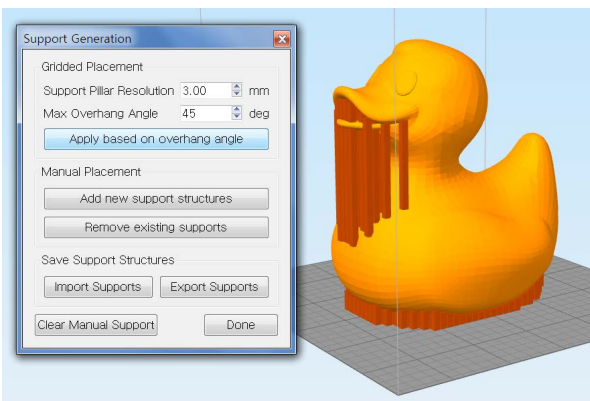
: 가

Support Pillar Resolution

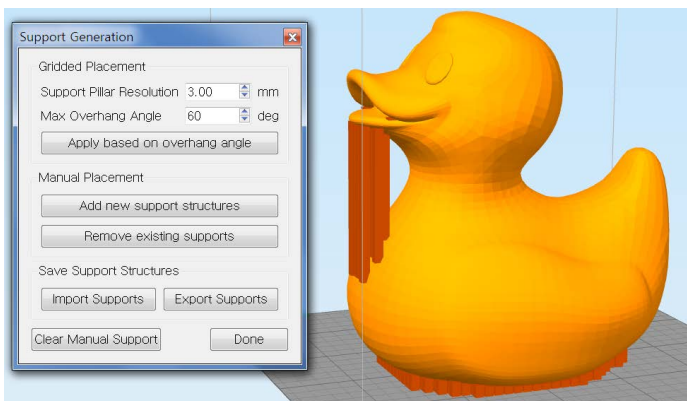
: 4mm, 2~3mm

Max Overhang Angle:

가 (가 ,).

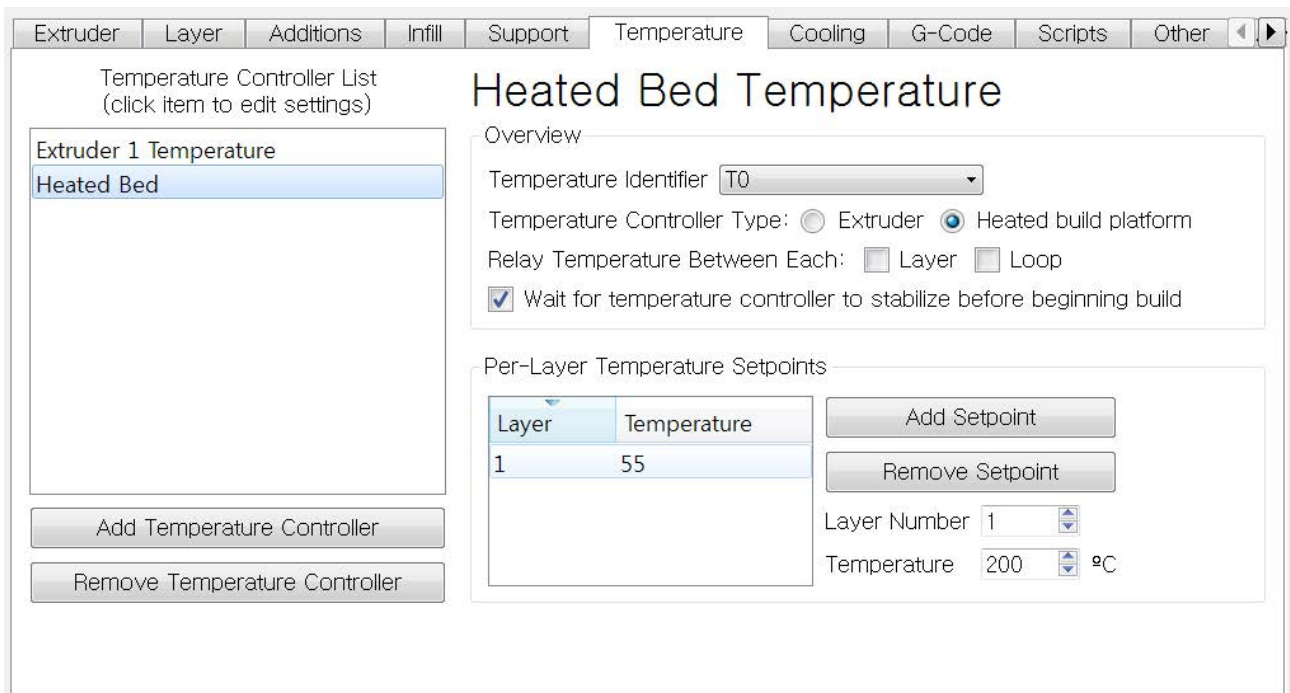


< Max Overhang Angle 45 >



< Max Overhang Angle 60 >

6) Temperature



Temperature Controller List

:

(Per-Layer Temperature Setpoints)

Per-Layer Temperature Setpoints

:

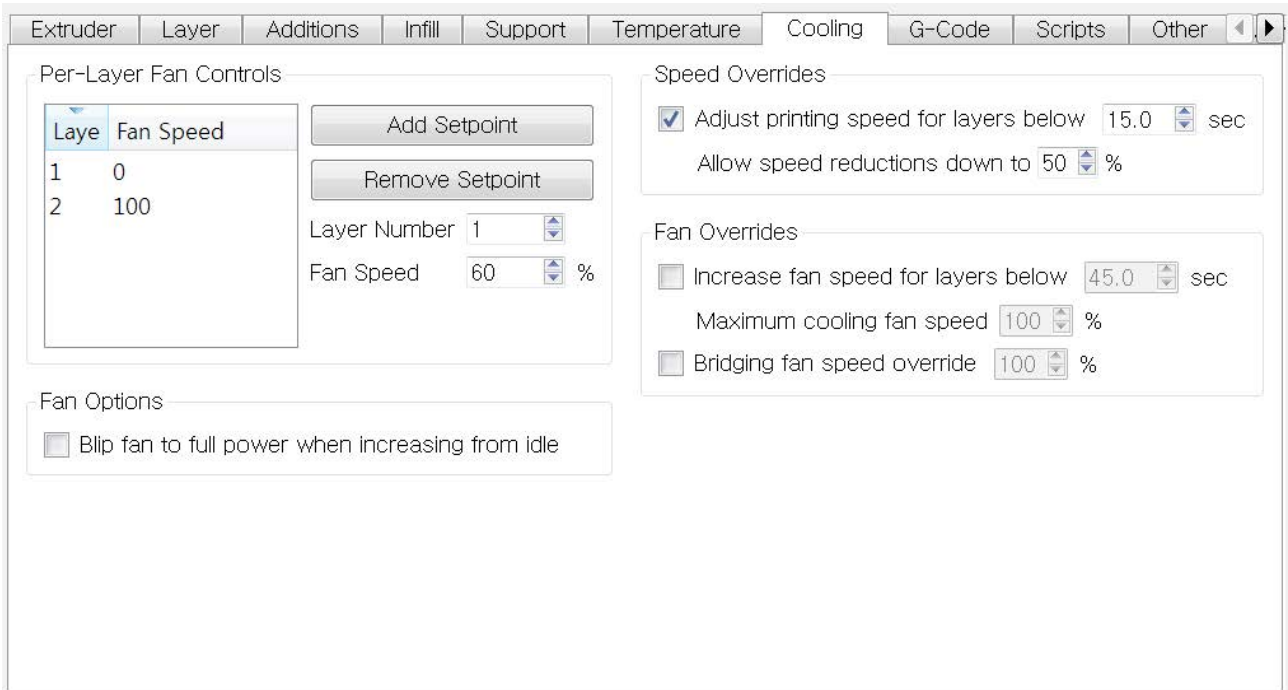
Temperature Controller List

Temperature

가

Add Setpoint

7) Cooling



Per-Layer Fan Controls

: . 0~100 가 (%) , 50 가

* PLA 가 . ABS 가
40% 가

| Layer | Fan Speed |
|-------|-----------|
| 1 | 0 |
| 2 | 100 |

< PLA filament Default >

| Layer | Fan Speed |
|-------|-----------|
| 1 | 0 |
| 3 | 40 |

< ABS filament Default >

8) G-Code Tab

The screenshot shows the 'G-Code' tab in a software interface. It is divided into two main sections: 'G-Code Options' and 'Update Machine Definition'.

G-Code Options:

- 5D firmware (include E-dimension)
- Relative extrusion distances
- Allow zeroing of extrusion distances (i.e. G92 E0)
- Use independent extruder axes
- Include M101/M102/M103 commands
- Firmware supports "sticky" parameters

G-Code Offsets:

| | X-Axis | Y-Axis | Z-Axis |
|--------|---------|---------|---------|
| Offset | 0.00 mm | 0.00 mm | 0.00 mm |

Update Machine Definition:

- Update Machine Definition using settings below
- This is a convenient way to update your machine definition along with your FFF profile. It is especially useful if you are constantly switching between different printers.*
- Machine type: Cartesian robot (rectangular volume)
- X-Axis: 145.0 mm
- Y-Axis: 145.0 mm
- Z-Axis: 160.0 mm
- Build volume: 145.0 mm x 145.0 mm x 160.0 mm
- Origin offset: 0.0 mm x 0.0 mm x 0.0 mm
- Homing dir: Min x Min x Min
- Flip build table axis: X Y Z

9) Scripts Tab

The screenshot shows the 'Scripts' tab in a software interface. It is divided into two main sections: 'Starting G-Code' and 'Post Processing'.

Starting G-Code:

- Starting G-Code
- Layer Change G-Code
- Tool Change G-Code
- Ending G-Code

```
G28 ; home all axes

G92 E0
G0 X0 Y120 F 4800
G0 Z0.2 F1000
G92 E0
G0 X0 Y20 E6.0 F1800
G0 X0 Y25 F4800
```

Post Processing:

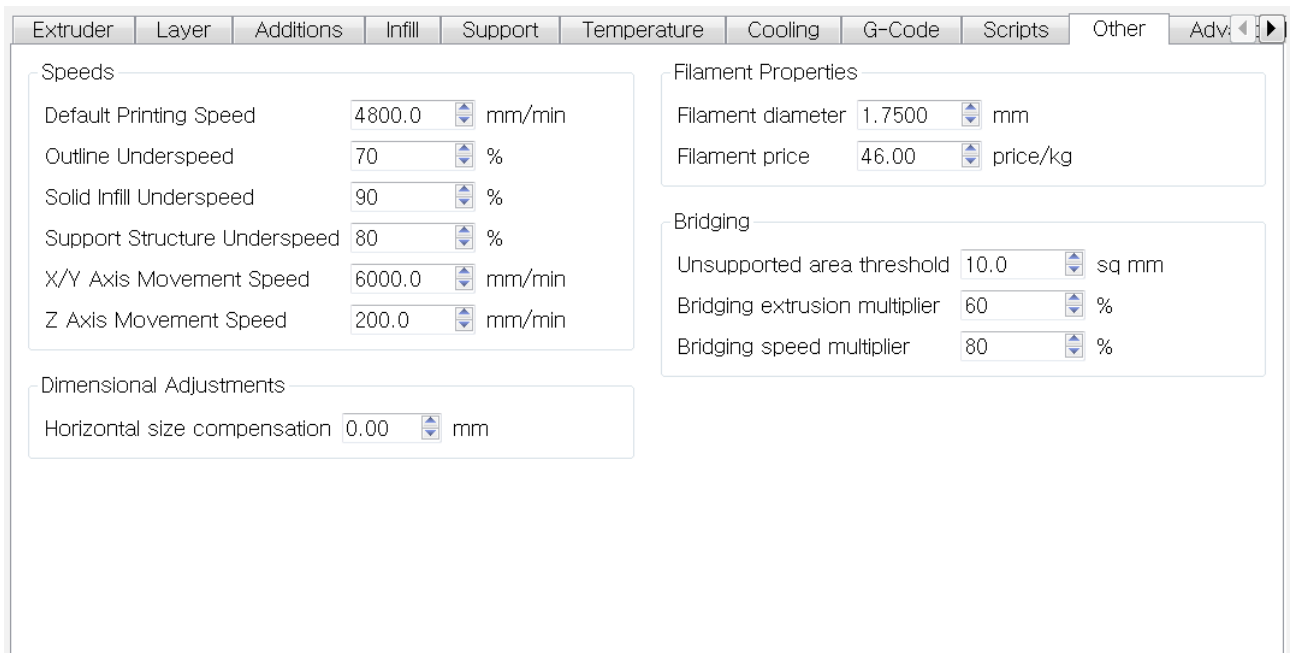
- Create .x3g file for MakerBot printers using GPX plugin (see Tools > Firmware Configuration for conversion settings)
- Add celebration at end of build (for .x3g files only) Random Song
- Create .makerbot file for 5th Gen MakerBot printers

Additional terminal commands for post processing

G-Code, Scripts

가

10) Other



Default Printing Speed

: , 1 . 3600~7200
3D

Outline Underspeed

: ,
가 .

Solid Infill Underspeed

: 100%
가 4200 90 , 3780mm/min

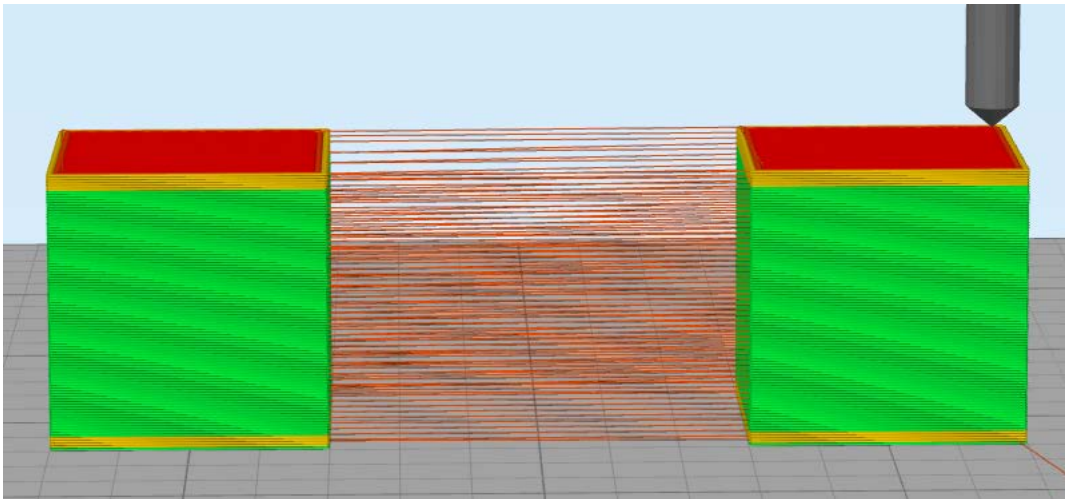
Support Structure Underspeed

:

X/Y Axis Movement Speed

: 가 , 가

Preview



Z Axis Movement Speed

: Z

Filament Diameter

:

1.75mm

Filament Price

:

가

Preview

Unsupported area threshold

:

Bridging extrusion multiplier

:

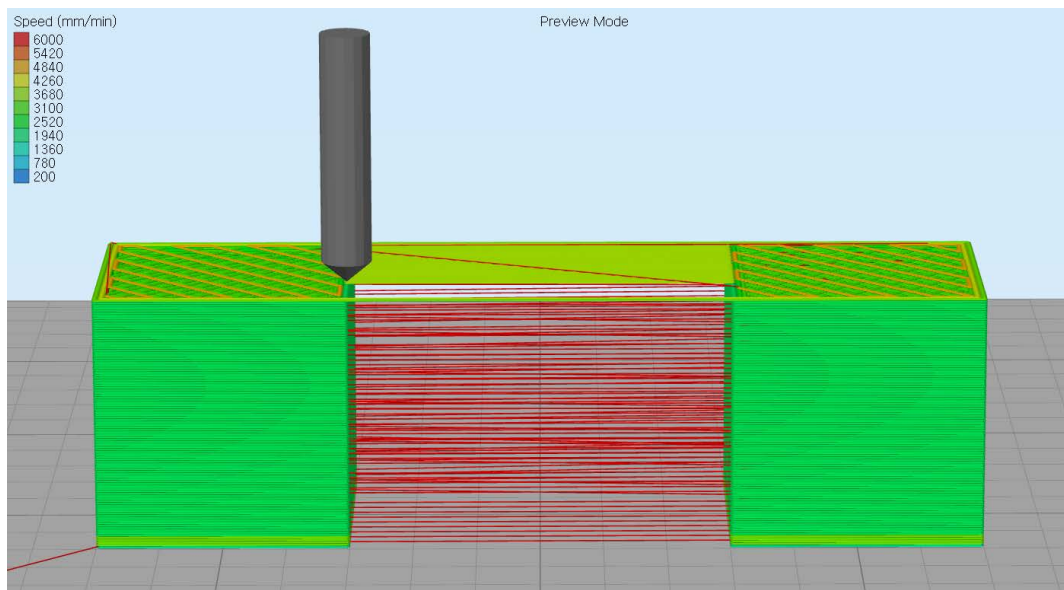
60%

Bridging Speed multiplier

:

80%

가



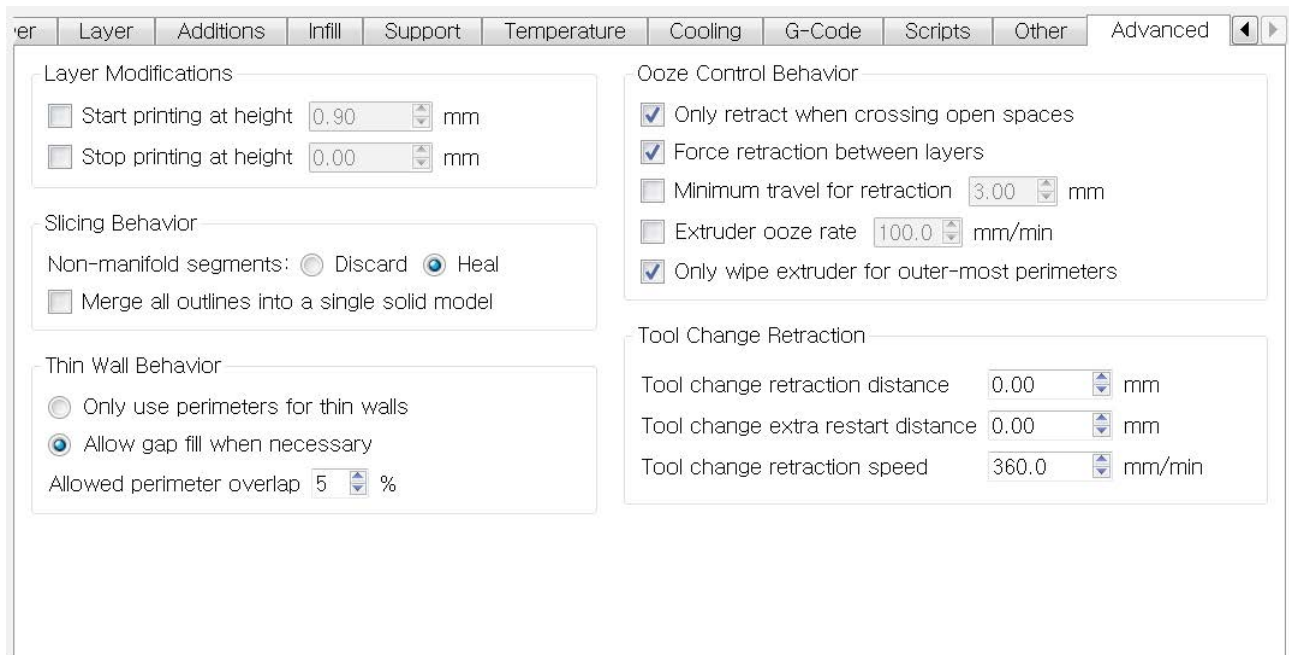
< >

: 4800mm/min

Bridging Speed multiplier: 80%

Bridging Speed: 3840mm/min

11) Advanced



Start Printing at Height

:

Stop Printing at Height

:

가

0.1mm

0.3mm

1)

Section

Enable Cross Section

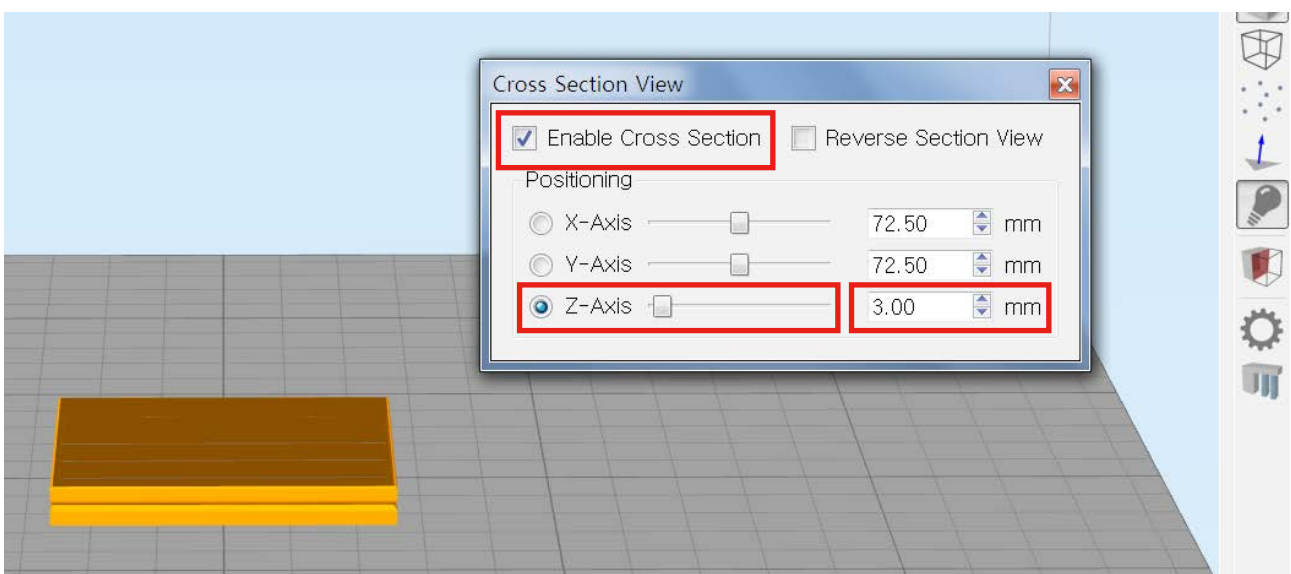
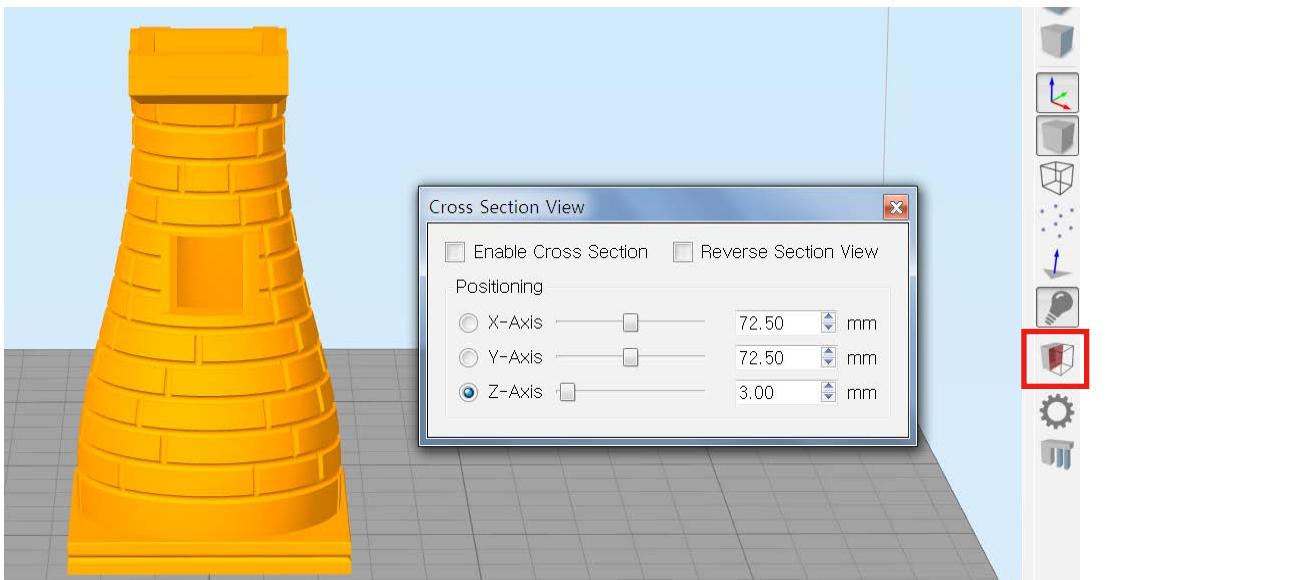
Z-Axis

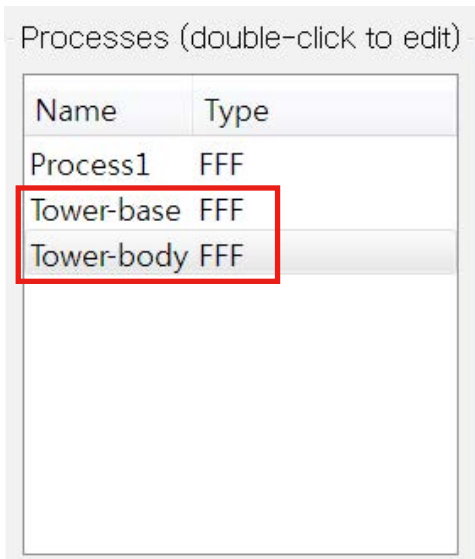
Cross

mm

3mm

가



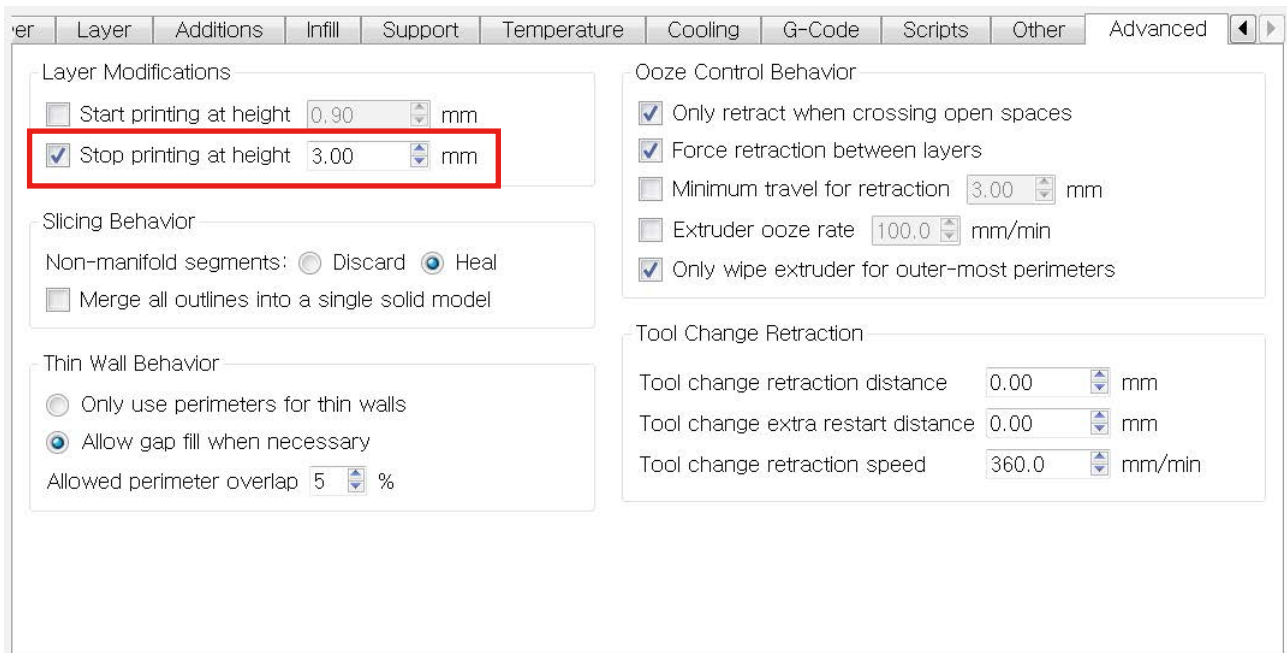


2)

Add Tower-base
 0.3mm , 7200mm/min.
 , Tower-body 0.1mm ,
 4800mm/min. . base
 , body

3) Tower-base
 3mm

Advanced>Stop printing at height



OK

Start printing at height

3mm

Process Name: Tower-body

Select Profile: PLA 0.2mm.fff Import Remove Export

Auto-Configure for Material: PLA ABS PVA Nylon

Auto-Configure for Print Quality: Fast Medium High

General Settings

Infill Percentage: Include Raft Generate Support

Layer | Additions | Infill | Support | Temperature | Cooling | G-Code | Scripts | Other | **Advanced**

Layer Modifications

Start printing at height 3.00 mm

Stop printing at height 0.00 mm

Slicing Behavior

Non-manifold segments: Discard Heal

Merge all outlines into a single solid model

Thin Wall Behavior

Only use perimeters for thin walls

Allow gap fill when necessary

Allowed perimeter overlap 5 %

Ooze Control Behavior

Only retract when crossing open spaces

Force retraction between layers

Minimum travel for retraction 3.00 mm

Extruder ooze rate 100.0 mm/min

Only wipe extruder for outer-most perimeters

Tool Change Retraction

Tool change retraction distance 0.00 mm

Tool change extra restart distance 0.00 mm

Tool change retraction speed 360.0 mm/min

4) Prepare to Print!

OK

Select Processes for Preparation

Process Selection

There are multiple FFF processes available in this workspace. Please select the desired processes for preparation. (Multiple selections will be merged into a single file)

Process1

Tower-base

Tower-body

Select All Select None

Printing Mode

If you have selected multiple FFF processes, please choose the desired printing mode

Continuous printing: layer-by-layer

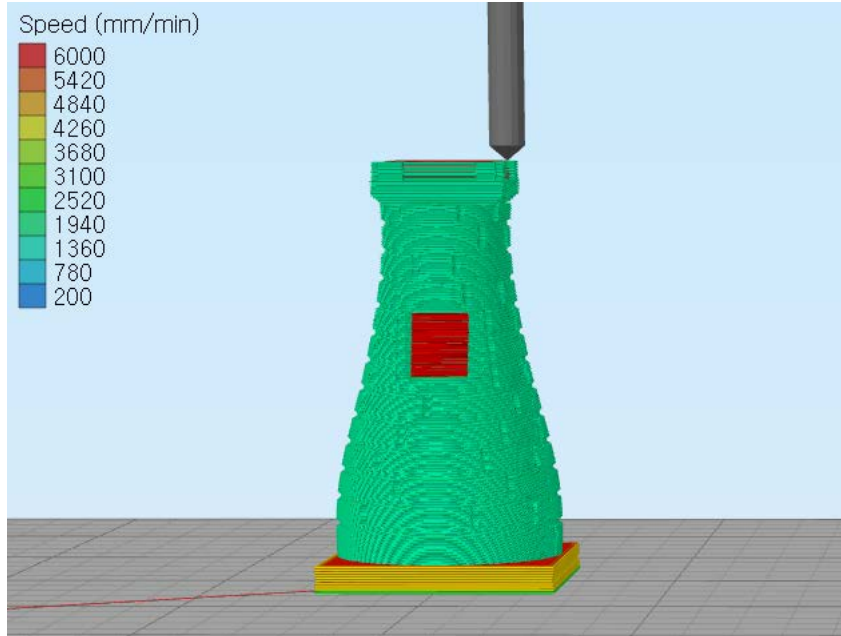
Sequential printing: object-by-object

Max height clearance 0.00 mm

OK Cancel

5)

가



Non-manifold segments

: (3D) 가
. Heal .

Merge all outlines into a single solid model

: 가 ,

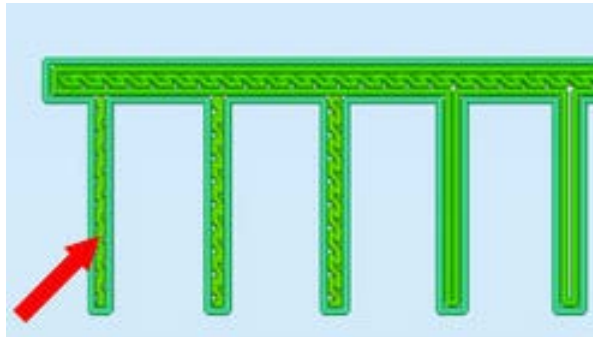
Only use perimeters for thin walls

:

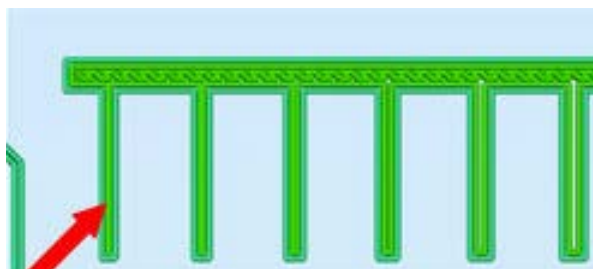
Allow gap fill when necessary

:

가



Perimeter overlap 10% :
가



Perimeter overlap 50% :
가

Only retract when crossing open spaces

:

Force retraction between layers

:

Minimum travel for retraction

:

Extruder ooze rate

:

가

,

가

Only wipe extruder for outer-most perimeters

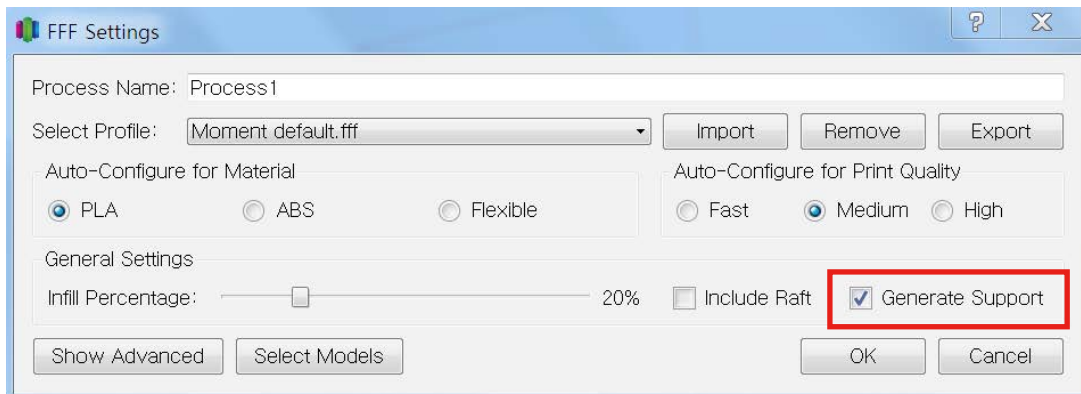
:

3.

Case1 >

* :

FFF 3D 가
. T , 가 T -
Simplify 3D -
T , T -
가 가 .
Simplify 3D 가 가 .
1. :
Generate Support , 가



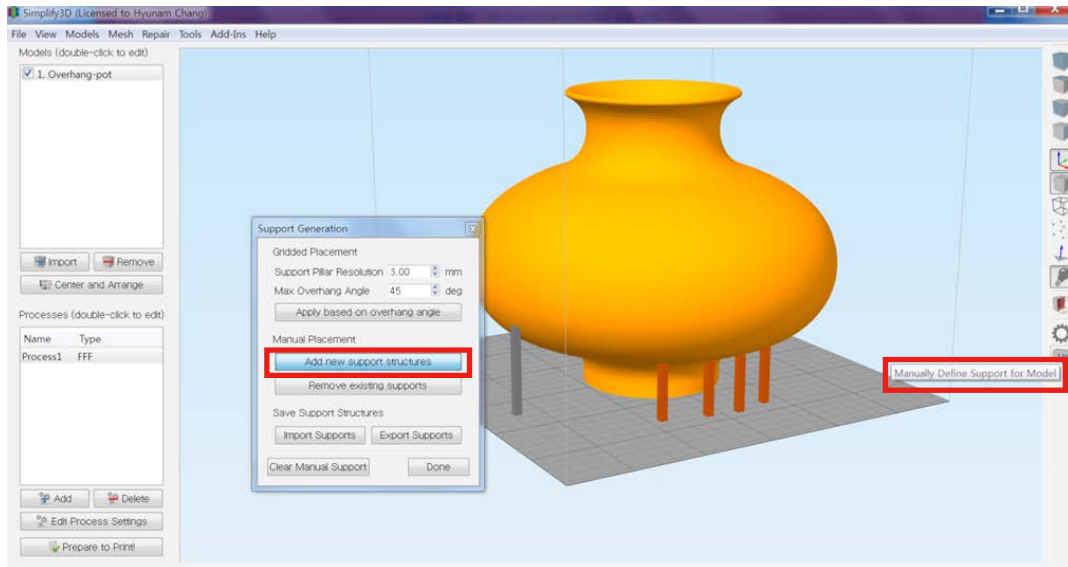
가 가 45°

2.

Manually Define Support for Model

, Add new support structures

structures



- Support Pillar Resolution

:

- Max Overhang Angle

:

(: 45)

- Apply based on overhang angle

:

가
(가

- Add new support structures

:

- Remove existing supports

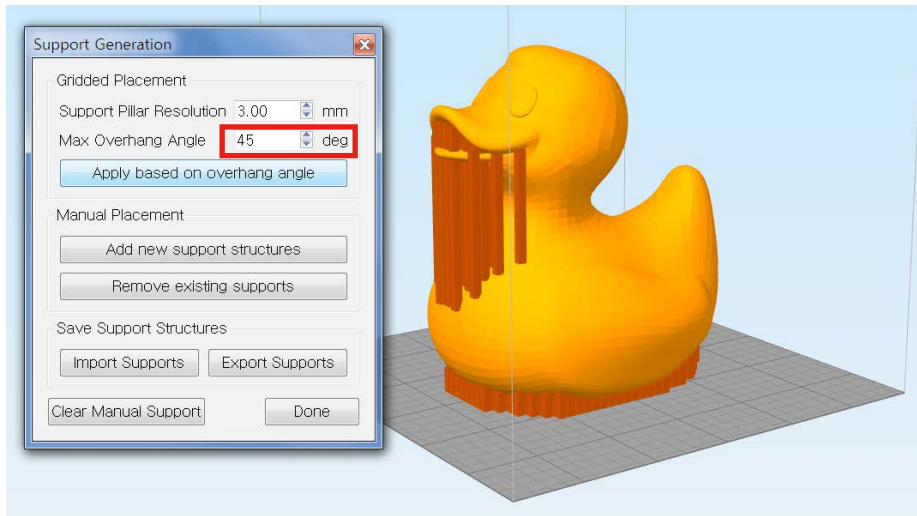
:

- Clear Manual Support

:

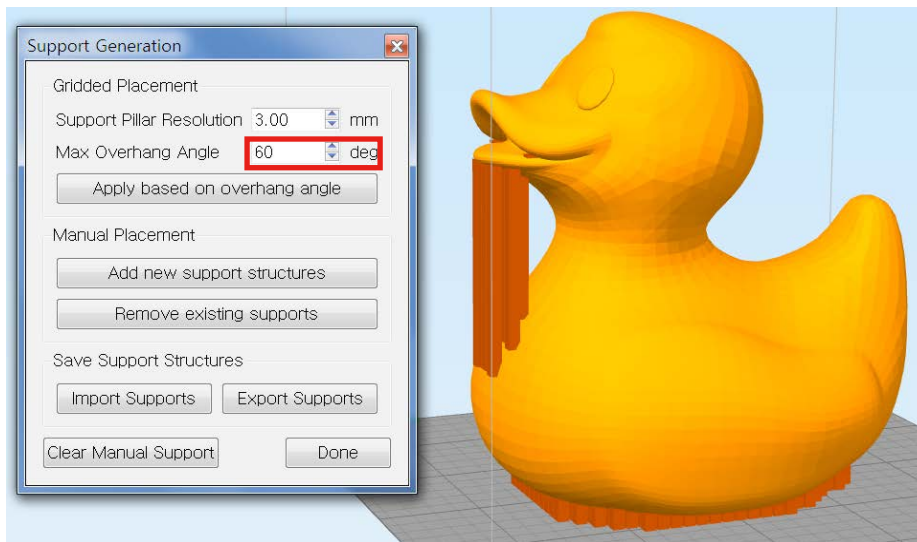


1



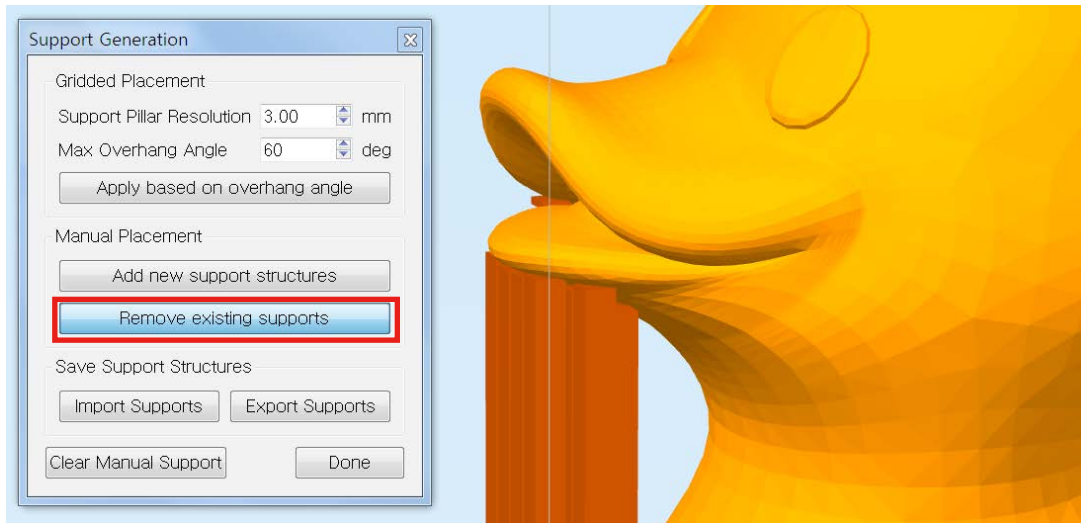
< : 3 22 / : 118.2g >

- Max Overhang Angle 45 가 (가 45° ,).

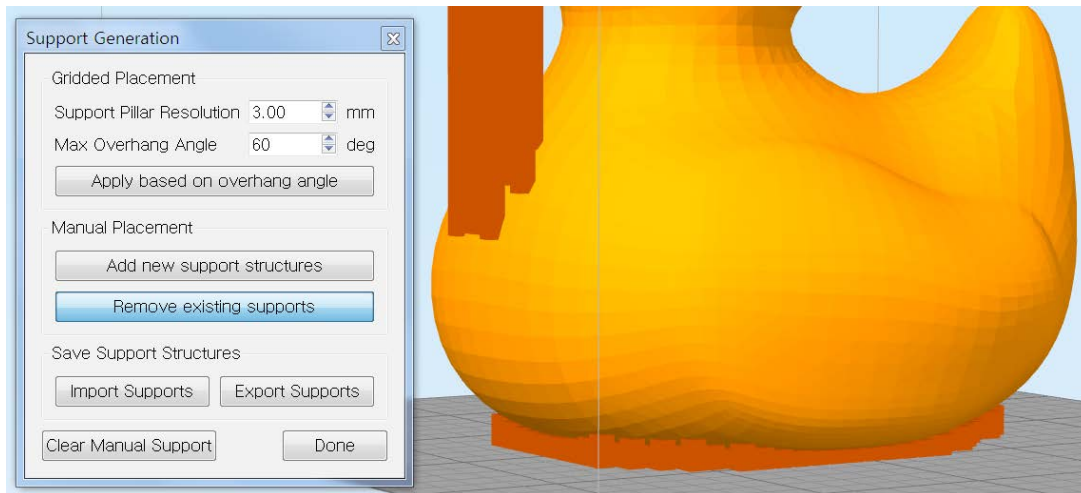


< : 3 8 / : 111.4g >

- Angle 60 . 60 Max Overhang 45

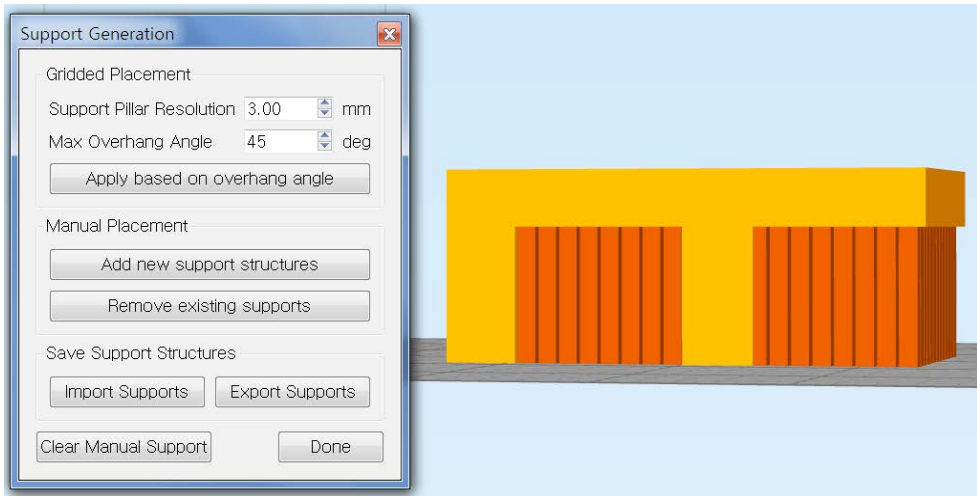


가 . Remove existing supports



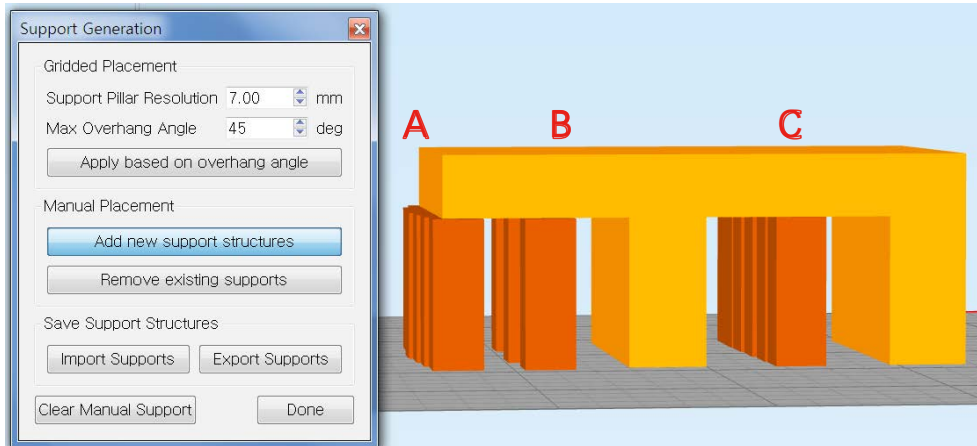
가
가 .

2



< : 1 8 / : 37.9g >

- 가 ,
가 .

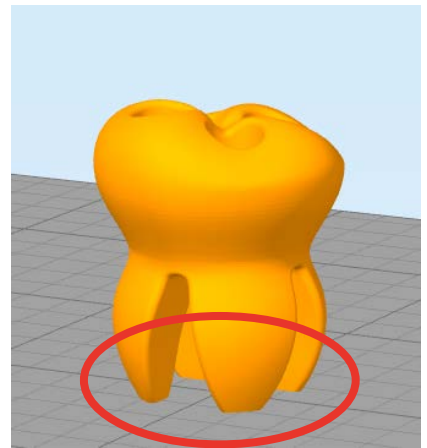
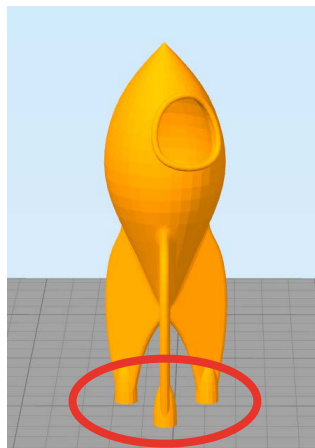
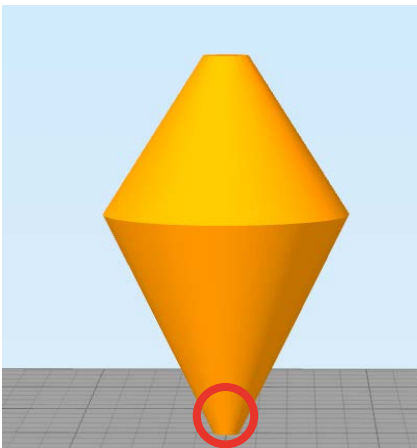


< : 57 / : 30.1g >

- A 가 가 .
B, C 1 . Support Pillar
Resolution 7mm (4mm) ,

* : A B , . 4cm

Case2 >



가

가

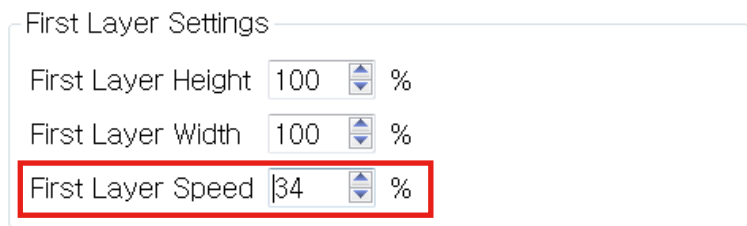
1.



2.

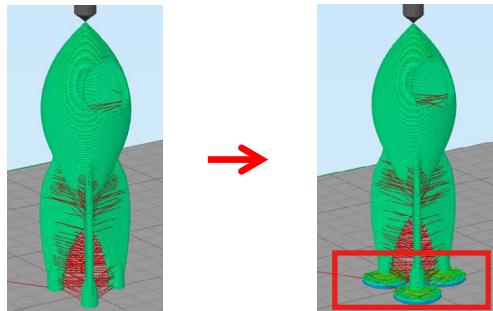
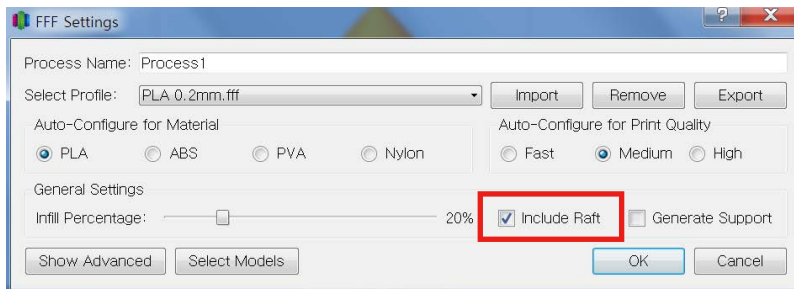
Setting > Speed

가 Simplify 3D Show Advanced
Layer First Layer Speed Gcode



3.

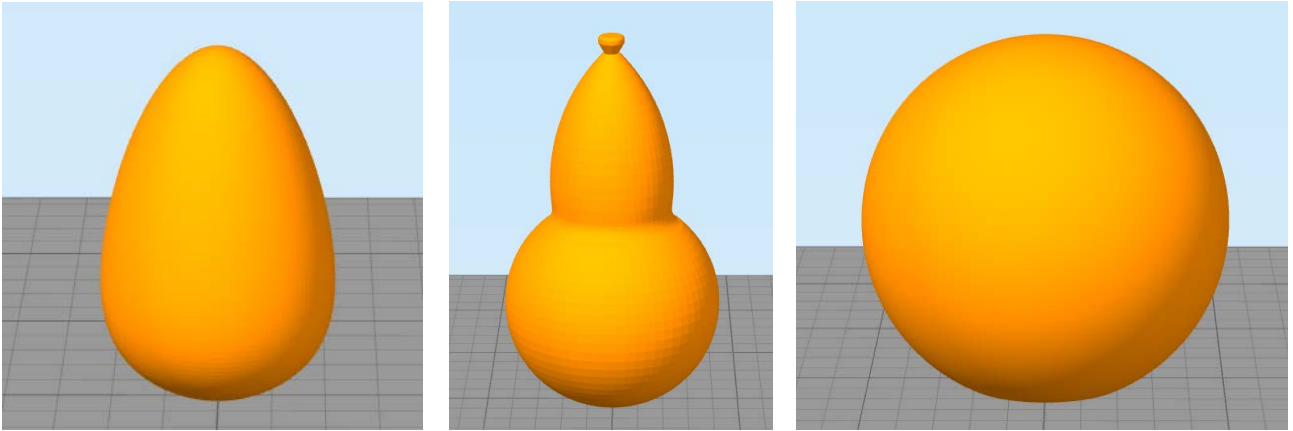
Additions Include Raft



*
* ABS

PLA

Case3 >



가

, Simplify 3D

Extruder > Coast at End

Coast at End

가

Ooze Control

| | | | |
|--|--------------------------|--------|--------|
| <input checked="" type="checkbox"/> Retraction | Retraction Distance | 3.00 | mm |
| | Extra Restart Distance | 0.00 | mm |
| | Retraction Vertical Lift | 0.00 | mm |
| | Retraction Speed | 2500.0 | mm/min |
| <input checked="" type="checkbox"/> Coast at End | Coasting Distance | 0.40 | mm |
| <input checked="" type="checkbox"/> Wipe Nozzle | Wipe Distance | 0.50 | mm |

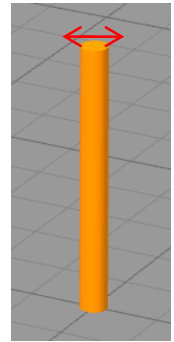
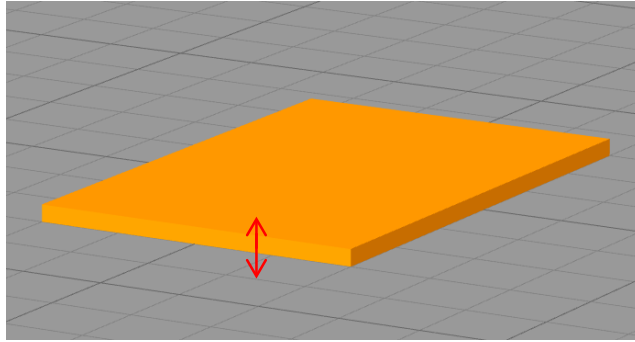
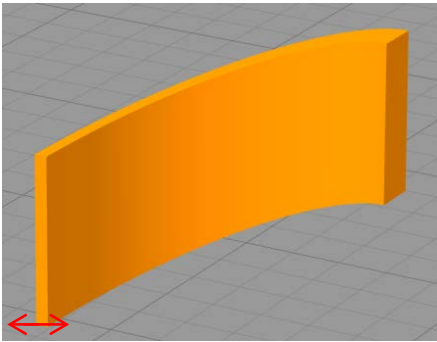


< Coast at End >



< Coast at End X >

Case4 > 가



0.5mm가 가 .

Moment .

0.4mm

가

0.5mm

0.5mm

가

Gcode

Preview .

