

# Formlabs Printer

The U-SoA Fabrication Lab will foster a culture of learning through making. Its principal purpose is to serve students and faculty in existing and future research pursuits, by providing robust training and broad access to a host of digital and analog tools. The Lab aims to continually improve, incorporating new technologies and expanding its capacities, growing into a resource equal to the substantial ambitions of a top-tier architecture program.



# FORM

## Formlabs 3B Resin Printer Request Form

Form to set up initial appointment for Formlabs Print

**\* Required**

Email address \*

Your email

Name \*

Your answer

UM Email \*

Your answer

Phone Number \*

Your answer

Date Needed \*

Must be at least 48 hours after submission date (Business Days). Files received after 3pm will be processed the following day.

Date

mm/dd/yyyy

File Name \*

Your answer

X (Length) in inches - MAXIMUM 5.5 INCHES \*

Your answer

Y (Width) in inches - MAXIMUM 5.5 INCHES \*

Your answer

Maximum Cost Preferred \*

We will not print your model if it exceeds this amount

Your answer

Special Instructions

Your answer

Submit

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## Usage

**The Formlabs 3B printer is available to all within the School of Architecture. To use the equipment, users must create their own 3d models, set up their preform files, and pay for the materials. Fabrication lab staff will send the materials and handle the machines. The printing process requires the handling of toxic chemicals and should only be handled by trained Fabrication Lab staff.**

**To use the equipment, users should submit the form located on the website and schedule appointment for an initial consultation with the trained staff members. To do this follow the steps below:**

- **Access the University of Miami School of Architecture website.**
- **Access the page for resin printing.**
- Fill out the form and click the link to “Booking”
- The form provides the lab staff the ability to review your project requirements. For more directions on booking the appointment see the next page.

**COST:** The Formlabs printer costs 20 cents per milliliter of volume for standard resins and 40 cents for speciality resins. The Fabrication Lab will supply standard grey and clear resin for student use. Speciality resins may be ordered on a project basis with approval by the Fabrication Lab Manager. Please note - ordering speciality resins may take time to process and ship so please plan well in advance if you would like to use a certain type of non standard resin. Students may also purchase their own resin cartridges and tanks to be used on the printer. Those cartridges and tanks will be returned to the student after use along with their print.



# U\_SoA\_Resin

Initial consult  
1 hour



## July 07 with Resin Printer

< > July 2020

Su	Mo	Tu	We	Th	Fr	Sa
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25

Select staff (optional)

Resin Printer

12:00 pm	12:30 pm	1:00 pm
1:30 pm	2:00 pm	

## Add your details

Name

Email

Phone number (optional)

Address (optional)

Please let us know if you have any special requests.  
Thank you.

Notes (optional)

Book



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-Access the University of Miami School of Architecture website.

-Access the page for resin printing.

-Fill out the form and click the link to “Booking”

-Click initial Consultation.

-Select a trained staff member from the dropdown “Select Staff List”

-Select an appointment date and time based upon availability.

-Fill out all additional information and click “Book”. Users should get an immediate confirmation when clicking book. If they did not, the appointment was not successfully created.

The user should show up to the appointment with the model they would like to print complete, set up in preform, and an idea of what type of resin they would like to use. If the Fabrication Lab has the type of resin available, the print will be sent during the appointment. If the Fabrication Lab does not have the resin available the student may have to wait for the shipping of the resin and a new tank before the model can be sent to the printer.

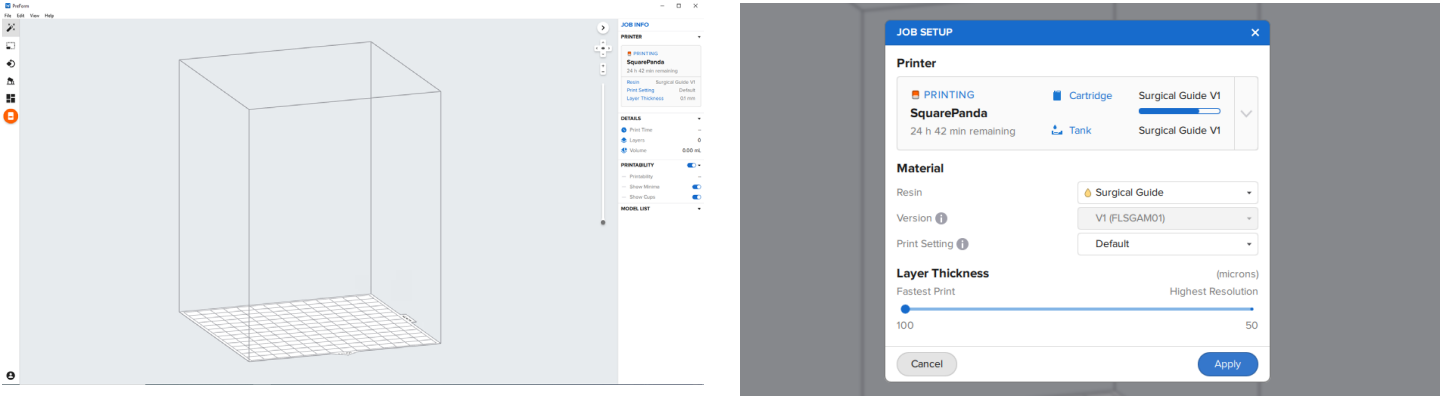
## UM\_FabLab\_3D Printing Cost Estimator

FormLabs Resin Printer	Volume (MLs) from PreForm (Including Supports)				Price Per ML	Print Cost
Standard Resin	16				0.2	\$3.20
Advanced Resin	9				0.4	\$3.60
ZCorp Powder Printer	Model Volume (In^3) from ZEdit	Binder ML from Z-Edit	Price Per Cubic Inch	Price Per ML Binder	Price Per ML Print Head	Print Cost
Powder	1	3	\$2.00	\$0.30	\$0.07	\$3.11

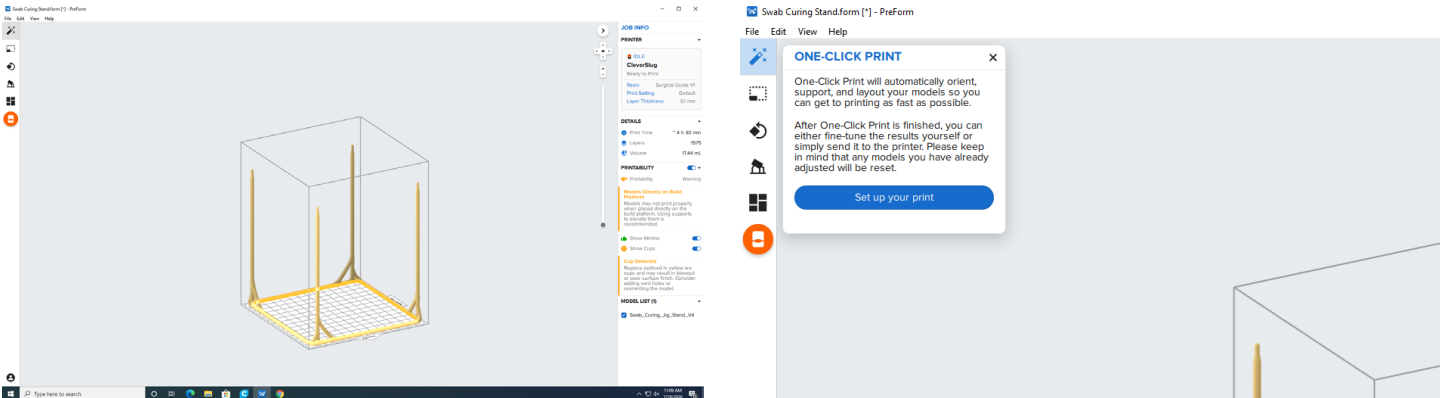
Procedures

SETTING UP PRINTS IN PREFORM

**Selecting Configuration:** Select SquarePanda as the printer, ensure the resin loaded in the printer matches the selected resin.



**Set-Up:** Next adjust the print as needed to solve issues of printability, cupping, or minimas. One option is to use “One-Click” print. This will automatically generate the supports and adjustments to make the print ready for sending. However, it does not always work. Alternatively, you can go through each step and set up the print in an optimum setting for your file.

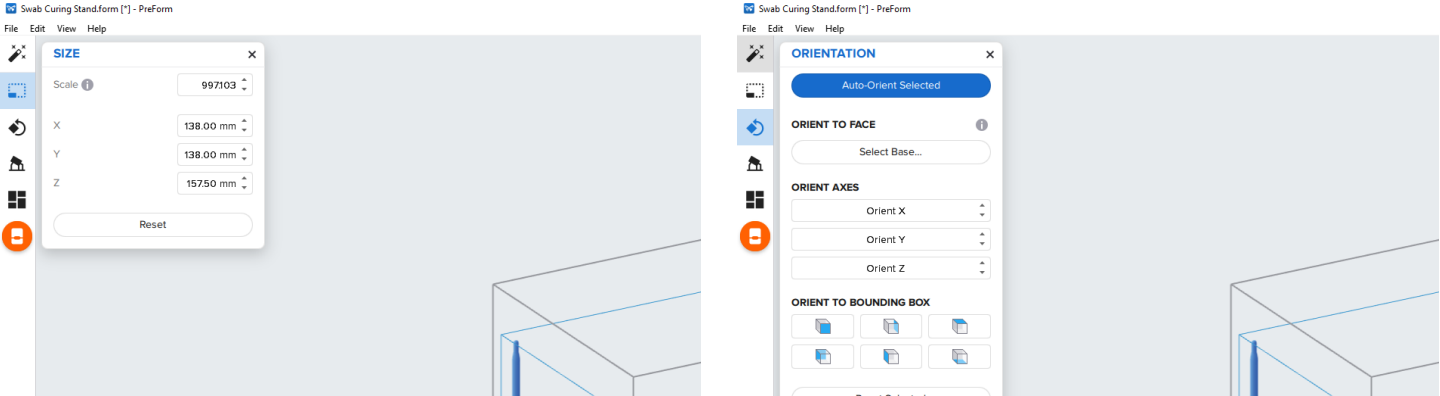


**Setting:** The printers should have default settings set-up for printing. You may want to decrease or increase layer height to adjust the quality and time of the print. If using supports make sure the support material is set to the second print head, otherwise make sure it is set to the first print head.

Procedures (cont.)

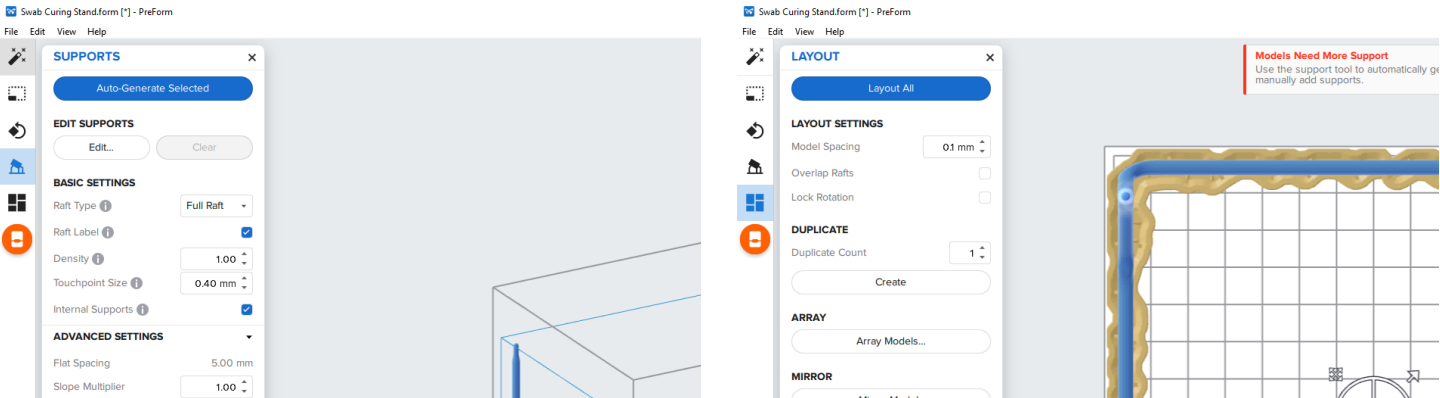
SENDING PRINTS TO THE PRINTER:

**Size:** In the size panel you can adjust the size of your print. In orientation, you can select how you want to orient your model.



**Orient Face:** This command allows you to select one side of the model which will automatically be orientated normal to the build plate.

**Supports:** Are required to make the print printable. There are many options including touch point, raft, and internal/external.

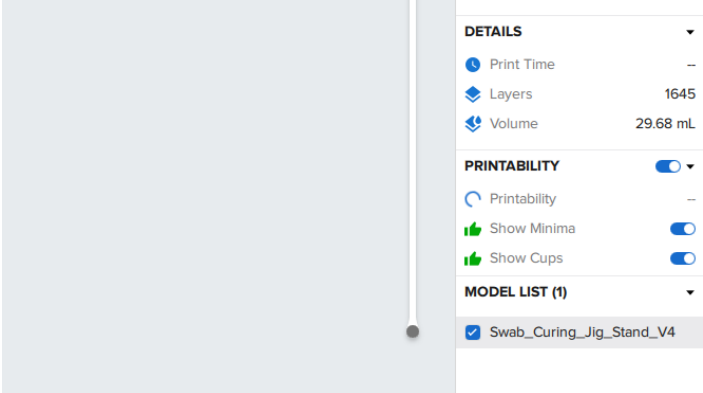


**Supports:** Select the type of raft. Mini rafts will create a small raft around each support where it touches the build plate, and in dense location it will create a shared raft. A full raft will create one large raft for the model covering the space between all supports. This will increase the print time and resin use but can improve reliability of the print. Next select the density and touchpoint size for the print. Density controls how many support piles are generated and touchpoint size controls the size of the tip supporting the model. Smaller and less dense supports create higher quality models but also increase risk of failure.

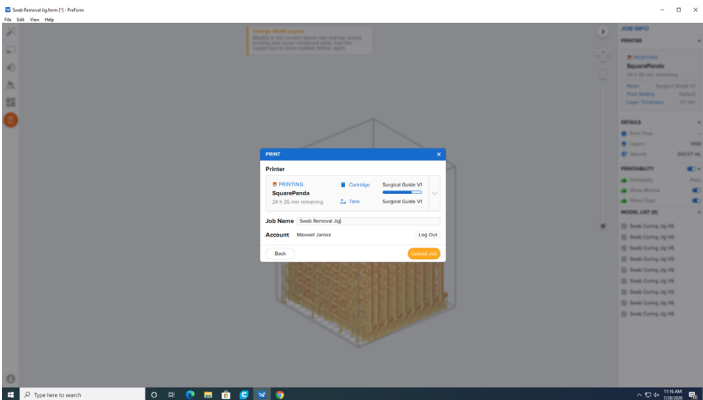
Procedures

SETTING UP PRINTS IN PREFORM

**Ready to Print:** Review the “printability”tab on the lower right hand corner. Prints should have green “thumbs-up” next to all rows.

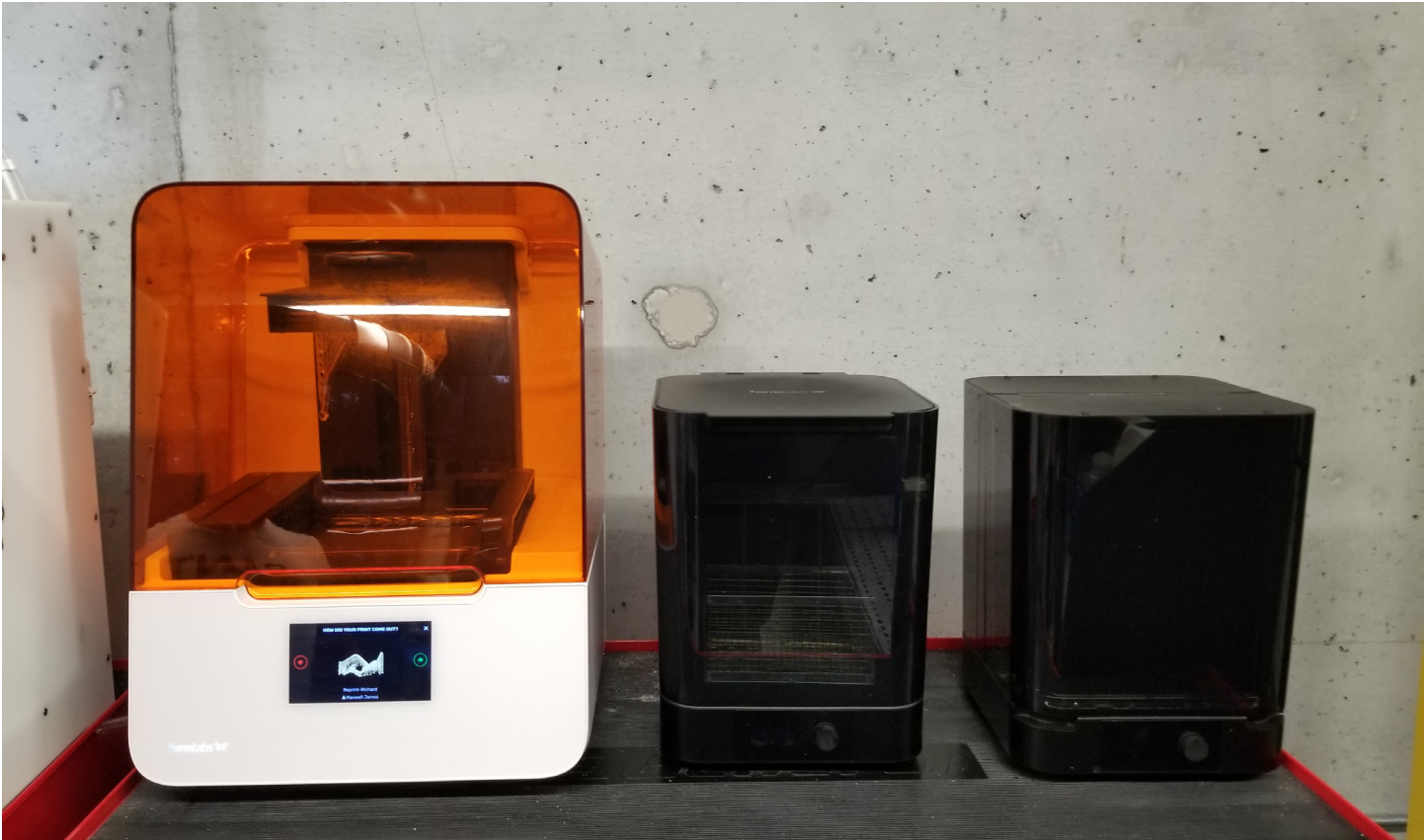


**Send Print:** Click the orange “print” button on the left hand side of the screen, a dialogue box will pop up, ensure all the settings are correct and click “upload job”.



**Tip:** If producing many duplicate models, only import a single model and use the “Layout” - “Array” function after creating the supports on the first model. This will duplicate the model into as many pieces as needed and will operate much faster than trying to generate support for all models at once.

Physical Set-Up



Printer

Washing Machine

Curing Machine

**After Sending:** Resin prints must be washed and cured (use gloves during this entire process).

To wash the print - place the build plate into the washing machine and run for 30 minutes.

To cure the print - remove the print from the build plate and dry for 15 minutes. Set the curing machine to the appropriate temperature and time based on the resin used. Once the curing machine is heated to the proper temperature place the print inside.