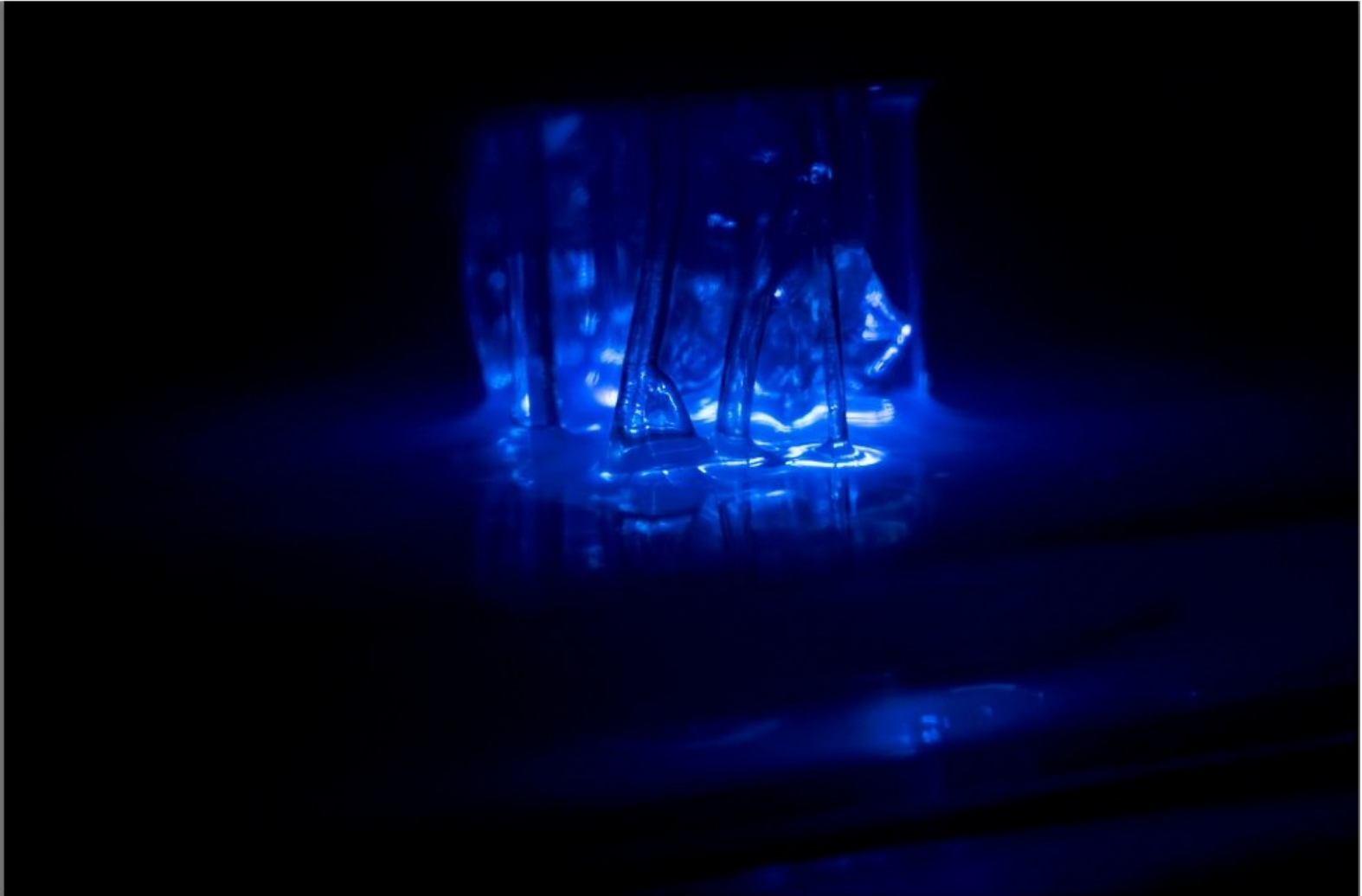


peopoly

Moai - How to find resin exposure time

This guide covers how exposure works on Moai and how to adjust settings for 3rd-party UV resin

Written By: Shu Peng



Step 1 — Overview



- Moai is equipped with a 150mW 405nm UV laser.
- Resin designed to cure with 405nm UV light should work. Please make sure as not all UV light are 405nm wavelength.
- Resins designed for DLP 3D printers usually are much more sensitive to UV light than ones designed for Laser SLA printers. DLP resin usually requires significantly less laser energy to cure.

Step 2 — Laser Exposure



- Exposure on Moai is determined by 2 factors:
 - 1. Laser Power, which is set in system settings
 - 2. Laser Moving Speed, which is set in Cura's print speed

Step 3 — Laser Power



- Default laser setting is 58. For resins designed for UV laser like Formlabs resins, they will cure between 55 to 70.
- Laser spot size varies with laser power, therefore, it is best to use the minimum laser power that can cure. This gives the best surface finish.

Step 4 — Laser Moving Speed



- Set in Cura via Print Speed
- The faster print speed is, the less exposure. (Laser moving quicker, thus delivering less energy to a give spot)
- Default print speed for
- We generally prefer to keep the Print Setting under 200mm/s in Cura. If you find yourself over-curing at 200m/s, it may be a good idea to lower laser power instead of increasing print speed.

Step 5 — How to find resin exposure



- We recommend start testing keeping print speed at 85mm/s for layer height = 0.1mm . This can be done using standard Moai print profile for 0.1mm
- drop laser power to 42 for DLP resin
- drop laser power to 55 for Laser resin
- test print this ring stl file: <https://drive.google.com/open?id=0Bzke6l...>
- Make sure vat is leveled before test print
- If the printer is making a very loud popping noise during each layer, especially if the noise persists after 10 layers, you may be over-curing the resin. This wears out the silicone layer in the vat much quicker. Stop if needed to double check curing on the build plate.

Step 6 — What to do when print fails



- If the test print fails, check to see if there is anything sticking on the plate.
- If there is nothing on the build plate and a thin layer in the vat, check your leveling
- If there is partial print on the build plate and broken off into vat, then exposure is close. Recommend increasing laser power by 1 to 2
- If there is nothing on the plate and nothing in the vat, please check your settings. Make sure laser power is correctly set and xy speed is at 4 under the settings. There should be something in the vat or plate if the system setting is correct

Step 7 — Print is successful



- If print is successful, congrats but your work is not done yet
- After IPA or Ethanol bath, check for holes on the side of ring. If holes are all closed off, you are overcuring. dial down the laser by 2 and try again
- If many but not all holes of the ring are open after the ring is properly cleaned, you are very close. You can slightly reduce laser power by 1 or increase print speed to 100mm/s and see how it prints.

Step 8 — Testing different layer heights



- Once you determine 0.1mm exposure value, you can find 0.05mm.
- A good starting point for 0.05mm layer height is keep laser power the same, and increase print speed to 130mm/s (moai 0.05mm profile does that.)
- For a quick way to find the exposure for 0.025mm layer height, increase print speed to 200mm/s or more. However, this is the optimal for 0.025mm and you may have to lower laser power to get better results.

Step 9 — Some observations



- There is only one exposure setting to cure a given resin. You can run lower laser power and slower print speed or higher laser power and faster print speed.
- We believe the best results are using minimal laser power that can cure resin with a print speed between 50-100mm/s