

Shanghai Digital Manufacturing Co., Ltd

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SZUV-T1120 Use Recommendations

When use the resin on the SL 3D printers, please follow the below recommendations:

1. Strict humidity control during the whole printing process.

SZUV-T1120 has higher requirements for humidity control in production and storage environments. **The room humidity where the SLA equipment is placed should be controlled within at least 38%.** The air humidity has a great influence on the quality of the part and the speed of production. If the humidity is too high, the part will have low hardness, easy to deform, and even the solidified resin layer of the part will be separated. The humidity will affect the curing speed of the resin, the higher the humidity, the slower is the curing speed, and the longer the curing time after exposure, which affects the filling scanning speed. Moreover, humidity can seriously affect the quality of the resin and the shelf life. Therefore, store the resin in the environment at humidity of least 38%.

2. Temperature control of the resin in resin tank of the SL 3D printer

Since the viscosity of our SZUV-T1120 is not high, production can be made without heating the resin. It is recommended that the resin temperature be controlled at around 25 ° C. No heating is more conducive to long-term stable use of the resin.

3. Distance between resin level and the strickle

The distance between the scraper and the zero liquid level directly affects whether the bottom of the molded part is delaminated or not and the curing bond between the first few layers. If the distance between the strickle and the resin surface is too high, it is on one hand, likely to cause delamination at the bottom, and on the other hand it is likely that the curing adhesion between the tens of layers in the front layer is not good and the orange peel is formed. Since the solidification depth of SZUV-T1120 is 0.14-0.16mm, the distance between the strickle and the resin surface can't be too large. **It is recommended that the ideal distance between the resin surface and the strickle is 0.05-0.15mm.**

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4. Scanning parameters adjustment

Filling scanning speed:

Only when the filling scanning speed is slow enough, the resin can be better cured, and so the moisture can't not easily invade and absorb into the part. The filling scanning speed directly affects the part modeling, strength and appearance.

Outline scanning speed:

Since the outline scanning speed directly affects the boundary effect and details of the molded part, the setting of the outline scanning speed is very important. In general, the higher the contour scanning speed, the less clear the boundary due to the incomplete curing of the outline of the molded part; the lower the outline scanning speed, the more stable the boundary and details of the molded part are better cured, so the boundaries and details will be more clear, it is recommended that the outline scanning speed setting is low appropriately.

Support scanning speed:

The support scanning speed is first determined by the bonding strength of the support with the platform and the strength of the support. As long as the support strength is high enough and the bonding strength with the platform is sufficiently strong, the support scanning speed can be appropriately increased; It is also determined by the outline scanning speed, since some SLA devices have been set that the scanning speed can't be lower than the support scanning speed, you can only set the support scanning speed after determining the appropriate outline scanning speed.

The single layer scan parameters suggested here are to ensure the quality of the part and the service life of the device.

| | | | |
|-------------------|-----------------------------------|--|---------|
| | Available single scan speed, mm/s | Suggested single scanning speed, mm/s | |
| Resin temperature | 18-25°C | 23°C | No need |

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| | | | |
|------------------------|---------------|-----------|---------------|
| | | | heating resin |
| Environment humidity | Below 40% | Below 38% | |
| Laser power | 300mw | 300mw | |
| Scanning interval | ≤ 0.1 mm | 0.08mm | |
| Support scanning speed | ≤ 1500 | 1200 | |
| Outline scanning speed | ≤ 7000 | 3000 | |
| Fill scanning speed | ≤ 7000 | 5000-6000 | |

5. Post-treatment of the printed part

Please follow the below post-treatment procedures for the newly printed part:≥

- 1) For the thin-walled part ($\cong 1$ mm), continue to soak it for more than half an hour in the resin SZUV-T1120, let it continue to react internally to achieve better initial strength;
- 2) After the part is printed, please remove the support first and then clean it in the cleaning agent, you can't remove the support in the cleaning agent for the low temperature there. We suggest to use ethanol for cleaning (please do not use medical alcohol or edible alcohol and other materials containing moisture), and then dry the part using compressed air.
- 3) UV curing treatment: After printing, it is better to UV cure the part in the UV curing box with 40W*8 UV lamp box for at least 15 minutes. The distribution of the light source in the UV curing box has a great influence on the curing effect, especially for large parts. The light source in the UV curing light box should be evenly distributed. The ultraviolet light should be irradiated in all directions, and the sample should be able to rotate. As much as possible to ensure that the part is evenly radiated by light in all directions;
- 4) Do post-treatment of UV curing and heat curing at the same time: In order to

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achieve the best performance of the product, increase the waterproof performance of the product and delay the deformation time of the product, it is recommended that the part is treated by UV curing and light curing. Firstly after drying the part is UV-cured with a 40W*8 UV lamp box for at least 60 minutes; then cured in an oven at a temperature of 80 degrees Celsius for 120 minutes (recommended heating process: directly from room temperature to 80 degrees Celsius, temperature increase speed: 0.5 Celsius / minute, then keep the part in the constant temperature at 80 degrees Celsius for 120 minutes, and finally from 80 degrees Celsius to room temperature, whole process should be more than 2 hours. In order to ensure that the part is evenly heated, sand can be used for thermal curing process). Of course, please pay attention to the humidity of the environment during the post-treatment process.

- 5) Please dry the part immediately after polishing (Don't polish the part with materials that contains water).
- 6) Place the part in a dry environment before it is cured since the newly built part is still in progress of the internal reaction, and it is most easy to absorb the moisture in the air and directly cause the part to expand or deform. Therefore, the part that has not been post-treated must be placed in a dry environment, and it is preferably to soak it in resin. During the draining of the resin on the part, the ambient humidity must also be low (38% or less).