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a brand of MAM – Mass Additive Manufacturing GmbH

Ultracur3D® ST 7500 G

User Guideline



Introduction

The following user guideline is for professionals who use: Ultracur3D® ST 7500 G.
The safety data given in this publication is for information purposes only and does not constitute a legally binding Material Safety Data Sheet (MSDS). The relevant MSDS can be obtained upon request from your supplier or you may contact MAM directly at sales@forward-am.com.
For more information, please refer to the country specific MSDS for advice.

Are you looking for an updated User Guideline version? Check out the latest online version here.

Storage conditions and disposal considerations

Keep container tightly closed in a room temperature, well-ventilated place. Keep container dry. If material is not being used, fill it back through a filter in the corresponding material bottle. The filter prevents cured pieces or failed prints from going back into the bottle. Ultracur3D® ST 7500 G must be disposed of in accordance with local regulations.
For more information, please refer to the country specific MSDS for advice.

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Intended use

Ultracur3D® ST 7500 G is a technical material based on (meth-)acrylate resin for suggested LCD and DLP systems. Working wavelength: 385 nm or 405 nm. Below, you can find some suggested 3D printers and printing parameters. For more information contact MAM directly at sales@forward-am.com.

Examples of suitable 3D-Printers and settings

	Wavelength	Power	Curing time	Voxel depth
Anycubic Photon Mono X 6K	405 nm	2.5 mW / cm²	4 s	100 µm
Creality Halot Sky CL 89	405 nm	2 mW / cm²	5 s	100 µm
Elegoo Saturn 2	405 nm	2 mW / cm²	7 s	100 µm
MiiCraft Ultra 125	405 nm	4 mW / cm²	2 s	100 µm
MiiCraft Ultra 125 Y	385 nm	4 mW / cm²	3 s	100 µm
Phrozen Sonic Mini 8k	405 nm	1.5 mW / cm²	9 s	100 µm
Rapidshape i30+®	385 nm	2 mW / cm²	3.5 s	100 µm
Stratasys Origin One	385 nm	5 mW / cm²	3 s	100 µm

If you cannot find your printer in the table or using the 3D Printing and Post Processing Settings Navigator you can use the values below as starting parameters. These are only approximations, different 3D printers may require different curing times and further optimization, but these values should be a good starting point.

The given values are all for printing at a layer thickness / voxel depth of 100 µm. If you need starting parameters for a different layer thickness, please contact us.

	405 nm Wavelength 3D Printer			
Power*	5 mW / cm²	4 mW / cm²	3 mW / cm²	2 mW / cm²
Suggested curing time	3.6 s	4.5 s	6 s	9 s

	385 nm Wavelength 3D Printer			
Power*	5 mW / cm²	4 mW / cm²	3 mW / cm²	2 mW / cm²
Suggested curing time	5.5 s	7 s	9.3 s	14 s

* Power measured directly on the glass

Printing process

The material should be processed at room temperature. Before usage, the material should be shaken well. Pour it slowly into the vat and wait a couple of minutes, until a smooth, bubble-free surface is obtained before starting the print job.

The 3D printer examples and settings stated above are only for general guidance. The fully optimized settings should always be determined by the users themselves, according to their specific needs. Please always refer to the user manual of the employed 3D printer for instructions on printer settings and handling.

Remove the parts carefully from the build platform with a suitable tool, for more information, refer to the user manual of the used 3D printer.

Cleaning and post curing process

Ultracur3D® ST 7500 G can be cleaned with a Glycol Ether based solvent like Ultracur3D® Cleaner and 2-propanol, please refer to the following cleaning procedure.

Cleaning with Ultracur3D® Cleaner and 2-propanol (IPA)

- Step 1: Place the parts in a container filled with Ultracur3D® Cleaner and place this container in an Ultrasonic bath filled with water for 3 minutes. The cleaning time can vary depending on the complexity of the printed geometry.
- Step 2: Rinse the parts with 2-propanol for a few seconds. Fine structures or holes may be better cleaned by using 2-propanol and a syringe or by separate brushing. Next, place the parts in a container filled with 2-propanol and place this container in an Ultrasonic bath filled with water for 3 minutes.
- Step 3: Blow dry the parts with pressurized air or nitrogen, until the parts are clean.
- Step 4: Place the parts into a warming cabinet at 40°C (104°F) for 30 minutes to dry off any remaining cleaning solvent.

Example of post curing procedures

Ultracur3D® ST 7500 G parts require adequate post-curing to achieve the optimal mechanical properties. After each post-curing cycle, the parts need to be flipped to achieve an even curing. After post-curing, remove any support structures and smoothen the surface if required.

	UV lamp	Power in mW / cm²	Duration of post-curing	Notes
Dymax ECE 2000 flood	Hg Metal Halide Bulb (broad spectrum)	Ca. 140 mW / cm² at 405 nm	2 x 600 seconds	Shelf height K
OtoFlash G 171	Flash-bulbs (broad spectrum)	Ca. 3.5 mW / cm² at 405 nm	2 x 6000 flashes	With Nitrogen
Phrozen Cure	405 nm LED	Ca. 12 mW / cm² at 405 nm	2 x 30 minutes	
Zortrax Curing Station	405 nm LED	Ca. 35 mW / cm² at 405 nm	2x 21 minutes	

These proceedings are only general guidelines. In the end, the user has to determine the optimum post-curing procedure based on their specific requirements and the equipment used.

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Frequently asked questions and other tips and tricks

1. **What kind of paint works well with Ultracur3D® ST 7500 G?**

- While painting e.g. figurines printed in Ultracur3D® ST 7500 G the paint from “Vallejo” seems to work well with this material. Also other paints can work but need to be tested.

2. **How can I smoothen the support marks on the surface of parts?**

- To smoothen the surface, a manual handpiece can be used with a milling cutter for plastic.

3. **My parts are translucent, how can I make them more opaque?**

- Before starting to print make sure to mix the material very well in the bottle. It is recommended to remix the material once a day with e.g. a playing card to ensure an even distribution of the color particles.

4. **Why do my parts have surface defects (e.g. small holes)?**

- Make sure all bubbles are gone before starting a print job.
- Check your material vat/ foil if there are any defects.
- Depending on the machine and geometry reducing the printing speed and increasing the lift distance will give the material a chance to flow properly.

5. Why do my parts have flakes?

- Make sure that your machine parts are all clean, smeared surfaces (e.g. on the glass, foils, covers etc.) can scatter the light and that can lead to flakes in the final printed parts
- Follow the 3D printer manual to see if your machine needs regular maintenance
- In case of a DLP printer, make sure the projector lens is being cleaned according to the 3D printer manual
- In case of a LCD printer, make sure that the screen is being cleaned according to the 3D printer manual

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