

# User Guideline

## Ultracur3D® ST 45

The following User guideline is for professionals who use: **Ultracur3D® ST 45**.

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 BASF directly at [sales@basf-3dps.com](mailto:sales@basf-3dps.com).

**For more information, please refer to the country specific MSDS for advice.**

### **Manufacturer**

BASF 3D Printing Solutions GmbH

69115 Heidelberg

GERMANY

E-mail address: [sales@basf-3dps.com](mailto:sales@basf-3dps.com)

<http://www.forward-am.com/>

### **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 to fill cured pieces or failed prints back into the bottle. Ultracur3D® ST 45 must be disposed of or incinerated in accordance with local regulations.

**For more information, please refer to the country specific MSDS for advice.**

### **Delivery units**

Ultracur3D® ST 45 is available in the following packaging sizes: 1 kg, 5 kg and possible larger volume packaging are also available upon request.

### **Intended Use**

Ultracur3D® ST 45 is a technical material based on (meth-)acrylate resin for suggested LCD and DLP systems. Working wavelength: 355nm, 385 nm or 405 nm. Attached a list of suggest 3D printer and Printing parameters. For more information contact BASF directly at [sales@basf-3dps.com](mailto:sales@basf-3dps.com).

*The data contained in this publication are based on our current knowledge and experience. They do not constitute an agreed contractual quality of the product and, in view of the many factors that may affect processing and application of our products, do not relieve processors from carrying out their own investigations and tests. The agreed contractual quality of the product at the time of transfer of risk is based solely on the data in the specification data sheet. Any descriptions, drawings, photographs, data, proportions, weights, etc. given in this publication may change without prior information. The customer and/or user is responsible to consider and respect all hazard and safety issues according to the MSDS of Ultracur3D® ST 45 and take, implement and/or install adequate measures and precautions to avoid any personal injuries, property damages and/or environmental pollution. Therefore, BASF3D Printing Solutions GmbH shall not be liable for any personal injury, property damages and/or environmental emissions arising out of or related to the testing, handling or usage, storage and possession of Ultracur3D® ST 45. It is the sole responsibility of the recipient of our product to ensure that any proprietary rights and existing laws and legislation are observed (02/2020)*

Version 5.0

### Example of Suitable 3D-Printers and Settings

PRINTER	STRATASYS ORIGIN ONE	MIICRAFT ULTRA 125	PRUSA SL 1	RAPIDSHAPE I30+
Wavelength	385 nm	385 nm	405 nm	385 nm
Power	5 mW/cm <sup>2</sup>	4 mW/cm <sup>2</sup>	0.45 mW/cm <sup>2</sup>	2 mW/cm <sup>2</sup>
Curing time	2.35 s	2 s	17 s	2 s
Voxel depth	100 µm	100 µm	100 µm	100 µm

If you cannot find your printer in the table, 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/cm <sup>2</sup>	4 mW/cm <sup>2</sup>	3 mW/cm <sup>2</sup>	2 mW/cm <sup>2</sup>
Suggested curing time	1.6 s	2 s	2.7 s	4 s

#### 385 nm WAVELENGTH 3D-PRINTER

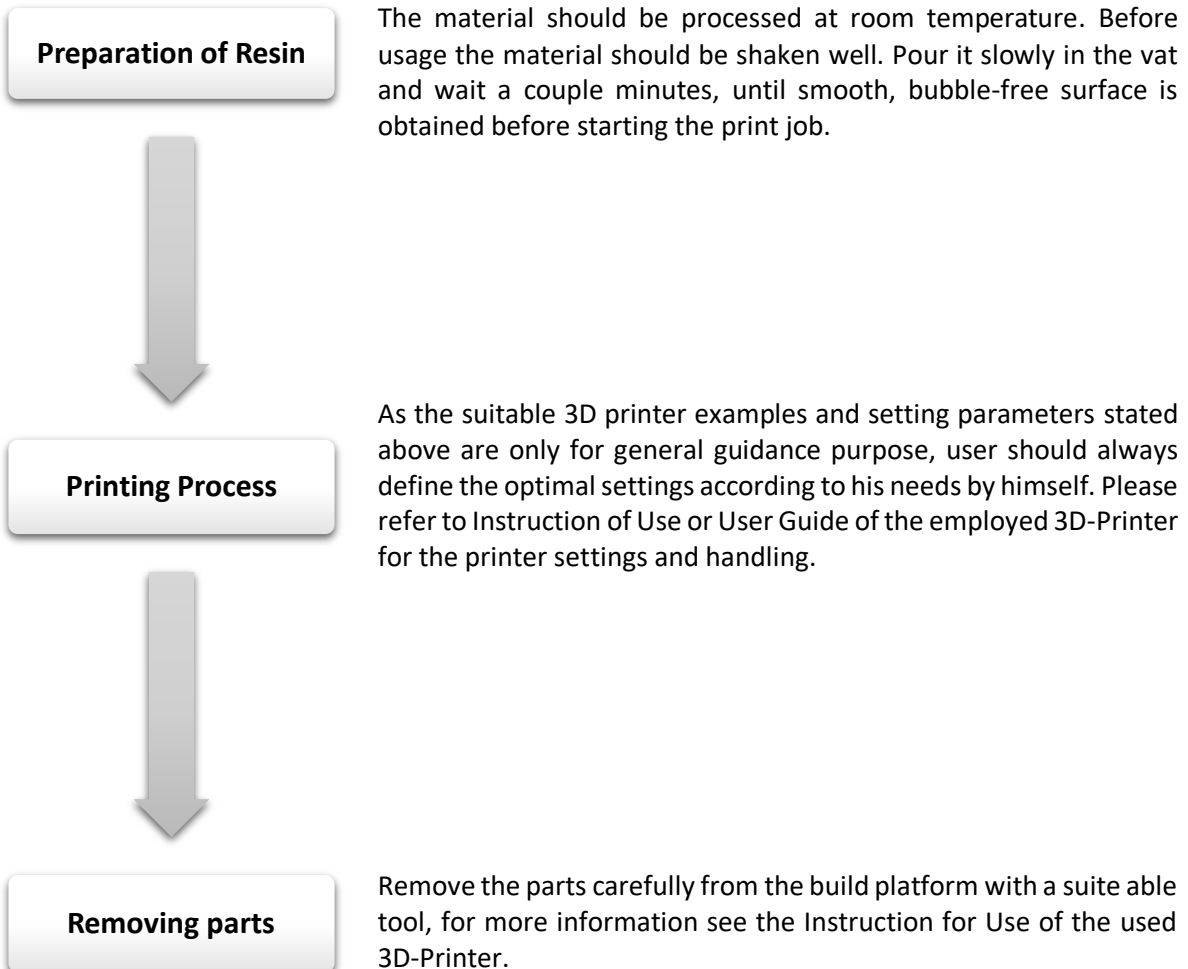
Power *	5 mW/cm <sup>2</sup>	4 mW/cm <sup>2</sup>	3 mW/cm <sup>2</sup>	2 mW/cm <sup>2</sup>
Suggested curing time	1.5 s	1.9 s	2.5 s	3.7 s

\*Power measured directly on the glass

*The data contained in this publication are based on our current knowledge and experience. They do not constitute an agreed contractual quality of the product and, in view of the many factors that may affect processing and application of our products, do not relieve processors from carrying out their own investigations and tests. The agreed contractual quality of the product at the time of transfer of risk is based solely on the data in the specification data sheet. Any descriptions, drawings, photographs, data, proportions, weights, etc. given in this publication may change without prior information. The customer and/or user is responsible to consider and respect all hazard and safety issues according to the MSDS of Ultracur3D® ST 45 and take, implement and/or install adequate measures and precautions to avoid any personal injuries, property damages and/or environmental pollution. Therefore, BASF3D Printing Solutions GmbH shall not be liable for any personal injury, property damages and/or environmental emissions arising out of or related to the testing, handling or usage, storage and possession of Ultracur3D® ST 45. It is the sole responsibility of the recipient of our product to ensure that any proprietary rights and existing laws and legislation are observed (02/2020)*

Version 5.0

## Printing Process



*The data contained in this publication are based on our current knowledge and experience. They do not constitute an agreed contractual quality of the product and, in view of the many factors that may affect processing and application of our products, do not relieve processors from carrying out their own investigations and tests. The agreed contractual quality of the product at the time of transfer of risk is based solely on the data in the specification data sheet. Any descriptions, drawings, photographs, data, proportions, weights, etc. given in this publication may change without prior information. The customer and/or user is responsible to consider and respect all hazard and safety issues according to the MSDS of Ultracur3D® ST 45 and take, implement and/or install adequate measures and precautions to avoid any personal injuries, property damages and/or environmental pollution. Therefore, BASF3D Printing Solutions GmbH shall not be liable for any personal injury, property damages and/or environmental emissions arising out of or related to the testing, handling or usage, storage and possession of Ultracur3D® ST 45. It is the sole responsibility of the recipient of our product to ensure that any proprietary rights and existing laws and legislation are observed (02/2020)*

Version 5.0

## Cleaning and Post curing process

### Cleaning Process

Ultracur3D® ST 45 can be cleaned with a Glycol Ether based solvent like Ultracur3D® Cleaner & 2-propanol, please refer to the following cleaning procedure.

#### Cleaning with Ultracur3D® Cleaner & 2-propanol

*Step 1:* Place the parts in a container filled with Ultracur3D® Cleaner and *place this container* in an Ultrasonic bath filled with water for 2 minutes.

*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 2 minutes.

*Step 3:* Blow dry the parts with pressure air/nitrogen, until the parts are clean.

### Drying

Place the parts into a warming cabinet @40°C for 30 minutes.

*The data contained in this publication are based on our current knowledge and experience. They do not constitute an agreed contractual quality of the product and, in view of the many factors that may affect processing and application of our products, do not relieve processors from carrying out their own investigations and tests. The agreed contractual quality of the product at the time of transfer of risk is based solely on the data in the specification data sheet. Any descriptions, drawings, photographs, data, proportions, weights, etc. given in this publication may change without prior information. The customer and/or user is responsible to consider and respect all hazard and safety issues according to the MSDS of Ultracur3D® ST 45 and take, implement and/or install adequate measures and precautions to avoid any personal injuries, property damages and/or environmental pollution. Therefore, BASF3D Printing Solutions GmbH shall not be liable for any personal injury, property damages and/or environmental emissions arising out of or related to the testing, handling or usage, storage and possession of Ultracur3D® ST 45. It is the sole responsibility of the recipient of our product to ensure that any proprietary rights and existing laws and legislation are observed (02/2020)*

Version 5.0

**Post curing**

Ultracur3D® ST 45 parts require adequate post curing to achieve the optimized final mechanical properties. After each post-curing cycle, the part needs to be flipped to achieve an even curing.

Example of post curing procedure

**Stratasys Origin One**

<b>Post-curing unit</b>	<b>Dymax ECE 2000 flood</b>
<b>Amount of cycles</b>	2
<b>Duration of one curing cycle</b>	600 seconds

**MiiCraft Ultra 125**

<b>Post-curing unit</b>	<b>Dymax ECE 2000 flood</b>
<b>Amount of cycles</b>	2
<b>Duration of one curing cycle</b>	300 seconds

**Prusa SL 1**

<b>Post-curing unit</b>	<b>Dymax ECE 2000 flood</b>
<b>Amount of cycles</b>	2
<b>Duration of one curing cycle</b>	600 seconds

**rapidshape i30+**

<b>Post-curing unit</b>	<b>Otoflash G171</b>	<b>Dymax ECE 2000 flood</b>
<b>Amount of cycles</b>	2	2
<b>Duration of one curing cycle</b>	2000 flashes	300 seconds

**Finishing Process**

Remove, if necessary, support structures and smoothing the surface.

These proceedings are only general guidelines, the optimal printing settings as well as curing time must be defined by the user himself. The post-curing might differ by using different 3D-Printers and different post-curing units may require different settings.

*The data contained in this publication are based on our current knowledge and experience. They do not constitute an agreed contractual quality of the product and, in view of the many factors that may affect processing and application of our products, do not relieve processors from carrying out their own investigations and tests. The agreed contractual quality of the product at the time of transfer of risk is based solely on the data in the specification data sheet. Any descriptions, drawings, photographs, data, proportions, weights, etc. given in this publication may change without prior information. The customer and/or user is responsible to consider and respect all hazard and safety issues according to the MSDS of Ultracur3D® ST 45 and take, implement and/or install adequate measures and precautions to avoid any personal injuries, property damages and/or environmental pollution. Therefore, BASF3D Printing Solutions GmbH shall not be liable for any personal injury, property damages and/or environmental emissions arising out of or related to the testing, handling or usage, storage and possession of Ultracur3D® ST 45. It is the sole responsibility of the recipient of our product to ensure that any proprietary rights and existing laws and legislation are observed (02/2020)*

Version 5.0