



Bilby 3D

MATERIAL DATA SAFETY SHEET

Issued in Australia by Bilby 3D Pty Ltd.

The attached Material Data Safety Sheet has been prepared by the manufacturer outside Australia.

In accordance with Australia WHS regulations the following Australian contact details apply

Section 1: AUSTRALIAN COMPANY DETAILS

In Australia the product is imported and distributed by:
Bilby 3D Pty Ltd

Mailing Address :

Kingsgrove Business Centre, 7/192 Kingsgrove Rd, Kingsgrove NSW 2208

Head Office Address :

Kingsgrove Business Centre, 7/192 Kingsgrove Rd, Kingsgrove NSW 2208

Contact Phone: 1800 847 333

Section 2: AUSTRALIAN EMERGENCY CONTACT

Emergency Contact

In the event of an emergency please contact:

Poisons Information Centre 24 hour Telephone Advice Line on 13 11 26

Section 3: AUSTRALIAN ISSUE DATA

Date of Issue : 1 March 2020

User Guideline

Ultracur3D® CK Line

The following User Guideline is for professionals who use: **Ultracur3D® CK 01, Ultracur3D® CK 02, Ultracur3D® CK 03, Ultracur3D® CK 04 and Ultracur3D® CK 06.**

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.

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

<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® CK 01, Ultracur3D® CK 02, Ultracur3D® CK 03, Ultracur3D® CK 04 and Ultracur3D® CK 06 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® CK Line, are available in the following packaging sizes:

- Ultracur3D® CK 01 in 500g and 1 kg,
- Ultracur3D® CK 02 in 500g,
- Ultracur3D® CK 03 in 500g,
- Ultracur3D® CK 04 in 500g,
- Ultracur3D® CK 06 in 500g and 1 kg

and possible larger volume packaging are also available upon request.

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Intended Use

Ultracur3D® CK Line can be used to print parts in a wide range of colors, without the need for post-processing. To use the color kits, you just mix a small amount of the color kit into your clear base resin before printing. For more information contact BASF directly at sales@basf-3dps.com.

Available Color

- Ultracur3D® CK 01 (White)
- Ultracur3D® CK 02 (Yellow)
- Ultracur3D® CK 03 (Cyan)
- Ultracur3D® CK 04 (Magenta)
- Ultracur3D® CK 06 (Black)

Mixing method:

- 1) Shake the color kits well before use. Pigment dispersions will often show some settling over time.
- 2) Determine the amount of color kit you want to add. You can use the table below as a guideline.
Remarks:
 - In the examples below, Ultracur3D® ST 80 is used as the clear base resin. Results with other materials will usually be similar, but take into account that if your base resin has a strong background color (e.g. yellow or brown), this may affect the final color.
 - The table uses weight-based ratio's. However, the same ratio's can be used on a volume-base (e.g. using a syringe to add color kit). Liquid densities of both the color kits as well as most available resins are all very similar (around 1.0-1.1 g/ml), so any effects on the final color will be negligible.
- 3) Mix the clear resin with the color kit:
 - Option 1: using an external mixer, just mix until the mixture looks homogenous. We have good results with a Silverson L5M-A mixer, at 1500 rpm for 15-30 minutes. Since materials will be exposed to light, it is recommended to do this in a UV-free (orange light) room.
 - Option 2: Add the required amount of Color kit to your base resin in its original container (bottle) and shake until homogenous.
- 4) Determine appropriate printing parameters (see indications below) and start printing!

There are various options that lead to equally good results.

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FIGURE	COLOR		ST 80 CLEAR	CK 01 White	CK 02 Yellow	CK 03 Cyan	CK 04 Magenta	CK 06 Black
1	White	Opaque	1000 g	45 g				
2	Black	Opaque	1000 g					10 g
3	Grey	Opaque	1000 g	23 g				1.5 g
4	Blue, light	Translucent	1000 g			5 g		
5	Blue, dark	Translucent	1000 g			40 g		
6	Blue	Opaque	1000 g	20 g		5 g		
7	Magenta, light	Translucent	1000 g				5 g	
8	Magenta, dark	Translucent	1000 g				40 g	
9	Magenta	Opaque	1000 g	20 g			5 g	
10	Yellow, light	Translucent	1000 g		5 g			
11	Yellow, dark	Translucent	1000 g		40 g			
12	Yellow	Opaque	1000 g	20 g	5 g			
13	Green, dark	Translucent	1000 g		20 g	20 g		
14	Purple	Translucent	1000 g			5 g	35 g	
15	Royal Blue	Translucent	1000 g			20 g	20 g	
16	Orange	Translucent	1000 g		35 g		5 g	
17	Red	Translucent	1000 g		20 g		20 g	



Compatibility with other Ultracur3D® 3D-printing resin

The Ultracur3D® CK Line has very good compatibility with the rigid Ultracur3D® materials (Ultracur3D® ST 80, Ultracur3D® ST 45, Ultracur3D® RG 35 and Ultracur3D® RG 50). Compatibility with Ultracur3D® flexible materials (FL / EL – Line) is more difficult and tests are still ongoing.

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Example of Suitable 3D-Printers and Settings (all with Ultracur3D® ST 80 as clear base resin)

MATERIAL	WHITE	BLACK	GREY	BLUE, LIGHT TRANSLUCENT	BLUE, DARK TRANSLUCENT	BLUE OPAQUE
Printer	MiiCraft Ultra 125	MiiCraft Ultra 125	MiiCraft Ultra 125	MiiCraft Ultra 125	MiiCraft Ultra 125	MiiCraft Ultra 125
Wavelength	385 nm	385 nm	385 nm	385 nm	385 nm	385 nm
Power	4 mW/cm ²	4 mW/cm ²	4 mW/cm ²	4 mW/cm ²	4 mW/cm ²	4 mW/cm ²
Curing time	2.75 s	5 s	3 s	4 s	4.5 s	3 s
Voxel depth	75 µm	75 µm	75 µm	75 µm	75 µm	75 µm

MATERIAL	MAGENTA, LIGHT TRANSLUCENT	MAGENTA, DARK TRANSLUCENT	MAGENTA OPAQUE	YELLOW, LIGHT TRANSLUCENT	YELLOW, DARK TRANSLUCENT	YELLOW OPAQUE
Printer	MiiCraft Ultra 125	MiiCraft Ultra 125	MiiCraft Ultra 125	MiiCraft Ultra 125	MiiCraft Ultra 125	MiiCraft Ultra 125
Wavelength	385 nm	385 nm	385 nm	385 nm	385 nm	385 nm
Power	4 mW/cm ²	4 mW/cm ²	4 mW/cm ²	4 mW/cm ²	4 mW/cm ²	4 mW/cm ²
Curing time	3.5 s	3.5 s	3 s	3.5 s	4.5 s	3 s
Voxel depth	75 µm	75 µm	75 µm	75 µm	75 µm	75 µm

MATERIAL	GREEN TRANSLUCENT	PURPLE TRANSLUCENT	ROYAL BLUE TRANSLUCENT	ORANGE TRANSLUCENT	RED TRANSLUCENT	ULTRACUR3D® ST 80 (REFERENCE)
Printer	MiiCraft Ultra 125	MiiCraft Ultra 125	MiiCraft Ultra 125	MiiCraft Ultra 125	MiiCraft Ultra 125	MiiCraft Ultra 125
Wavelength	385 nm	385 nm	385 nm	385 nm	385 nm	385 nm
Power	4 mW/cm ²	4 mW/cm ²	4 mW/cm ²	4 mW/cm ²	4 mW/cm ²	4 mW/cm ²
Curing time	4 s	3.5 s	3.75 s	4.5 s	4 s	2.5 s
Voxel depth	75 µm	75 µm	75 µm	75 µm	75 µm	75 µm

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Printing Process



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

As the suitable 3D printer examples and setting parameters stated above are only for general guidance purpose, user should always define the optimal settings according to his needs by himself. Please refer to Instruction of Use or User Guide of the employed 3D-Printer for the printer settings and handling.

Remove the parts carefully from the build platform with a suitable tool, for more information see the Instruction for Use of the used 3D-Printer.

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Cleaning and Post curing process

Cleaning Process

The different color mixtures, listed in this document, with the Ultracur3D® CK Line 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.

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Post curing

The following settings can be used for all listed colors. After each post-curing cycle, the part needs to be flipped to achieve an even curing.

Examples of post curing procedures

MiiCraft Ultra 125

Post-curing unit	Dymax ECE 2000 flood
Amount of cycles	2
Duration of one curing cycle	600 s



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.

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Mechanical properties

Please note that due to adding a foreign material, certain characteristics like the mechanical-, biocompatibility- properties might be slightly affected. This is very dependent on the base material (clear) that is in use. In our tests below with Ultracur3D® ST 80, we saw slight decreases in E modulus, and slight increases in Elongation at break, but usually not more than 10% change (preliminary data!). For other materials this might be different.

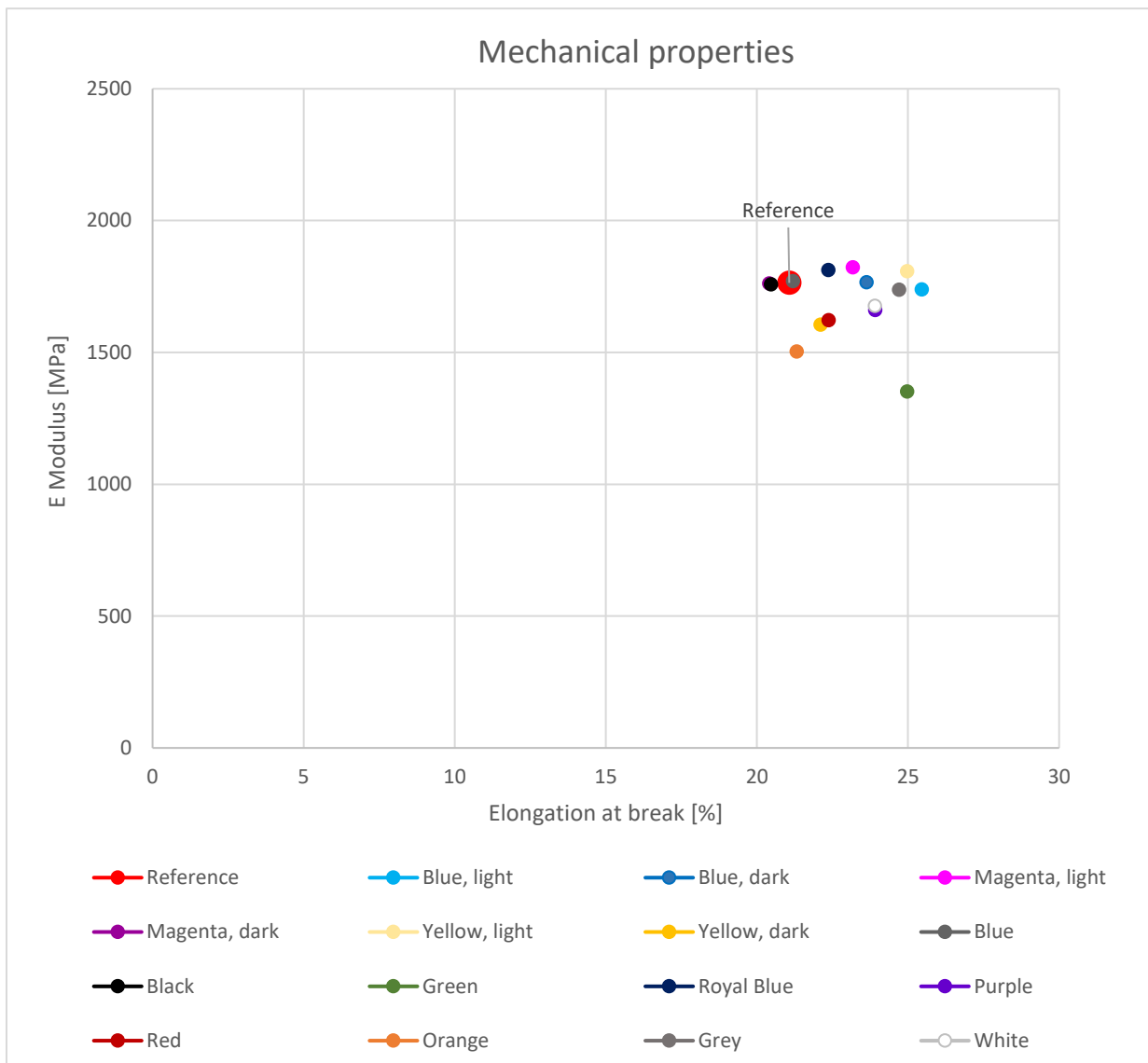


Figure 18 Change in mechanical properties

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