

### Material: iglidur® i3000-PR 3D printing resin

#### 1) General information

The iglidur® i3000-PR material developed by igus® is a thermoset synthetic resin. The resin is suitable for additive manufacturing processes based on stereolithography, especially the DLP process. It can be processed on 3D printers that allow third-party materials to be processed and the printing parameters to be freely set. The material was tested on DLP and LCD/mSLA 3D printers.

#### 2) Processing instructions

Read the safety data sheet before first use. Process in a well-ventilated area. Avoid skin contact with uncured or partially cured resin, wear nitrile gloves and face protection. Shake the bottle well before filling the resin into the resin vat. Before starting a print job, stir the resin in the vat with a soft spatula, e.g. silicone spatula. Remove impurities, e.g. hardened material residues in the vat (use the printer's cleaning function or run resin through a filter).

#### 3) Processing parameters

The optimum processing parameters depend a lot on the characteristics of the respective printer. Therefore, the following values are only to be understood as reference values.

##### DLP 3D printer *(profile created with ASIGA MAX X UV)*

Light source: 385 nm, light intensity max. 26 mW/cm<sup>2</sup>

Parameter	Burn-in layer	Other layers
Number	1	
Layer thickness [mm]	0.05 – 0.075	0.05 – 0.075
Exposure [s]	3.5	2.3 – 2.7
Light intensity [mW/cm <sup>2</sup> ]	12	12
Wait time before exposure [s]	1	0.25
Wait time after exposure [s]	2	0.25
Separation distance [mm]	10	10
Separation speed [mm/s]	2.8	2.8
Approach speed [mm/s]	4.3	4.3
XY compensation [mm]	-0.05	-0.02
XY scaling [%]	100.8	100.8
Build volume temperature [°C]	30	30

##### LCD/mSLA 3D printer *(profile created with Phrozen Sonic Mini 8K)*

Light source: 405 nm, light intensity ca. 3-6 mW/cm<sup>2</sup>

Parameter	Burn-in layer	Other layers
Number	3	
Layer thickness [mm]	0.05 – 0.075	0.05 – 0.075
Exposure [s]	25	7 – 9
Light intensity [%]	100	100
Wait time before exposure [s]	5	0.5
Wait time after exposure [s]	5	0.5
Separation distance [mm]	10	10
Separation speed [mm/s]	1.5	1.5
Approach speed [mm/s]	2.5	2.5
XY compensation [mm]	-0.1	-0.05
XY-Skalierung [%]	100,5 – 101	100,5 – 101

#### 4) Support structures

igidur® i3000-PR is sensitive to the correct application of support structures. The usual rules for adding support structures in DLP or SLA 3D printing apply. Unsupported areas ("islands") can damage the part and cause the print job to fail. For small and normal components: the first or lowest supports should have a contact diameter of approx. 0.5 mm and all further supports 0.3 mm; for larger components, use thicker supports if necessary. Many fine supports with close spacing enable safe and easy to remove structures.

#### 5) Post processing

The printed parts should not dwell either in the resin or in the cleaning agent. Wash printed parts in a washing station, e.g. ultrasonic cleaner in isopropyl alcohol (IPA). Use washing cycles of maximum 2 minutes, allow to dry or blow dry in the meantime. Before cleaning, the support structure should be removed, and any residue of uncured resin must be washed off completely. Post-cure in UV chamber at least until component surface is dry and hard. Add post-curing time for thick-walled parts. The duration of post-curing also influences the parts' accuracy. After post-curing, the traces of the support structure can be removed with a file or sandpaper.

#### 6) Storage

Store the resin in a dark, cool and dry place if possible. Consume within one year.

#### 7) FAQ

##### **Do I need a special printer to process the iglidur® 3D printing resin?**

No, a special printer is not necessary. Even on entry-level LCD models, i3000 could be processed well. The exposure times may be longer than usual.

##### **Does my printer need a heated build volume?**

No, a heated build volume is not absolutely necessary. However, at ambient temperatures below 20 °C, the resin is too viscous. This can reduce the print quality and the print job may fail.

##### **The printed part does not adhere to the platform, what can I do?**

1. check the levelling, if necessary readjust the zero position; for this, see the printer's manual.
2. check whether the print platform reaches the zero position. Check resin vat for debris and remove if necessary (use the printer's cleaning function)
3. Increase exposure time for the burn in layer
4. If adjustable, increase light intensity for burn in layer.

##### **Adhesion between print bed and part is too high. How can it be reduced?**

1. check the levelling, if necessary readjust the zero position; for this, see the printer's manual.
2. Decrease burn in exposure time
3. If adjustable, decrease light intensity for burn in layer.