



Somos[®] QuickGen[™] 500

Overview

Somos[®] QuickGen[™] 500 is a fast-printing DLP/LCD material with a print speed 2x faster than similar materials. It offers accurate printing for general and functional prototypes.

Technical Data

Optical Properties

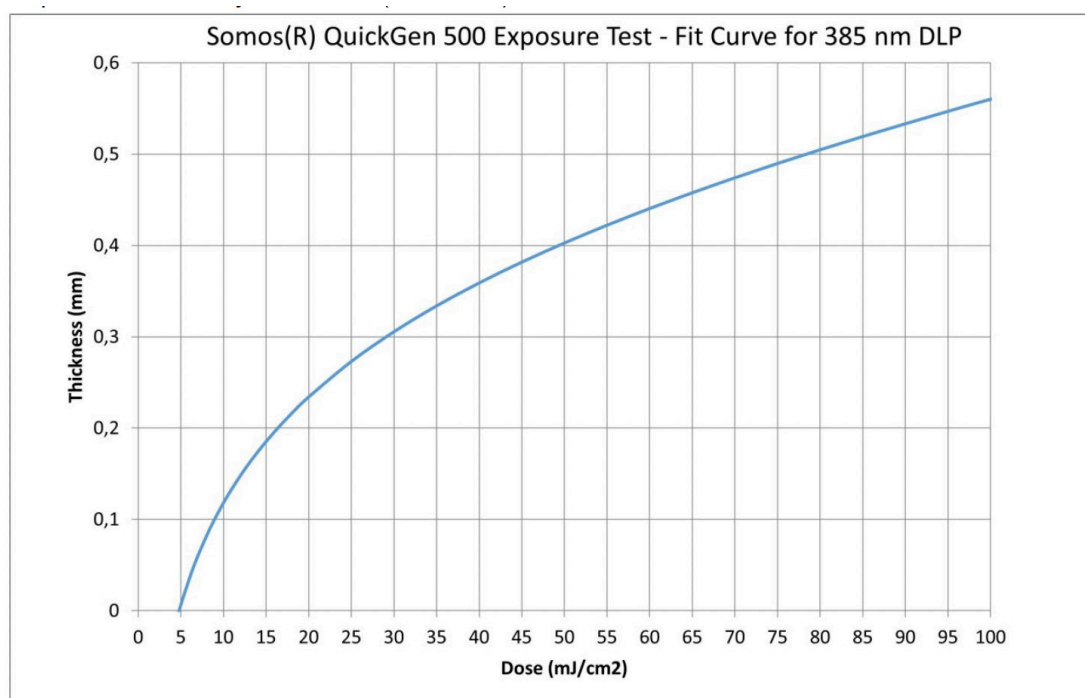
Property	Value	Comments
E_c	4.85 mJ/cm ²	Simple Exposure Test; Working Curve
D_p	0.160 mils	385 nm DLP, 5 mW/cm ² measured intensity
E10	22 mJ/cm ²	
Time/Energy to cure 0.05 mm layer	1.50 s 7.5 mJ/cm ²	
Time/Energy to cure 0.10 mm layer	2.44 s 12.2 mJ/cm ²	
Time/Energy to cure 0.15 mm layer	3.80 s 19.0 mJ/cm ²	
Time/Energy to cure 0.20 mm layer	5.84 s 29.2 mJ/cm ²	



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Exposure Testing

Exposure testing was performed using a 385 nm DLP light engine. A 0.2 mm Polytetrafluoroethylene (PTFE) membrane was placed over the light engine housing and the resin was cured on the membrane. At a wavelength of 385 nm, the E_{10} , defined by energy dose required to cure a layer to 10 mil (0.250 mm) thickness was calculated to be 0.24 J/cm².



Safety Instructions

Adhere to the following guidelines:

- Read and understand the Safety Data Sheet (SDS) before using the material.
- Avoid contact with eyes, skin & clothing by wearing the following Personal Protective Equipment (PPE):
 - Safety Glasses/Goggles
 - Gloves
 - Laboratory Coat
- Keep the work area clean.
- Avoid spreading material on clean surfaces.

Somos[®] QuickGen[™] 500

- If material is found on clean areas, it should be cleaned off immediately with a disposable paper towel and isopropanol.
- Wash hands regularly after handling material.
- Provide adequate ventilation.
- Prevent build-up of volatile substances from materials and solvents.
- Remove dust from clean and finished parts.
- See the Stratasys[®] [Handling of Cured Somos Stereolithography Resins](#) guide for UV materials for further safety instructions.

Preparing Equipment

Operating Conditions

We recommend the following room conditions:

- Ambient temperature of 20°C – 25°C (68°F – 77°F)
- Humidity of less than 40%.
- Minimize dust in resin chamber/build platform.
- Use UV filters for lighting and external windows.

Replacing Material

When replacing material, make sure you clean the vat thoroughly, dispose of used material and cleaning products (solvents, paper towels, etc.) properly and follow vat installation procedures.

Machine Maintenance

Contact your equipment supplier for up-to-date technical support for your equipment. Below are a few common checks that will help you build parts successfully:

Optics

- Keep optics dust free and clean. Periodic preventative maintenance, in accordance with manufacturer recommendations, will increase the life of the light engine and improve its quality.
- Have the light engine serviced periodically per guidance of the equipment manufacturer. The typical frequency is two to three times annually.

Machine Computer

- Inspect the cooling fans for electronic components regularly to ensure they are working properly.
- Install backup hard drives to ensure you do not lose any data. This is very important, especially for older equipment.
- Make sure the latest computer software service packs are installed on your system for optimal performance.

Somos[®] QuickGen[™] 500

Build Parameters

Build parameters are subject to site conditions and machine efficiency. The parameters mentioned below can be considered base settings that you can tweak for improved styles.

Machine Settings

Before beginning a new build, check the resin chamber for crashed parts and cured resin, ensuring the bottom of the vat is intact since the resin may have high adhesion forces. Confirm the machine is properly calibrated and has predictable energy delivery on all areas of the build platform.

Guidance for Build Styles

For builds of all layer thicknesses, allow a first layer burn-in exposure dose of 100 mJ/cm², assuming the printer is a 385 nm DLP, with two additional layers at 50 mJ/cm².

Parts can be densely packed if the part design is short and/or rigid, with a Z-wait as low as 1 second per layer.

Longer parts printed in the “Z” direction or thin-walled parts can begin to flex slightly in the later stages of the build or after appreciable height of thin-walled parts are achieved, though this should not affect part quality. For these kinds of parts, increase part spacing to a minimum of 2 mm, and increase the Z-wait to a minimum of 2 seconds per layer.

Printing at under 0.10 mm layer thicknesses may need increased z-wait to compensate for lower modulus “green” parts and reduced gap for resin flow.

Printing at over 0.15 mm layer thicknesses may lead to increased separation forces between membrane and green part, though this should not affect overall print.

Postprocessing

Part-cleaning Procedure

- Drain excess material off the parts in the vat.
- Remove the platform from the machine and remove the parts.

Cleaning

- Wash with isopropanol (IPA) under continuous agitation for two minutes at a ratio of 1:50 Part:Solvent or greater, followed by another two minute IPA wash using clean IPA. Air dry in well ventilated space for best results.
- Glycol Ether will also work as a first wash step, under similar conditions as IPA.
- Agitation or sonication may be used.

Somos[®] QuickGen[™] 500

Post-curing

- Fusion Line (Broad Spectrum): This is the fastest post-cure method. Cure at a dose varying from 1 J/cm² for 8 passes, 2 1 J/cm² for 4 passes, or 4 1 J/cm² for 2 passes under a nitrogen blanket. Double the passes if no nitrogen blanket is available. Rotate parts half-way through.
- Traditional Post-cure: A CureBox Plus is recommended. Post-cure with UV and heat at 60°C for 30 minutes, flipping once mid-cure.

Disposal Instructions

In some areas, partially cured or uncured waste UV material may be classified as hazardous waste, and requires special packaging.

Transportation Disposal

Contact the governmental or other body that regulates waste disposal in your area to determine the disposal protocols.

Packaging Transportation Disposal Methods

Packaging Transportation Disposal methods must prevent any form of human contact with the waste UV material, even if it is classified as nonhazardous or unregulated. This therefore precludes the use of disposal methods that might result in groundwater or surface water contamination.

Solvent Disposal

Solvents should be isolated in a sealed, marked container and disposed of as “hazardous waste” in accordance with all applicable laws and regulations.

Clean-up Material Disposal

Soiled clothing, empty containers, etc., should be disposed of in accordance with the applicable “hazardous waste” guidelines. If any of these items contain uncured or partially cured UV-curable materials, the disposal method used must prevent any form of human contact, including any that could result in groundwater or surface water contamination.

Somos[®] QuickGen[™] 500

FAQ/Troubleshooting

Below are some examples of common issues and troubleshooting solutions. Consult this part of the guide if you are having difficulties and do not hesitate to contact your local Stratasys representative.

Issue: Delamination

Delamination occurs on the bottom layer of parts at the corners or on part edges, most commonly at interface between support and part.

Solution: Increase exposure at bottom facing layers, most critically at first 0.3 mm of part.

Issue: Roughness

The bottom surface of the part is not smooth and level.

Solution: Increase energy exposure, reduce support break point diameter, reduce peel speed between layers.

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Stratasys Headquarters

7665 Commerce Way,
Eden Prairie, MN 55344
+1 800 801 6491 (US Toll Free)
+1 952 937-3000 (Intl)
+1 952 937-0070 (Fax)

1 Holtzman St., Science Park,
PO Box 2496
Rehovot 76124, Israel
+972 74 745 4000
+972 74 745 5000 (Fax)

[stratasys.com](https://www.stratasys.com)

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