

Somos[®] WeatherX[™] 100

Somos[®] WeatherX 100 is a rigid material with good property retention after UV and chemical exposure. Developed by Somos[®] materials team.

Somos[®] WeatherX 100 can achieve the following properties without failure.

Material color:	Black	
	100um layer thickness	50um layer thickness
Maximum unsupported overhang length	4mm	3mm
Maximum span length	11mm	9mm
Minimum unsupported overhang angle	15°	15°
Minimum vertical wire diameter:		
• 1 mm height	0.25mm	0.25mm
• 3 mm height	0.25mm	0.25mm
• 5 mm height	0.5mm	0.5mm
Minimum unsupported wall thickness:		
• 5 mm height	0.25mm	0.25mm
• 10 mm height	0.25mm	0.25mm
Minimum hole diameter in z	1mm	1mm
Minimum hole diameter in xy	0.5mm	0.5mm

Support tips

The contact point diameter for supports should range from 0.4-0.8mm, 0.5mm is typical.

Contact point spacing of 2-3mm is typical for flat downward facing surfaces. Tighter spacing is useful for flat surfaces, angled surfaces can tolerate wider spacing.

Printing

Validated settings work well for most geometries. For large cross-sectional areas, you may need to increase delay. For big overhangs to resolve the best, you may want to increase exposure duration. For unvented volumes or parts with diameters greater than 35mm you may need to increase delay by 1.5 sec for every 10mm.

Part removal

Large cross sections may be difficult to remove from the platform. Using a metal scraper or razor scraper, slowly work the tool between the print and the build head with gradual, careful movements. Always push



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Cleaning

Cleaning your print is a 4-step process, involving two "baths" in the sonicator, with the user drying the part after each bath using an air compressor.

Cleaning step	
1st bath is sonication in Glycol Ether	3 minutes
Dry parts with compressed air*	10-60 seconds
2nd bath is sonication in clean IPA	3 minutes
Dry parts with compressed air*	10-60 seconds

If part is not fully clean (still appears wet after compressed air treatment, evaporation is not taking place) repeat 2nd bath followed by compressed air drying.

* Take care to avoid damaging delicate features. Aim compressed air away from you, ideally into an air cleaning cabinet or a trash can.

Postcure

The presented material requires a two step post curing process to ensure the best possible mechanical properties. The two step post curing process is divided into an ultraviolet and a thermal curing process.

- Wait at least 60 minutes after drying before postcure.
- Place in the Dymax ECE 5000, shelf I, for 3 minutes per side.
- Thin-walled parts may warp during the postcure process. To avoid this, postcure for shorter intervals, flipping part between.
- An initial short burst of 10 seconds on each side can help build strength and stiffness to reduce warping in subsequent longer intervals.
- After finishing ultraviolet curing, place the parts in a 100°C oven for 60 minutes.
- After thermal cure, allow temperature to slowly decrease to 55°C for about 1 hour before taking the parts out of the oven.



Origin[®] One

General material processing best practices

Support considerations

- Supports should be designed with adequate thickness and/or structure to ensure they remain rigid and intact during the print process.
- Tall parts need support structures that are more robust to prevent movement of the part as it grows taller while the build head is moving.
- Support contact points should be large enough so they can sustain the weight of the part and the dynamics of the print process, but always as small as possible to leave the smallest support marks.
- There are many support structures that work well, including bar/tree supports, lattice structures, polylines/fences, scaffolds, and volume supports.
- The optimal support design and type(s) for each print are dependent on part geometry and size.

Part and support removal

- When the print is complete, remove all parts and the build platform from printer. It's helpful to have a lunch tray or other non-reactive portable surface under the printer to transfer the parts and build platform and avoid dripping resin. Clean up any resin that is spilled immediately.
- A razor scraper or a putty knife is helpful for detaching part/supports from platform. Always push scrapers away from your hands.
- Remove all parts from build platform and wipe clean with a paper towel and acetone/isopropyl alcohol after each print is completed.
- Large cross sections may be difficult to remove from the platform. Using a metal scraper or razor scraper, slowly work the tool between the print and the build head with gradual, careful movements. Always push the scraper away from your fingers.
- Supports may be removed before cleaning or after.
- Remove supports before cleaning will extend solvent life and accelerate cleaning, as there will be less resin that needs to be removed. Dense supports can be difficult to clean or block area of the part from being fully cleaned.

Printing

- Stratasys will provide the printing profile to ensure printability on the Origin[®] One.
- Perform cleaning on the build head to ensure that there are no residual parts or resin on it.
- Ensure the glass bottom/membrane of the tray is clean. If smudged, wipe clean with a Kimwipe (or other lint-free wipe) and a small amount of acetone or isopropyl alcohol.
- Perform the build head calibration using the touchscreen on the front of the machine and follow the instructions displayed on the screen.
- Fill the tray with enough resin to accommodate the part volume plus at least 200 ml extra.
- Shake the bottle of resin for at least 30 seconds before pouring resin into the tray or use adequate roller machine to stir the resin bottle before use.
- If resin in the tray has been sitting for a while and seems idle, stir resin thoroughly with a flexible silicone spatula.
- If adding fresh resin to an existing tray with resin, stir resin thoroughly with a flexible silicone spatula.
- To achieve the best surface finish for big cross sections, increase model region delay.
- To achieve the best overhangs, increase model region exposure duration.

Origin[®] One

General material processing best practices

Cleaning

- Always aim to minimize the part's exposure to solvent during cleaning. All materials will absorb solvent in their green state to some degree and minimizing time in solvent will lessen the impact on mechanical properties.
- Keep dedicated solvent containers for each material. Containers should close with an air-tight seal to prevent IPA evaporation.
- Dry parts between baths with compressed air. Take care to avoid damaging delicate features. Always spray away from body, machinery or other parts.
- Dry parts after second bath with compressed air.
- Inspect the part after the second bath. If not fully clean (still appears wet and evaporation is not evident), repeat the clean bath and subsequent air drying.
- Negative features, interior corners, and blind holes may be difficult to clean. A Q-tip soaked in IPA can be helpful.
- Use a clean room wipe wet with IPA to spot-clean resin.



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