

Customer Information Bulletin



CIB00141, Rev A
Date: 7/30/2019

Subject:

ProX 800/950, iPro 8000/9000

Tips and information for part building with Accura® ClearVue™ Free (SL 7870) resin.

Issue:

3D Systems' Print-Process team has developed best practices for printing with Accura ClearVue resin.

Solution:

- 1. Software version:** Use of the most current software version is recommended, to ensure compatibility with newly-created build styles.
- 2. Software Entries:** Each material on an SLA system uses specific parameters in the client software and/or the printer operational software. The critical specific starting parameters are listed below with their material-specific values:

	iPro 8000/9000 ProX 800/950
Dp (mils)	7.2
Ec (mJ/cm ²)	10.6
Baseline Scale Factors (x, y, z)	1.0014, 1.0014, 1.0000
Baseline Linewidth Compensation Value*	0.025 mm (0.001")*
Recommended vat temperature	28°C

*Refer to **Step 11** for instructions about where and how to change the values in 3D Sprint.

- 3. Part Supports:** Accura ClearVue Free (SL 7870) support parameters have been optimized for successful part building, and produce supports that are described as "hard and crisp." Modifying supports may cause build crashes; proceed with caution if you modify support parameters. If supports are too strong, they can be difficult to remove without damaging the part surface, especially when supports are crowded around each other. Therefore, review the automatically generated supports and edit as needed to avoid overcrowding.

4. Hatch Over-cure: Hatch over-cure has been optimized for mechanical properties and build speed. It is highly recommended that the hatch over-cure values not be reduced from their defaults. However, hatch over-cure can be reduced to increase build speed. Reducing HOC from 0.006" to 0.004" (0.15 - 0.10 mm) can be explored. In general, this increased throughput comes at the cost of accuracy and mechanical properties, before and after post-curing.

5. Bubbles: Due to the nature of this resin, micro bubbles may be seen in some parts with thin walls (less than 0.25 in, or 6.35 mm – approximately the thickness of the Zephyr™ Recoater Blade). To minimize generating bubbles in your part, we recommend orienting the length of the thin-walled feature parallel with the Y axis.

6. Part cleaning: We recommend cleaning parts ONLY with isopropyl alcohol (IPA). Use of other solvents is not recommended, as they may cause surface gumminess or tackiness. Follow this procedure:

- Carefully remove parts and supports from the platform.
- Place parts in the IPA bath for five minutes
- If needed, brush down-facing surfaces/features with a soft toothbrush to remove residual resin.
- Rinse again with fresh clean IPA – just a quick rinse of about 10 seconds to remove the last residue.
- Air dry to complete cleaning, using low-pressure air especially to clear liquid out of any crevices in the part.



NOTE: CARE SHOULD BE TAKEN TO ENSURE THAT THE PARTS ARE NOT LEFT IN IPA FOR MORE THAN 15 MINUTES TOTAL TIME, TO AVOID THE PART DISTORTING DUE TO THE SOLVENT ATTACKING THE CURED MATERIAL.



NOTE: TPM WILL CLEAN PARTS EFFECTIVELY, BUT WILL CREATE A HAZY PART SURFACE (NOT CLEAR), AND MAY EVEN BE GUMMY OR TACKY. TPM IS NOT RECOMMENDED DUE TO THIS EFFECT ON THE FINISHED PART.

7. Support removal: It is preferable that supports are removed prior to UV post cure, to avoid damaging the part surface.

8. Post Curing: Post-cure the parts in the ProCure™ post-curing apparatus for 45 minutes on each side.

9. Resin Stabilization: Like the other resin types, Accura ClearVue Free needs to be stabilized. Please follow 3D Systems Resin-Stabilization guidelines to maintain the best performance and prolong resin life.

- 10. Cloudy appearance:** Accura® ClearVue™ Free (SL 7870) can develop agglomeration of material, which is sometimes described as white “particles” or “powder” in the clear resin. This can occur from several causes, but is not reversible. Therefore, it is important to follow the instructions below:
- SL7870 vats must be carefully maintained. If any partially-cured material remains in the vat (examples: part bits from a crashed build, material left a long time in a trapped volume and then poured back into the vat, etc.), it is vital that that material be strained out of the vat. Also, if partially-cured material could be at the bottom of the vat (same causes, left to settle downward), it is important that it not be stirred into the rest of the vat.
 - When using the elevator stir feature, avoid letting the elevator reach all the way to the bottom of the vat – this can bring partially cured material up into the rest of the vat, and start further agglomeration, which will cause the clear resin and resulting parts to become cloudy. With stirring initiating at just below the set **Start Position**, use a stir depth that is 80% or less of the max part height typically printed.
 - A different cause for vat and part cloudiness is stray light. It is vital that the systems be properly maintained such that there is no excess beam scatter inside the system. This can be from many causes, including poor optical alignment, poor beam rest placement, etc. During part printing, it is normal to see a laser beam fluorescing on the resin surface when imaging each part layer. If other beams are observed or laser light scatter is noticed or suspected during part printing (nearby or far from the intended image), or even when the printer is idle, contact 3D Systems Customer Support.

Stray room light cannot be allowed into the system. Doors left open, gaps in panels, and other opportunities for light to impinge on the vat can lead to formation of these white specs.

- As a clear material, SL7870 is particularly sensitive to these situations and needs special care in vat maintenance and management of unintended light.

11. Instructions for entering Linewidth Compensation values in 3D Sprint.

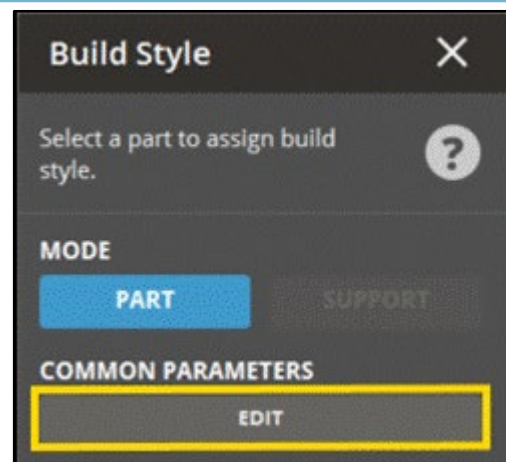
In 3D Sprint, you will perform two steps. The first one saves new values to a style, and the second one builds a platform configuration with the new style (allows you to set the new value as the default).

- To adjust compensation for a single part in 3D Sprint:
 - With a part selected, click **Build Style**.

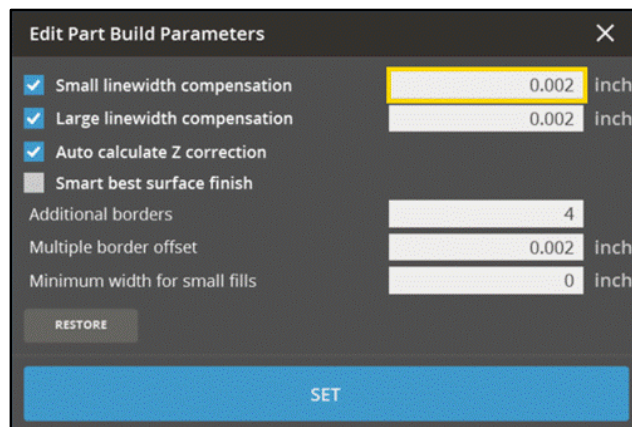


Customer Information Bulletin

b. Under Common Parameters, click **Edit**.

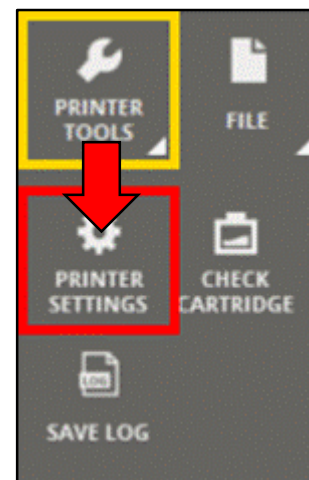


c. Enter a value in the Small linewidth compensation field.



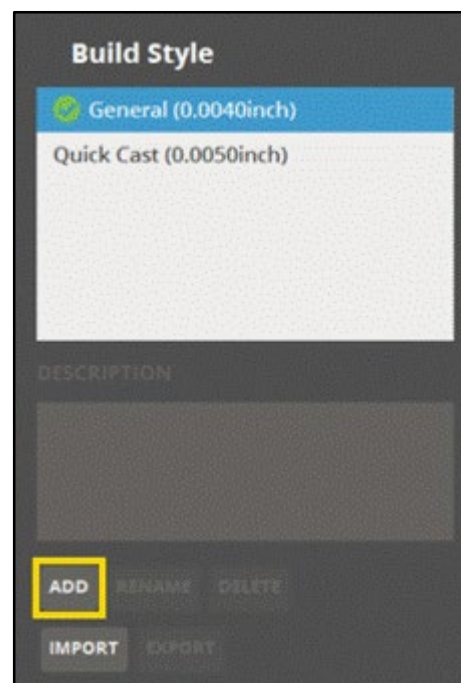
2. To adjust compensation and save within a Style in 3D Sprint:

a. Select **Printer Tools > Printer Settings**.

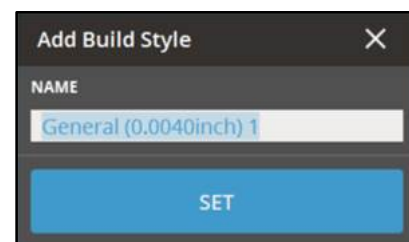


Customer Information Bulletin

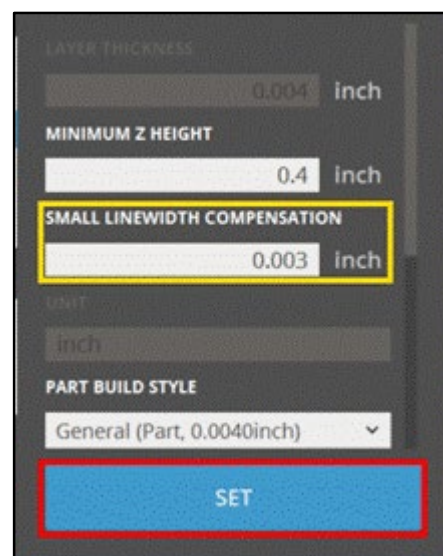
b. Click **Add**.



c. Choose a name for your saved style configuration



d. Enter a value for Small linewidth compensation and click **Set**.



Customer Information Bulletin

- d. Your new style is now saved and available on the Build Style tab in 3D Sprint.

