



Customer Information Bulletin

CIB

CIB #: 0506
Date: 31 October 2005
Status: Non-confidential

Subject: Tips and Information for Building with Accura® 25 SL Material on the Viper™, SLA® 3500, SLA 5000, and SLA 7000 Systems

1. **Buildstation™ software entries:** Each material on a SLA system uses a specific material entry in the Buildstation software. The entries contain the values for Dp and Ec used for each material. See the Buildstation Users' Guide for details. The values for Dp and Ec are shown below. In addition, different machine specific shrink/scale factors and linewidth compensation values must be used. The baseline or starting values to be used with Accura 25 SL material are given below:

Recommended Starting Parameters

	Viper System	SLA 350/3500 System	SLA 5000 System	SLA 7000 System
Dp (mils)	4.2	4.2	4.2	4.2
Ec (mJ/cm2)	10.5	10.5	10.5	10.5
Baseline Scale Factors (x, y, z)	1.0012 1.0012 1.000	1.0012 1.0012 1.000	1.003 1.003 1.000	1.0025 1.0025 1.000
Baseline Linewidth Compensation Value	0.150 mm (0.006")	0.150 mm (0.006")	0.178 mm (0.007")	0.125 mm (0.005")
Recommended vat temperature	28°C	28°C	28°C	28°C

2. **Software version:** Some software enhancements have been made that facilitate the use of this material. Please make sure that the most current software version is loaded. At a minimum, it is recommended that users have Buildstation 5.4 software Update 1 installed.
3. **Bubbles:** Though this material does not easily create bubbles, users should still take care to avoid creating bubbles during the support building process. If bubbles are observed, slowing down the elevator movement can reduce bubble formation during support building.
4. **Hatch overcure:** In general, modifying the EXACT™ and FAST™ styles is not necessary. The styles have been optimized for both, speed and accuracy. It is highly recommended that the hatch overcure values for EXACT and FAST not be reduced from default, to ensure good part yield and low post-cure distortion.
5. **Downfacing surfaces:** In the EXACT style, the down fill cure depth has been optimized to reduce curl on downfacing layers. Modifying down fill cure depth may reduce part quality.
6. **FAST style:** In general, the FAST style is about 40% faster than the EXACT style. The actual difference in throughput is dependent on part geometry, laser power and system type. Note that this increased throughput comes at the cost of accuracy and mechanical properties of both, green and post cured parts. Since the FAST style is a WEAVE™ style, less resin cure occurs in the vat, so green parts will be a little less firm than the same geometry built in EXACT.

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7. **Use of post-hatch delay (PHD):** The styles for this resin are set up to allow the use of PHD. However, PHD time greater than zero is used only on the SLA 7000 default styles. Decreasing PHD time on the SLA 7000 may increase part warpage and distortion. It may also result in bad sidewall and overall part quality. For all systems, the PHD value may be increased to decrease differential shrinkage, but the PHD time required to increase part quality is very large, and generally not a good tradeoff. On the SLA 5000, you may want to add some PHD if you are building a very large bulky part, to ensure best part quality.
8. **Large flats:** Certain parts with large flat areas (larger than 50 mm [2 in] across) may not build successfully using the general frg support style. If you have geometries with large flats, we recommend that you use the supplied support style designated "LFLT" such as Accura25_LFLT.frg. This file with tightens the Strand Spacing to reduce lifting of the large surface. Also, when building parts that have a large surface area (larger than 150mm [6 in] square), the sweep speed should be reduced to 25mm/s (1 in/s).
9. **Near-flat downfacing features:** For the Viper, SLA 3500 and SLA 5000 system, a special EXACT build style has been developed to minimize downfacing border and surface delamination for Near Flat Inclined Downfacing surfaces. This style should be used when surfaces are sloped at an angle of less than 20 degrees from horizontal. This file is named Part_Accura25_EXACT_0040in_NFLT.sty.
10. **Trapped volumes:** Accura 25 material does not require a special trapped volume style.
11. **Part cleaning:** The glossy top surface of Accura 25 resin can be removed by wiping or brushing green parts during cleaning. If you want to maintain the glossy top surface, parts should not be hand wiped, but rather air dried. Platforms with parts still attached can be cleaned in TPM, but should be placed at an angle to the z-axis to ensure thorough part cleaning, which is the typical approach for thorough cleaning. Care should be taken to ensure that the parts are not left in TPM for more than 2 hours. Isopropanol and propylene carbonate have also been used successfully for cleaning this material.
12. **Stirring:** While we have noticed some pigment settling on the elevator arms of large frame systems, we have not seen any significant loss of pigment in the vat or in the parts produced. As such we do not believe that Accura 25 material requires any stirring or mixing. Parts remain consistently white without any additional agitation.
13. **Very thin parts:** Very thin parts (< 0.75mm [0.030 in] walls/features) may distort during post-curing. Carefully support these very thin walls/features to avoid sagging or deformation during post-curing. Supporting the part with loose sand is suitable.
14. **Viper HR mode part building:** When building parts in the HR mode on a Viper SLA system, it is recommended that parts are built in the "sweet area", which is the 125mm x 125mm (5 x 5 in) area in the center of the vat. If parts are built outside this "sweet area", part failure risk increases. To help ensure proper part building outside the sweet area, you may want to increase border overcure by 0.05mm (0.002 in) from the default.
15. **AccuMax™ category:** Accura 25 material should be categorized as a Category 1 material resin for the AccuMax software.

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16. **Styles Availability:** The table below outlines the styles available for Accura 25 plastic.

SLA System	Build Mode	Style	Layer Thickness
Viper™ Pro SLA system	Normal Resolution	Normal	0.100 mm (0.004 in.)
Viper and SLA 3500/5000/7000 systems	Normal Resolution	EXACT (EXCT)	0.100 mm (0.004 in.)
Viper and SLA 3500/5000/7000 systems	Normal Resolution	FAST	0.150 mm (0.006 in.)
Viper SLA system	High Resolution	EXACT (EXCT)	0.050 mm (0.002 in.)
SLA 250 System w/ Solid-State Laser	Normal Resolution	NA	NA
SLA 500 System w/ Solid-State Laser	Normal Resolution	NA	NA

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