Overview

Rigur™ RGD450™ is a white, model material that simulates polypropylene in appearance and functionality. Rigur RGD450 offers excellent durability, dimensional stability and surface quality.

This Application Note describes recommendations and tips for achieving optimum quality and advanced mechanical properties when printing parts with Rigur RGD450.

A. Cleaning Printer Components
B. Preparing Trays for Printing
C. Printing Preferences (Objet1000 Plus printers only)
D. Removing Support Material
E. Drying Parts
F. Photobleaching Parts (Objet1000 Plus printers only)

Printing Recommendations and Tips

A. Cleaning Printer Components

Rigur RGD450 leaves more residue on the print heads than Vero™ materials. For best results and to maintain print heads in optimum condition:

Desktop printers—
After a print job is completed, run the Head Cleaning wizard.

Eden/Connex printers—
- After every print job, run the Head Cleaning wizard and the Wiper Cleaning wizard.
- If the Head Cleaning wizard is not run for 33 hours of printing, the wizard automatically opens when starting or resuming printing.
  If this occurs when a print job is interrupted, cancel the wizard to resume printing.
  Run the Head Cleaning wizard after the print job is completed.

Note:
You cannot cancel the Head Cleaning wizard to resume printing if head cleaning has not been performed for 99 hours.

- Every 15 minutes of printing, several sequences of purge are automatically performed.
Objet1000 Plus printers—
- After every print job, run the Cleaning Wizard.
- If the Cleaning Wizard was not run for 99 printing hours and printing was interrupted, you must run the wizard before resuming printing.
- Every 15 minutes of printing, several sequences of purge are automatically performed.

B. Preparing Trays for Printing
Internal stress may cause parts to curve upwards and detach from the tray. The arrangement of Rigur RGD450 parts on the build tray can reduce this possibility. When printing parts that have a high aspect ratio (X:Y), position the longer side along the Y-axis (see figure 3).

C. Printing Preferences (Objet1000 Plus printers only)
On Objet1000 Plus printers, prolonged exposure to UV radiation during printing causes a yellowish tint in Rigur RGD450 parts. For this reason, the printing mode and surface finish you choose can affect the color of the parts.

High Speed mode / matte surface finish
When printing Rigur RGD450 parts, always prefer the High Speed printing mode and a matte surface finish to achieve good color results.
In High Speed mode, fewer print-head and UV lamp passes (along the X-axis) are needed to complete the part. Furthermore, the support material that covers matte surfaces helps protect the part’s layers from excessive UV radiation, thereby preventing or reducing the tinting.

Printing parts with a glossy surface finish
When printing glossy parts, arrange them so they have similar heights. This ensures that the parts are not exposed to unnecessary UV radiation, since parts with similar heights require the same number of print-head and UV-lamp passes.

D. Removing Support Material
Proper handling and cleaning of parts printed with RGD450 and its digital materials is required for best results.

Important:
Do not use a cleaning station, such as CleanStation DT3 and CleanStation CSIIP, to remove the Support material from RGD450 parts.

- Remove the support material immediately after printing is completed.
- Use special care when cleaning parts with delicate elements.
- Excessive contact of parts with water or caustic soda (sodium hydroxide) can adversely affect dimensional stability and cause deformations.
  - When removing support material with the WaterJet, keep cleaning time to a minimum.
  - When removing support material with a 1-percent caustic soda solution, soak parts with walls thinner than 2 mm for no more than one hour. Soak all other parts for no more than two hours.
E. Drying Parts
Drying Rigur RGD450 parts thoroughly is essential for achieving optimum quality. To dry parts thoroughly, use the following methods, as necessary:
- Use an air blower to remove excess water from parts.
- Place parts on a dry surface or on a drying rack.
- Orientate parts so that they dry effectively, making sure that areas that trap water are exposed.
- Orientate parts so that there is minimal strain on thin walls (see Figure 4).

F. Photobleaching Parts (Objet1000 Plus printers only)
If parts printed with Rigur RGD450 Plus have a yellowish tint, the tint will fade naturally over time. You can greatly accelerate this process by using a suitable photobleaching treatment. This involves exposing parts to intense fluorescent light.

Two photobleaching methods are recommended by Stratasys—

Method 1: Using an Illumination Chamber (Figure 5)
- Off-the-shelf product
- Enables control of temperature and light intensity
- Assures predictable results

Method 2: Using Desk Lamps (Figure 6)
- Self-assembly from readily available components
  Note: The fluorescent lamps should be rated 23W, Daylight.
- Low cost solution
- Varying results, due to the lack of precise control over temperature and light intensity

Photobleaching Instructions:
1. When using desk lamps, place the parts in a container. The inside of the container must be covered with aluminum foil. Use at least two lamps, more when treating part in a large container.
2. Arrange the printed parts in the chamber/container with enough distance between them to allow light to reach all sides of each part.
3. Turn on the lights. Verify that the ambient temperature around the parts is approximately 40°C (104°F). Higher temperatures may cause part distortion; lower temperatures may not produce satisfactory results. When using desk lamps, you can achieve the required temperature by positioning the lamps approximately 10 cm (4 in) above the models.
4. Inspect the model tint after six hours of treatment.
   
   • For parts with a matte finish, this should be enough.
   • For parts with a glossy finish, continue the photobleaching treatment for up to 18 hours to achieve the desired results.
1 Prepare the tray.

For models with a high aspect ratio (X:Y), when possible position the long edge on the Y axis.

2 Remove the support material.

After printing, remove support material from parts. Keep waterjet treatment to a minimum and treat delicate parts with special care.

Optional:
Soak parts in a 1% caustic soda solution—
• delicate parts < 1 hour
• regular parts < 2 hours

3 Dry the parts thoroughly.

a. Use an air blower to remove excess water.

b. Place the parts on a dry surface or drying rack.

c. Position the parts so that they dry effectively.

d. Make sure that there is minimal strain on delicate elements.

4 Clean the print heads.

Run the Head Cleaning Wizard soon after printing.