VeroClear
RGD810

Overview

VeroClear™ (RGD810™) is a colorless transparent, rigid material featuring great dimensional stability. As a rule, best clarity is achieved when parts are printed with a matte finish and treated as explained below.

Combined with rubber-like or color materials, you can produce models with unique material combinations, opacities, hues and hardness.

This document describes tips and recommendations for obtaining optimum results for VeroClear parts.

- Material replacement
- Cleaning printer components
- Printing preferences
- Part thickness
- Polishing parts
- Gluing parts
- Photobleaching parts

Best Practice

stratasys

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Recommendations and Tips

Material Replacement

Traces of previous materials affect the clarity of VeroClear. Before printing with VeroClear, replace one or both of the currently installed cartridges with a VeroClear cartridge. Run the Material/Resin Replacement Wizard and select the flushing option appropriate for your printer.

When replacing RGD720™, RGD515Plus, TangoPlus™ or Agilus30™ Clear, select:

- High Performance cycle and run the wizard once.
- Short cycle and run the wizard four times.
- Single cycle and run the wizard four times.
- Full cycle and run the wizard once.

When replacing other model materials, select:

- High Performance cycle and run the wizard once. Then, run the wizard again (once) and select the Economy cycle.
- Short cycle and run the wizard five times.
- Single cycle and run the wizard five times.
- Full cycle and run the wizard once.

Cleaning Printer Components

Before printing with VeroClear, clean the print heads, wiper, and roller waste collector thoroughly. This ensures that traces of previous materials (lines, spots, etc.) do not appear in the VeroClear part.

Printing Preferences

Prolonged exposure to UV radiation during printing may produce parts with a yellowish tint. The printing mode and surface finish you choose affect the clarity of VeroClear parts. To achieve maximum clarity, use the following guidelines.

Printing Mode

- Desktop printers — Prefer the High Quality mode (if available). In desktop printers that are enabled for printing modes, always prefer to print VeroClear parts in High Quality mode.
- All Other printers — Prefer the High Speed mode. In High Speed mode, printed layers are 30-microns thick compared to 16 microns with High Quality mode. Therefore, fewer print-head and UV lamp passes (along the x-axis) are needed to complete the part.

Surface Finish

- Matte Surface Finish (Recommended) — When printing VeroClear parts, always prefer a matte surface finish. The support material that covers matte surfaces helps protect the part's layers from excessive UV radiation, thereby improving clarity.

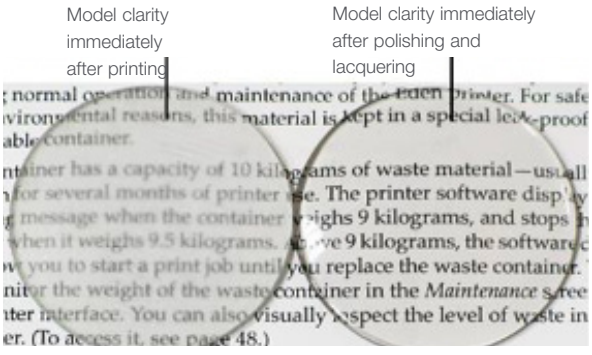

Figure 1: Parts printed in High Speed Mode with a matte finish.

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- Glossy Surface Finish — When printing glossy parts, arrange them so they have similar heights (Figure 3). 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. When printing parts with different heights on the same tray (Figure 4), the print block passes over all parts even after the shorter parts have been completed. This causes the shorter parts to absorb more UV radiation than necessary, which reduces clarity.

Polishing Parts

Polishing VeroClear parts improves their clarity (Figure 1). Applying a coat of clear lacquer gives parts a shine and protects their surfaces. For polishing instructions, refer to the “Guide to Post Process Applications” on creating translucent 3D parts. When removing support material with the water jet, keep cleaning time to a minimum.

Gluing Parts

When gluing parts printed with VeroClear, use clear glue to ensure clarity in the joint areas. Apply glue only where necessary to minimize the glued surfaces.

Figure 2: Material Replacement wizard flushing cycles (sample).

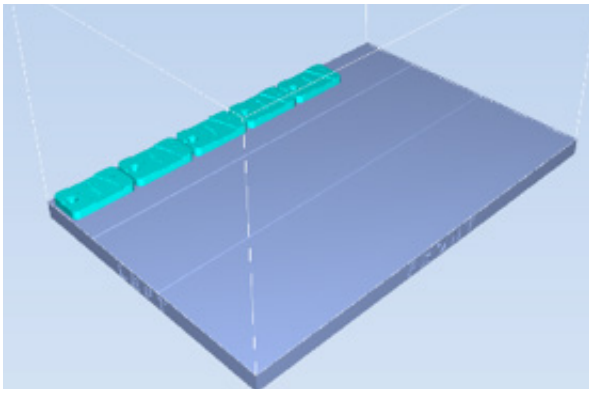
Figure 3: Parts with similar heights.


Figure 4: Parts with different heights — glossy finish is not recommended.


Figure 5: Polished and lacquered part, printed with VeroClear.

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Part Thickness

Parts that are less than 15 mm thick offer the best clarity and color. Parts thicker than 15 mm may have a tint.

Photobleaching Parts

Parts printed with VeroClear have a slightly yellow tint when removed from the printer. This is especially true for parts printed with a glossy finish. The yellow tint fades naturally over time, but you can greatly accelerate this process by using photobleaching treatment. This involves exposing parts to intense LED flood light.

Important: Perform the photobleaching treatment as soon as possible after printing.

Recommended photobleaching methods include:

Method A: Stratasys ProBleacher™ (Figure 6)

- Sold and supported by Stratasys
- Temperature, light intensity, and duration control
- Office-friendly
- Fast and consistent results

Method B: Using LED Flood Light (Figure 7)

- Self-assembly from readily available components, including a cabinet lined with mirrors and a 100W LED flood light, 6500K daylight.
- Low-cost solution
- Varying results, due to the lack of precise control over temperature and light intensity

Method C: Using an Illumination Chamber

- Off-the-shelf chamber
- Enables controlling temperature and light intensity
- Assures predictable results

Figure 6: Stratasys ProBleacher

Figure 7: Sample do-it-yourself photobleaching cabinet with LED lamp and mirrors.

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General Photobleaching Instructions:

If you are using the Stratasys ProBleacher, follow the instruction in the Product Guide. Otherwise, follow the instructions below.

1. For best results, polish the parts before performing photobleaching.
2. As soon as possible after printing, place the parts in the cabinet/chamber.
3. Arrange the printed parts with enough distance between them to allow light to reach all sides of each part.
4. Turn on the light and set the temperature (if applicable). Verify that the ambient temperature is between 30 – 40ºC (86 – 104ºF). Higher temperatures may cause part distortion; lower temperatures may not produce satisfactory results.
5. Inspect the model tint after six hours of treatment.
    - For parts with a matte finish, this should suffice.
    - For parts with a glossy finish, continue the photobleaching treatment for up to 24 hours to achieve the desired results.

Figure 8: Sample models before photobleaching treatment.

Figure 9: Sample models after photobleaching treatment.

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