

Application

Note



## Overview

VeroClear RGD810 is a colorless transparent, rigid material featuring great dimensional stability. This document describes tips and recommendations for achieving optimum clarity for VeroClear parts.

- Material Replacement
- Cleaning printer components
- Surface finish preferences
- Polishing parts
- Gluing parts
- Part thickness
- Photobleaching

## Printing Recommendations and Tips

### A. Material Replacement

Traces of previous materials affect the clarity of VeroClear parts.

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

- When replacing RGD720, or TangoPlus™, select:
  - Short cycle, and run the wizard four times.
  - Single cycle, and run the wizard four times.
- When replacing other Model materials, select:
  - Short cycle, and run the wizard five times.
  - Single cycle, and run the wizard five times.

### B. 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, ...) do not appear in the VeroClear part.

### C. Printing Preferences

Prolonged exposure to UV radiation during printing produces parts with a yellowish tint. For this reason, the surface finish you choose affects the clarity of VeroClear parts.

#### Matte surface finish

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: Polished and lacquered part, printed with VeroClear



Figure 2: Resin/Material Replacement wizard options

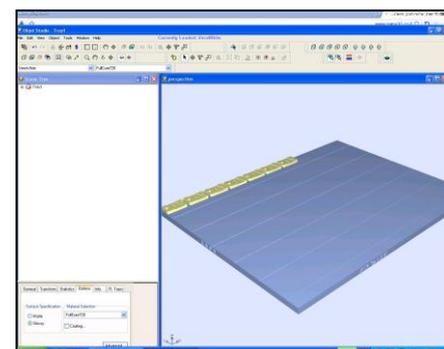


Figure 3: Parts with similar heights.

## 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. When printing parts with different heights on the same tray, 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.

## D. Polishing Parts

Polishing VeroClear parts improves their clarity. 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.

## E. Gluing Parts

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

## F. Part Thickness

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

## G. Photobleaching

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 a suitable photobleaching treatment. This involves exposing parts to intense fluorescent light.

Within six hours of exposure, there is a tint reduction of approximately 70%. After 24 hours, there is tint reduction of 90%.

Two photobleaching methods are recommended by Stratasys—

### Method A: Using an Illumination Chamber (Figure 6)

- Off-the-shelf chamber
- Enables controlling temperature and light intensity
- Assures predictable results
- Cost: approximately \$1300 US

### Method B: Using Desk Lamps (Figure 7)

- Self-assembly from readily available components
- Low cost solution
- Varying results, due to the lack of precise control over temperature and light intensity
- Cost: \$50-200 US

Note: The fluorescent lamps should be rated 45W, 6500K.

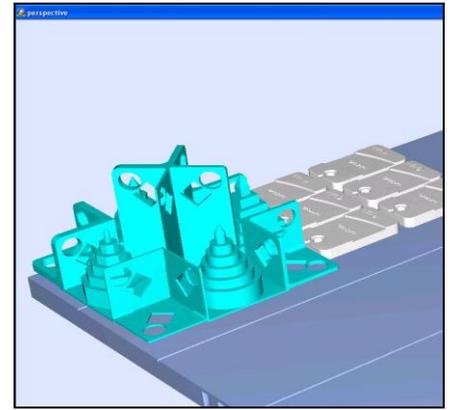


Figure 4: Parts with different heights—glossy finish is not recommended



Figure 5: Parts printed with different materials and surface finish



Figure 6: Illumination chamber for photobleaching

### Photobleaching Instructions:

1. When using desk lamps, place the models in a container. The inside of the container must be covered with aluminum foil. Use at least two lamps, more when treating model in a large container.
2. Arrange the printed models in the chamber/container with enough distance between them to allow light to reach all sides of each model.
3. Turn on the lights. Verify that the ambient temperature around the models is approximately 40°C (104°F). Higher temperatures may cause model 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 models after six hours of treatment.
  - For parts with a matte finish, this should be enough. Polish and lacquer the parts.
  - For parts with a glossy finish, continue the photobleaching treatment for up to 18 hours more.



Figure 7: Using desk lamps for photobleaching

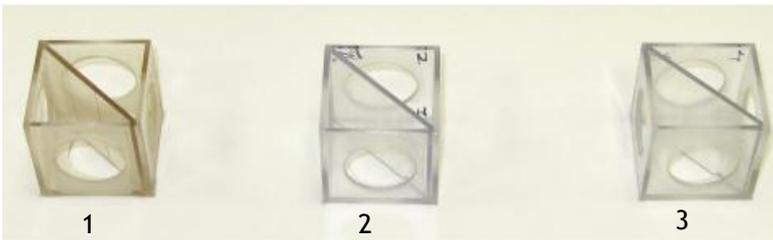


Figure 8: Sample model before photobleaching treatment (1); after photobleaching in chamber (2); after photobleaching with desk lamps (3)

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