

Resinify Technology LLC Application Guide

TempCrown Resin

3D Printing Temporary Crowns and Bridges

TempCrown Resin is a tooth-colored resin designed for 3D printing temporary crown and bridge restorations, inlays, onlays, and veneers. Indicated for up to seven-unit bridges and available in multiple shades, this highly filled material provides excellent marginal adaptation, strength, and aesthetics. Use traditional temporary cements to attach restorations produced with **TempCrown Resin** for up to 12 months.

This application guide demonstrates each step for making 3D printed temporary crown and bridge restorations on **Resinify Technology LLC** 3D printers. Use the following workflow to ensure precise results.

Essentials

Needed From the Dentist:

- A physical or digital impression of the patient's dentition

Required Hardware and Materials:

- DLP or mSLA 3D Printers
- Resin Tank
- TempCrown Resin
- Wash Unit
- Cure Unit
- Stainless Steel Build Platform
- Finishing kit or secondary wash station
- Desktop scanner (if physical impression or model)
- Low-speed dental handpiece with cutting and finishing wheels
- Sandblaster
- Polishing or glazing equipment and materials
- Glass bead blasting material (recommended brand)
- Isopropyl alcohol (IPA) ≥99%

Required Software:

- Dental design software or outsourcing to a dental design provider

Note:

- For full compliance and biocompatibility, **TempCrown Resin** requires a dedicated resin tank, Stainless Steel Build Platform, Resinify Wash Unit, and finishing kit, which should not be mixed with any other resins.

1. Scan

- Dental design software requires a digital impression of the patient's anatomy in order to design a temporary prosthetic. To acquire this data, scan the patient directly with a 3D intraoral scanner or scan a physical impression or a poured model with a desktop 3D scanner.

2. Design

2.1 Design the Appliance There are several dental software options for digitally designing temporary crown and bridge restorations. In this application guide, we will be outlining parameters for **3Shape Dental System** and **ExoCAD**.

There are also outsourced dental CAD providers where you can send a digitized impression for creating the design.

General Construction Requirements	Recommended Values
Minimum thickness (crowns, inlays, onlays, veneers)	1.0 mm
Minimum thickness (bridges)	1.0 mm (anterior) - 1.5 mm (posterior)

3Shape Settings:

Cement Spaces	
Cement gap	0.01 mm
Extra cement gap	0.04 mm
Overlay	
Margin line offset	0.15 mm
Drill compensation	Off

ExoCAD Settings:

Gap	
No Cement Gap	zero from margin 1 mm
Gap	0.07 mm
Boarder	
Horizontal	0.15 mm
Undercuts	
Anticipate Milling	Off

2.2 Export the STL File Once the case has been designed to specification, manufacturing can begin. The majority of dental design software generates a manufacturing file in **stl** format. Locate the file and move it into the print preparation software.

3. Print

Note: Use the latest version of software and firmware for optimal results.

3.1 Import the File(s) Import or open the design file(s) by dragging them into the software or using the “File” menu to locate them on your computer or network.

3.2 Material Selection Select the material for printing by clicking the printer box in the “Job Info” menu on the right-hand side.

3.3 Orientation Proper part orientation is critical to ensure part accuracy and fitment.

Always position the restoration(s) horizontally to the build platform with the occlusal plane facing the build platform.

To rotate a restoration, click on the part and “click and drag” the sphere.

3.4 Generate Supports

3.4.1 Automatic Support Generation Click the “Supports” button on the left side of the software and click the “Auto Generate Selected” or “Auto Generate All” button.

Note: The default support settings were developed to include optimal fit of complex large span bridges. For less elaborate cases, support density and touchpoint sizes may be lowered if needed.

3.4.2 Manual Support Editing If a support point is not in an ideal location, it can be moved after automatic generation by clicking the “Edit...” button in the Supports menu.

Always properly support the parts of the anatomy closest to the build platform.

The software will indicate in red what areas might require additional support.

Confirm under the “Job Info” menu bar on the right side of the program that “Printability” has green thumbs-up.

3.5 Printing Layout

Standard Printing For most jobs, it is best to place parts toward the middle of the build platform.

Tip: When printing multiple cases, overlapping rafts can optimize the use of the build volume and save material.

Fastest Printing on Resinify Printers If the fastest print time is needed, move the parts toward the wiper/mixer side of the build platform indicated in the software.

3.6 Transferring Job to the Printer Send the job to the printer by clicking the orange printer icon on the left.

The “Print” dialog box will open to select the printer.

Click the orange “Upload Job” button to begin the transfer of the job to the printer.

3.7 Set up the Printer Shake the **TempCrown Resin** bottle, Stainless Steel Build Platform.

Begin printing by selecting the print job from the printer’s touch screen. Follow any prompts or dialogs shown on the printer screen. The printer will automatically complete the print.

Note: To ensure the correct build platform is being used, check the top of the build platform. The Stainless Steel Build Platform includes a mark indicating its compatibility with **TempCrown Resin**. Deviating from recommended instructions may adversely affect performance, biocompatibility, and aesthetics of the printed provisionals.

Attention: For full compliance and biocompatibility, **TempCrown Resin** requires a dedicated resin tank and Stainless Steel Build Platform. Only use the Resinify Wash Unit with other Resinify biocompatible resins.

4. Post-Processing

Always use gloves when handling uncured resin and parts.

4.1 Part Removal Remove printed parts from the build platform by wedging the part removal or scraping tool under the part raft and rotating the tool.

4.2 Washing

Precautions:

- When washing the printed part with solvent, ensure it is done in a properly ventilated environment with proper protective masks and gloves.
- Expired or unused **TempCrown Resin** shall be disposed of in accordance with local regulations.
- IPA shall be disposed of in accordance with local regulations.

Place printed parts in the Resinify Wash Unit filled with isopropyl alcohol (IPA, $\geq 99\%$) and wash them for the time established in the instructions for use (IFU).

Make sure the parts are fully submerged in IPA when washing. Exceeding wash duration may affect dimensional accuracy and performance of printed parts over time.

Use a brush or pipe cleaner to remove excess resin and reduce the amount of post-processing needed later.

4.3 Drying Leave parts to air dry for at least 30 minutes in a well-ventilated area. The dried parts will have a white, powdery coating on the print surfaces. Compressed air can also be used to dry parts.

If any wet, uncured resin is still present after drying, use a squeeze bottle with fresh IPA to remove uncured resin and then air dry the parts again.

4.4 Post-Curing and Support Removal To maintain dimensional accuracy and biocompatibility, post-curing must be done in two steps.

4.4.1 Post-Curing Step One With the raft and supports still intact, place printed parts in the cure unit with the raft side down. Post-cure the parts in the Resinify Cure Unit using settings established in the IFU.

4.4.2 Support Removal Remove parts from the Resinify Cure Unit and use a handpiece with a cutting disc to separate supports and the raft from printed parts.

Carefully sandblast the printed part surfaces to remove the white, powdery coating using a sandblaster with glass bead blasting material at a maximum blasting pressure of 1.5 bar.

Check printed part fit and finish, and contour parts as needed using a dental handpiece and carbide rotary burs.

4.4.3 Post-Curing Step Two Place finished parts in the cure unit with the occlusal plane facing upwards. Post-cure the parts again using settings established in the IFU.

For best results and full compliance, printed parts must be post-cured twice as recommended. Any deviations from this protocol may lead to unsatisfactory fit and affect biocompatibility.

Inspect the restoration. Discard and reprint it if any cracks or damage are detected.

4.5 Finishing and Polishing Post-cured parts must be polished using pumice stone and polishing compound prior to use.

If rough marks are left behind after support removal, use a carbide or other rotary tool before polishing surfaces to improve patient comfort.

A high gloss shine can be achieved with traditional polishing tools and materials used for acrylics and composites.

Note: Robinson brushes and rubberized spiral wheels are ideal for polishing occlusal anatomy. **Refert Opal-L** works very well as a polishing material.

Avoid overheating the parts during polishing.

Inspect the restoration again. Discard and reprint it if any cracks or damage are detected.

Light-cured glaze and characterization can also be used, such as **GC OPTIGLAZE™**. Follow the instructions from the material manufacturer.

5. Delivery and Treatment

The finished restoration can be attached to a patient's tooth using conventional temporary cements such as Temp Bond NE. If the subsequent permanent restoration will be attached with methacrylate-based composite cement, then eugenol-free temporary cements are recommended for use.

Follow the instructions for use provided by the luting agent manufacturer.

Reporting Undesirable Effects

In the event of adverse effects, reactions, or similar occurrences from the use of these products, report immediately by contacting **Resinify Technology LLC** via the website or through your local distributor.

Manufacturer

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