



SprintRay 3D Printing for Hybrid Denture Workflow User Guide

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SprintRay 3D Printing for Hybrid Denture Workflow



Product Information

The 3D Printing for Hybrid Dentures is a workflow guide that provides step-by-step instructions on capturing patient data, planning treatment, creating a print job, and preparing for placement. This guide is designed to assist dental professionals in using the SprintRay 3D printing system to fabricate hybrid dentures.

Capture Data

Before starting the 3D printing process, it is important to capture post-op intraoral scans and photogrammetry data. This data will be used to create a good design with a passive fit.

1. **Intraoral Scan:** Take an intraoral scan of the patient's tissue with the sealing caps positioned over the abutments. This scan provides a complete, positional understanding of the patient's dentition. Export and label the scans for easy access.
2. **Photogrammetry Scan:** Attach scan bodies to the implants and perform photogrammetry according to the manufacturer's specifications. This scan records the exact positioning of the implants for design adjustments.
3. **Patient Photos:** Capture intraoral photos of rest position, high line smile, and retracted position. These photos aid in creating perfect aesthetics.

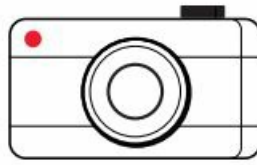
A better way to fabricate dental prosthetics is here, and with it, a new way to place provisional dentures. More and more clinicians are interested in providing long-term temporary solutions that are aesthetic, cost-effective, and have incredible strength. This guide will walk you through the process of gathering data and placing a hybrid denture once surgery has been completed. To learn how the full workflow for 3D printing a surgical guide, consult the workflow guide for 3D Printing for Guided Surgery.

Capture Patient Data

 **Total Time:** 5–10



Photogrammetry Scanner



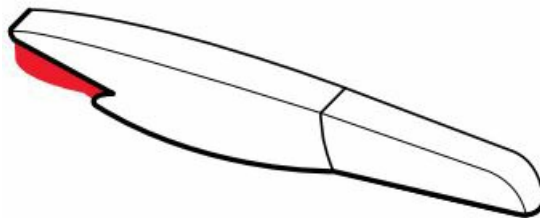
Camera



Intraoral Scanner

- Once the implants have been placed, you'll need to capture post-op intraoral scans and photogrammetry data. These touchpoints will allow SprintRay or your partner designer to create a good design that seats with passive fit.
- Data management is key for this workflow. Create a folder that's easily accessible and export all files and folders into this central location.

Intraoral Scan



Take an intraoral scan of the patient's tissue with the sealing caps positioned over the abutments. This will give your designer a complete, positional understanding of the patient's dentition.

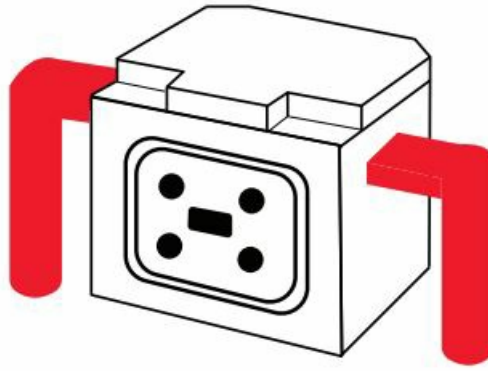
Scans

- Upper tissue scan
- Lower tissue scan

Warning

- If the patient is already edentulous and has a denture, perform pre-op upper, lower, and bite scans and store them for submission in the treatment planning phase.
- Export the scans and label them to make it easy for your designer.

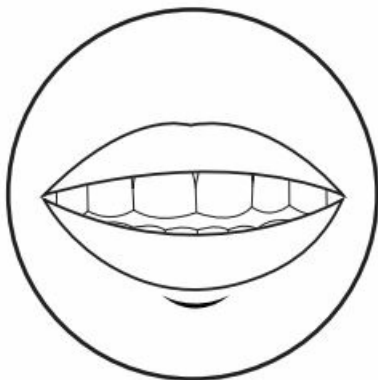
Photogrammetry Scan



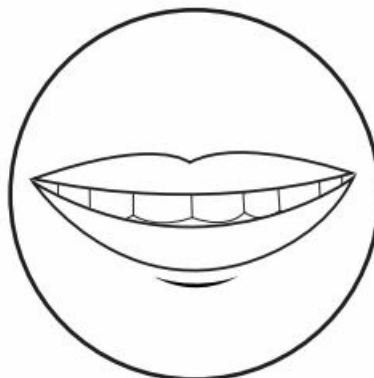
- Attach the scan bodies to the implants, then perform photogrammetry to the manufacturer's specifications. This will record the exact, final positioning of the implants so that your lab partner can adjust their design accordingly for a good passive fit.
- Keep the entire folder of information intact – you'll upload it all at once during the treatment planning phase. If you have any questions about this process, please contact the manufacturer of your photogrammetry scanner.

Patient Photos

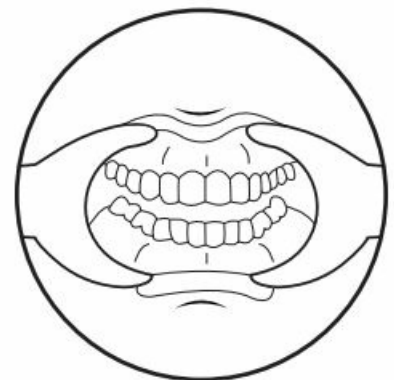
Photos of the patient allow your designer to create perfect aesthetics. Capture the following intraoral photos:



Rest Position



High Line Smile

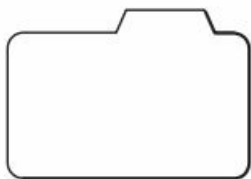


Retracted

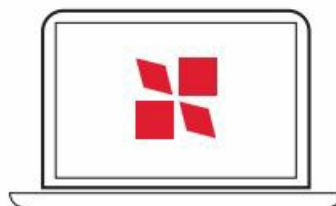
Plan Treatment



Total Time: 1-2 hrs



Pre and postop patient data



Computer with internet access



Cloud Design

- Once you've captured all the post-op data you'll need, it's time to submit your files to SprintRay Cloud Design.

Submit Treatment Request

- To submit a design request, visit dashboard.sprintray.com and sign in with your SprintRay account.
- Select or add your patient, then choose the 'Hybrid Denture' treatment type. Follow the prompts on the screen to upload all the files you gathered in Step 1.

Review and Approve Design

- Once your designer has created your Hybrid Denture treatment, they will send you files and any notes to review the case. You can communicate with the designer via our integrated chat system if you have any questions or revision requests.
- When you approve your design, you'll be able to download and send it to print.

Warning: Once your design is ready, you can send it straight to your printer; if you do this, skip Step 3

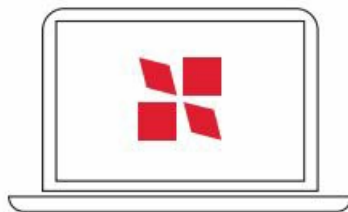
Create a Print Job



Total Time: 5 mins



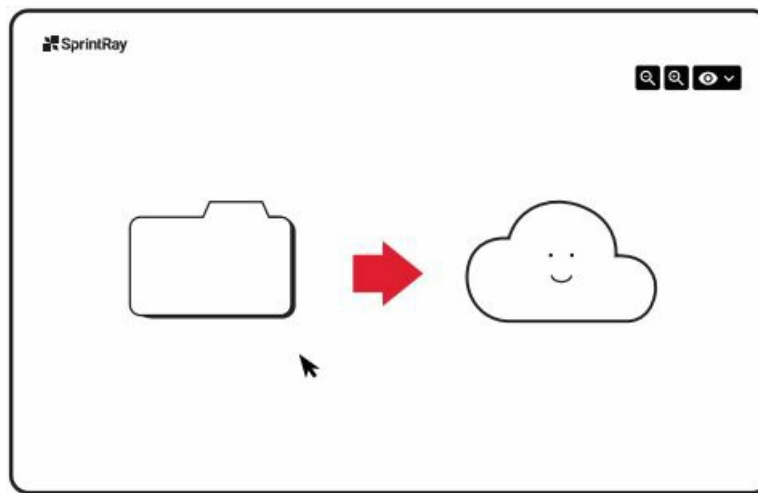
Rayware Cloud



Computer with internet access

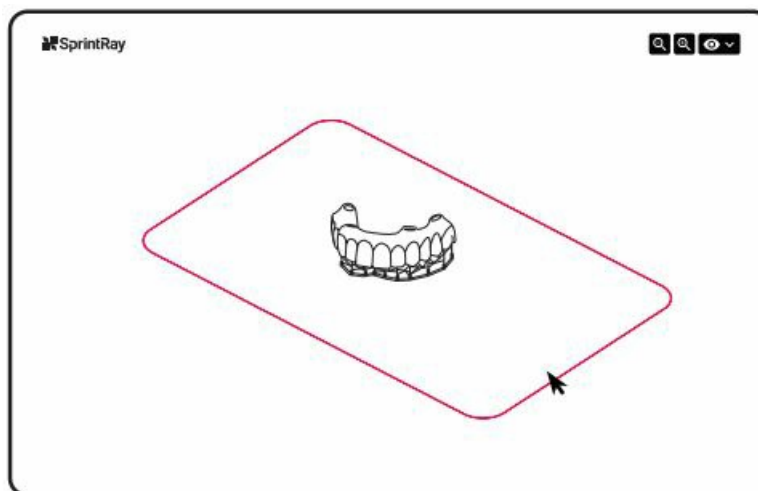
- Once you've approved your design, it's time to bring your temporary hybrid to life.
- If you used SprintRay Cloud Design to create your model, it's time to bring it into RayWare and prepare it for 3D printing.

Import into Rayware



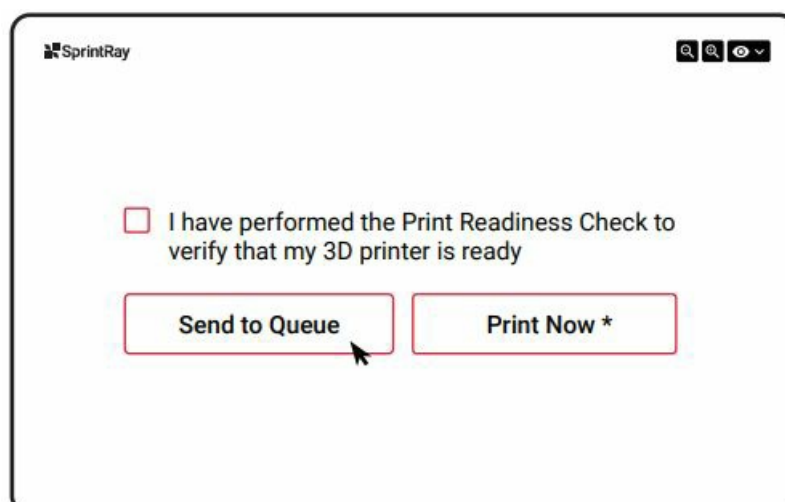
Once you've approved your design, you'll gain access to a few different options. For this workflow, import the file into RayWare Cloud. Select the 'Hybrid Denture' treatment option with supports and import your file. Select the 3D printer you'll use to fabricate this treatment – we recommend Pro55 or Pro55 S. Select the appropriate resin.

Verify Setup



RayWare Cloud uses AI to determine the best orientation for your print job and will automatically avoid placing supports on or near screw holes. Double-check that the orientation is correct with the teeth facing down and the occlusal plane parallel to the build platform.

Send to Print



- Once you're happy with the setup of your print, select the 'Send to Queue' button, then select the printer you'd like to use for this print job. Now it's time to prepare the printer.

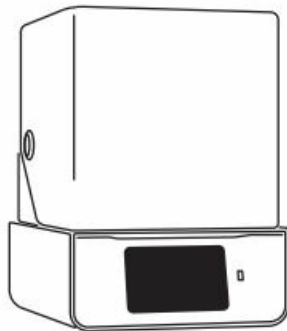
Send to Queue

- You can also use the 'Print Now' button, but be sure to thoroughly inspect your printer before you start printing

3D Print Prosthetic



Total Time: 40 mins



SprintRay Pro or Pro S 3D printer

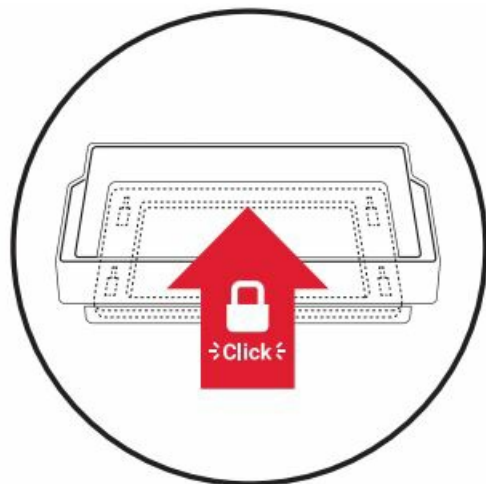
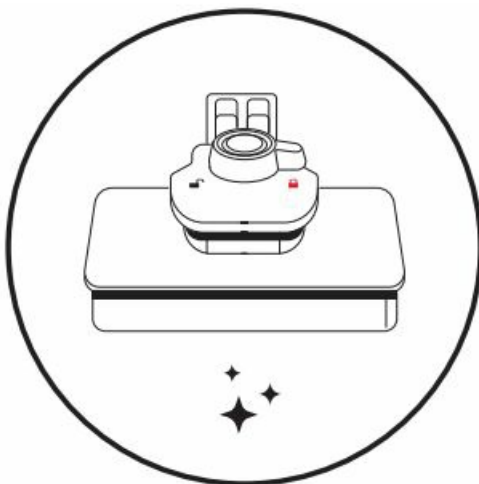


Resin

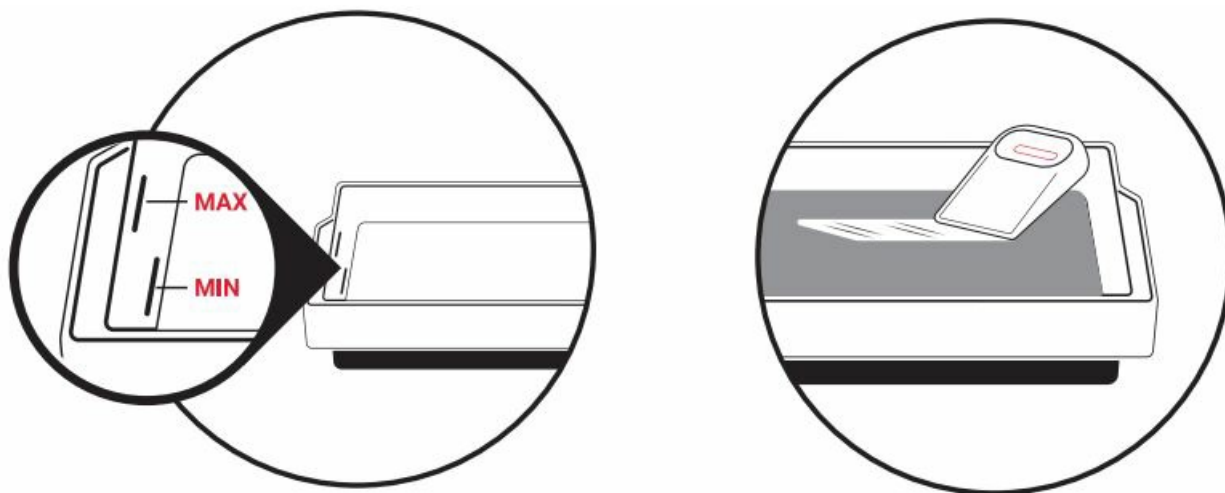
- It's time to prepare your 3D printer to fabricate the hybrid denture and begin the printing process.
- The amount of time required for printing will vary depending on the resin you use, the size of the appliance, and the printer type.

Prepare the Printer

Complete the following checklist to make sure your printer is ready:

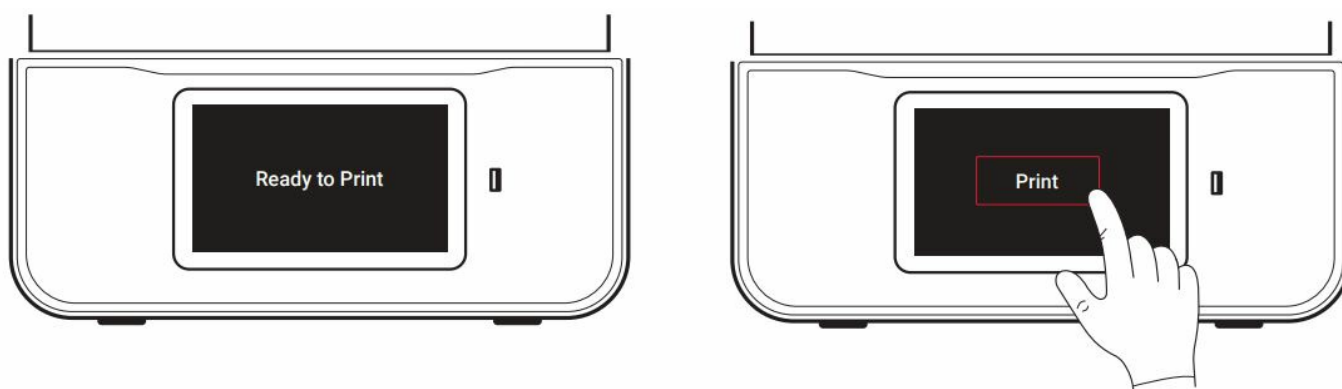


- Verify to check that the build plate is attached, clean, and locked
- Verify that the resin tank is seated in its cradle



- Make sure the resin is between the min and max lines in the tank
- Inspect the resin with the squeegee to make sure the bottom of the tank is clean

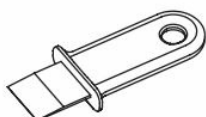
Start the Print Job



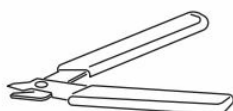
- On the printer touchscreen, go to the 'Queue' tab and locate your hybrid denture print job. Select 'Start Print'. It may take a few minutes before the printer arm starts to lower, depending on whether or not the resin tank and/or build platform need to be heated up.
- You can view the progress of your print on the printer's touchscreen, including how much time is left before your job is complete. This information can also be viewed via our cloud Dashboard and on RayWare Cloud.

Clean Prosthetic

5.1–5.3



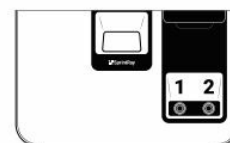
Print Removal Tool



Support Snipper



Soft Cloth

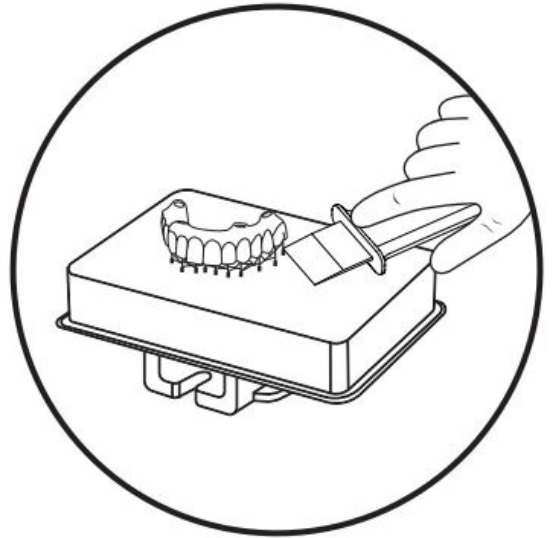
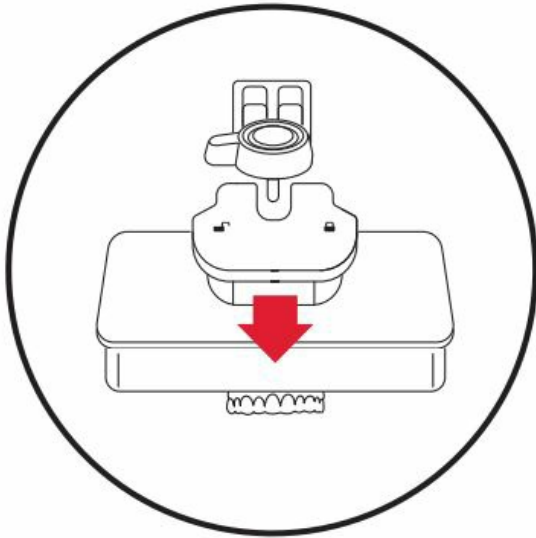


SprintRay ProWash

 **10 mins**

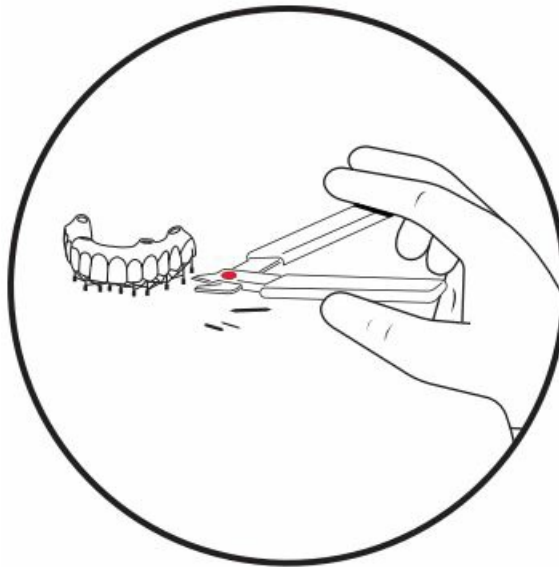
- Your hybrid denture comes out of the printer with a layer of uncured resin still attached. You'll need to wash it off with isopropyl alcohol.

Remove From the Build Platform



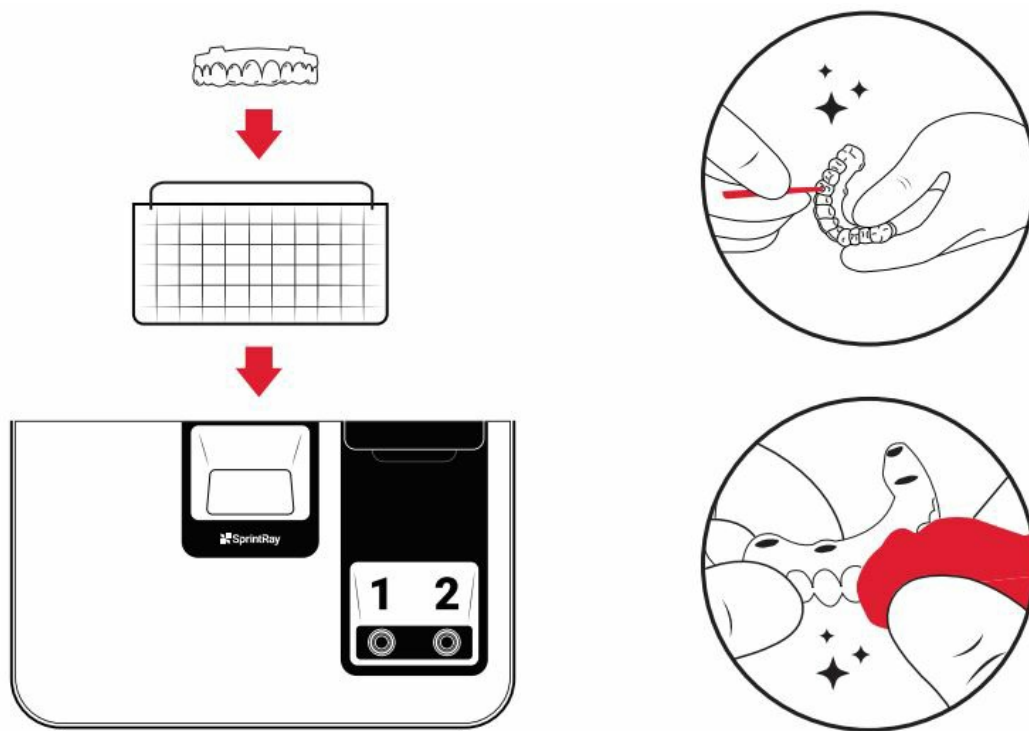
- Unlock the build platform and gently pull it toward you to release it from the printer. By twisting the prosthetic, you should be able to remove it from the build platform by hand.
- If it doesn't release easily, place the platform against a hard surface and use the print removal tool to scrape it off.

Remove Supports



The support structures in RayWare Cloud are specifically designed to twist away from the model by hand. If you have any supports remaining on the prosthetic, use flush cutters to clip them off. Don't worry if there are still small stubs left on the model, you'll remove those later.

Clean in Sprinray Pro Wash

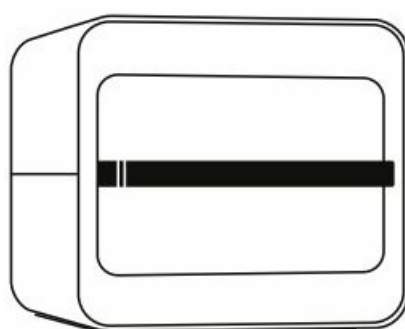


Wash in SprintRay ProWash with IPA 91% for 3 minutes, then dry for 3 minutes. Use compressed air to make sure the IPA is completely evaporated from the surface of the model. Wipe the surfaces of the model with a blue shop towel; this will help achieve a matte finish during the curing process.

Warning: If your prosthetic has difficult-to-clean areas, use a fine brush and a spray bottle with IPA 91% to make sure they are thoroughly cleaned.

Post Cure Prosthetic

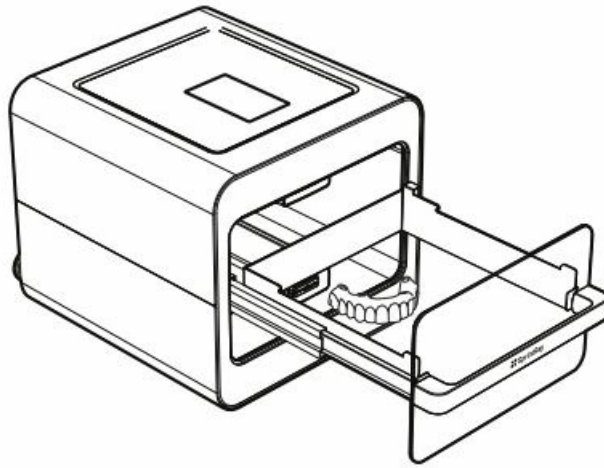
 **Total Time:** 5–10



SprintRay ProCure 2

- To optimize mechanical properties and ensure biocompatibility, your printed appliances must be fully cured.

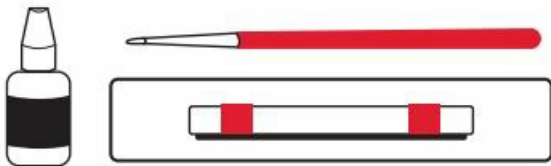
Place in ProCure 2



- Place the prosthetic in ProCure 2. On the touchscreen, select the curing profile for the resin you used to print the prosthetic. If you're only printing one or two prosthetics place them in Zone A and select Zone A curing for the fastest results.
- Depending on the resin you used to print your prosthetic, the cure time will vary.
- If you're using ProCure 1, place the prosthetic in the chamber and select the correct profile. The curing process may take up to 60 minutes.

Prepare for Placement

7.1–7.3



Optiglaze Kit



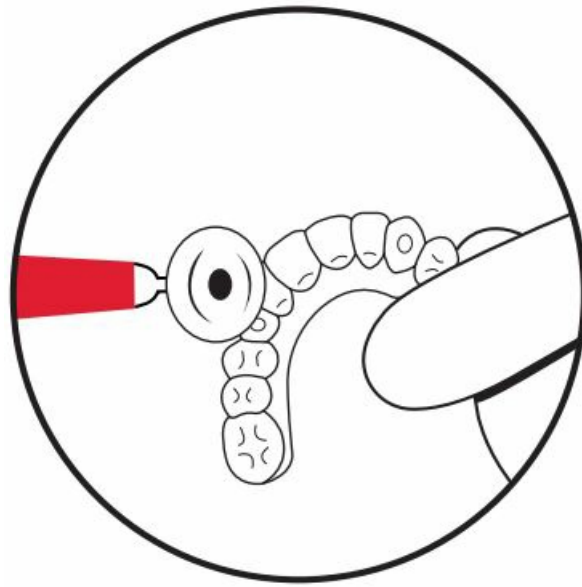
Lab Handpiece



15-30 mins

- Before placing the prosthetic, you'll need to smoothen off any imperfections left by support structures, then characterize.

Smoothen the Prosthetic

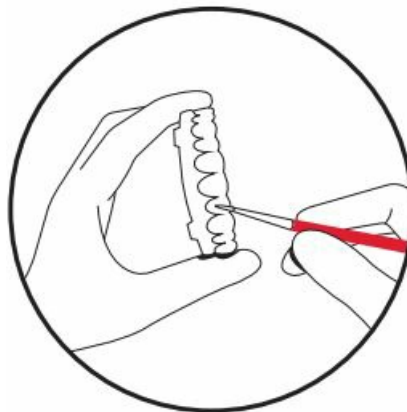


- Use a fine lab carbide bur or a red Scotch-Brite™ Fuzzies attachment to remove remaining stubs leftover by the support structures until the surface is smooth and uniform.
- Polishing the intaglio surface is optional, but if you'd like to then we recommend using the Twist Composite Polisher by Meisinger (#9769M-170-HP), then the Knife Edge Luster Polisher by Meisinger (9782-145-HP).

Characterize

This step is optional, but we recommend it for the best patient experience. We recommend GC OptiGlaze™ by GC for the best cosmetic effect, which you can layer and light cure to your desired aesthetics.

There are many great techniques to characterize a prosthetic. For a natural-looking 3D printed restoration, we recommend the following:



1. Use pink composite or create pink optiglaze with 1 drop of red and 1 drop of pink
2. Use a fine brush to stain the gingiva with pink stain to add more depth and character
3. Use a blue stain at the incisal edges to create a translucent effect
4. Use other stains (like brown & orange) to create a more natural look
5. Pain the entire surface (except the intaglio) with a thin layer of clear glaze

Warning: If you're not sure how to cure your glaze, check the IFU of the manufacturer.

Prepare and Deliver




- If your design includes any metal copings or other features, now is the time to add them.
- Your 3D printed prosthetic is now ready for delivery.

Torque Bolt Sequencing

- Seat each channel by turning each screw gently until you feel contact with the screw channel collar. Do not tighten until all screws are seated.
- Turn each screw gently until you feel contact with the screw channel collar, then stop. Do not tighten until you've seated all the screws. Once seated, begin tightening each screw in an alternating pattern.

Warning: Failure to follow correct sequencing may create an uneven fit.

Documents / Resources

	<p>SprintRay 3D Printing for Hybrid Denture Workflow [pdf] User Guide 3D Printing for Hybrid Denture Workflow, Printing for Hybrid Denture Workflow, Hybrid Denture Workflow, Denture Workflow, Workflow</p>
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References

-  [SprintRay](#)