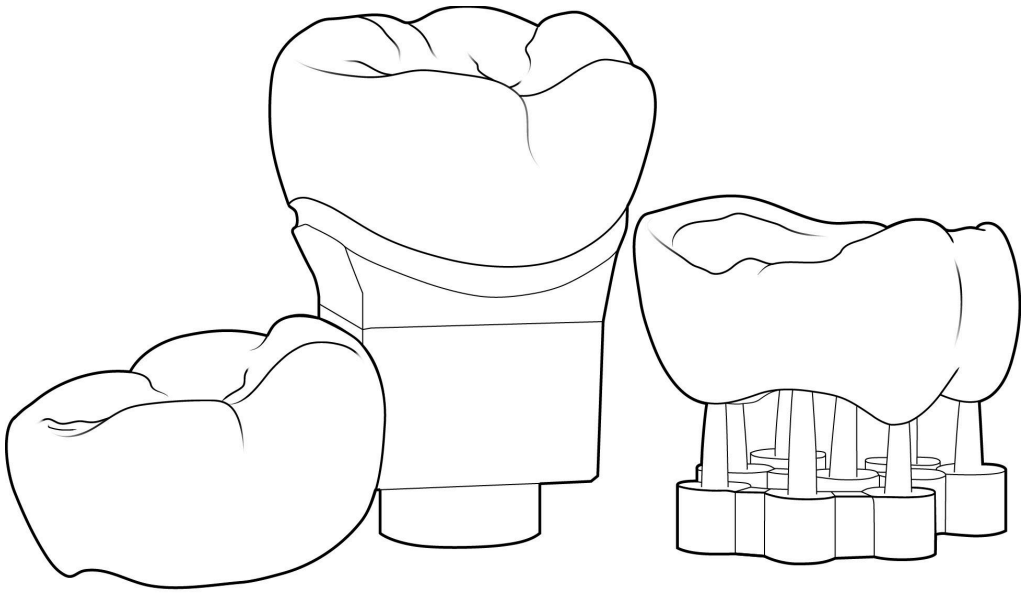
Workflow guide:

3D printing for cemented restorations



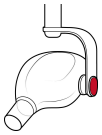
With 3D printing, you can provide chairside ceramic restorations to more patients for a fraction of the cost of other in-office methods. This guide will walk you through data gathering, design, fabrication, preparation, and placement.

Resins compatible with this workflow:

- SprintRay Ceramic Crown (USA), Crown HT, Digital Temp, Crown (Canada)

Workflow at a glance

1.Prep and data capture

Tools:

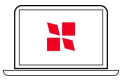
- Intraoral scanner
- Digital X-ray

2. Plan treatment

Tools:

- Computer with internet
- Patient data
- SprintRay account

3. Create a print job




Tools:

- Computer with internet
- SprintRay account

4. 3D print


Tools:

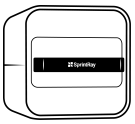
- SprintRay Pro or Midas 3D printer
- Supported SprintRay resin

5. Wash with IPA


Tools:

- Soft towel
- Spray bottle with IPA 91%
- Compressed air
- Snippers

6. Post Cure



Tools:

- SprintRay cure device

7. Wash with IPA

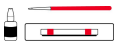


Tools:

- Blue shop towel
- Spray bottle with IPA 91%
- Compressed air

8. Prepare the restoration

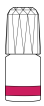
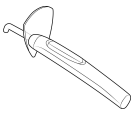


Tools:

- Lab handpiece
- Polishing wheels
-Toothbrush & soapy water
- Glazing or polishing tools

9. Lute the restoration

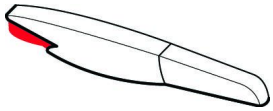




Tools:

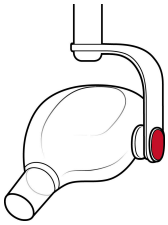
- Variolink Esthetic Try-in pastes
- Ivoclean®
- Adhese® Universal
- Variolink Esthetic DC
- Handheld curing light

1. Capture data and prep tooth

Tools



Intraoral scanner



Digital X-ray

1.1 Pre-prep scans

Digital X-ray
Capture an X-ray of the current tooth for documentation and to understand the patient's anatomy.

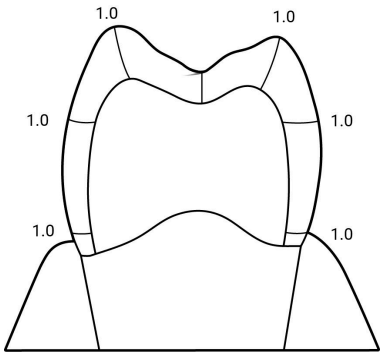
Pre-prep scans
Before the patient is numb, use an intraoral scanner to capture the opposing arch and bite scan.

> ⚠ *Scans may be taken after the patient goes numb, but scanning beforehand will provide the most accurate data for your design*

1.2 Prep teeth

Create a circular shoulder with rounded inner edges with an eye toward minimum thickness. Always consult the IFU for the material you're using.

Recommended prep for most cemented restorations is a uniform 1 mm reduction.



For partial crown, bridge, and veneer cases, consult the resin IFU for guidelines and minimum thicknesses.

1.3 Post-prep scans

Retract the surrounding gums. To use AI design, you'll need to capture the margin around the preps generously. Remove blood and saliva from the affected area before scanning.

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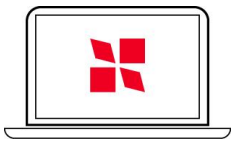
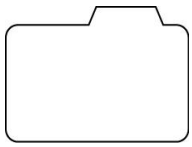
2. Plan treatment with AI Studio or Cloud Design

Tools



Computer with internet access



Patient data

SprintRay account

2.1 Start a new treatment

Visit dashboard.sprintray.com and sign in with your SprintRay account. Select or add your patient. Choose AI Crown for a design in just a few minutes, or Cemented Restoration to mix and match multiple treatment types, including crowns, veneers, bridges, and more.

Upload your scans, choose the options for this treatment, and then submit. If you're using AI, this should only take a few minutes.

> ⚠ If you're a Midas user, you get early access to AI Studio for posterior crown design. Visit sprintray.studio and sign in with your SprintRay account to get started.

2.2 Review & approve

You'll receive an email once your treatment is ready for review. If everything looks good, you can approve the treatment to receive your files. If you need a revision, you can request one now. Once you've approved the treatment, you're ready to prepare your files for printing.

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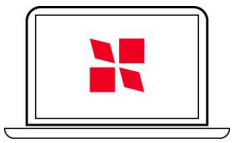
3. Create a print job

Tools



Computer with internet access

SprintRay account

3.1 Import into RayWare

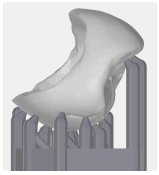
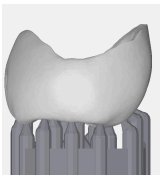
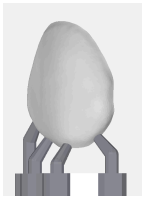
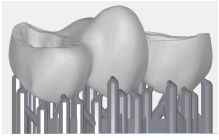
RayWare setup details

Job type: Restorations

Restoration type: select the type of restoration for each file

Material: SprintRay restoration resin of your choosing

Orientation: verify the orientation against the table below. Orientation is approximate, so don't worry if your file seems a few degrees off.

Anterior crown	Posterior crown	Inlay / onlay	Implant crown	Veneers	Bridge
	On Midas  On Pro 2 				

3.2 Queue to printer

Once you're happy with your print setup, select the 'Send to Queue' button, then choose the printer you'd like to use for this print job.

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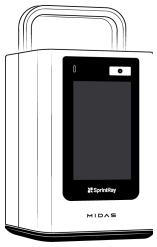
4. 3D print

Tools

Pro 2 / Pro S 3D printer

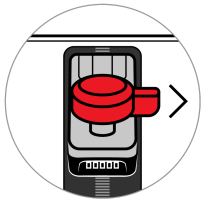
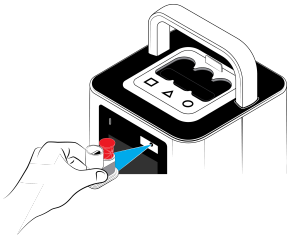
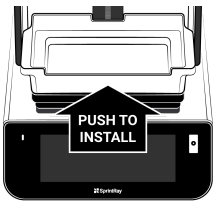
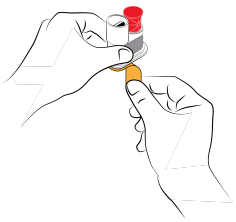
SprintRay resin

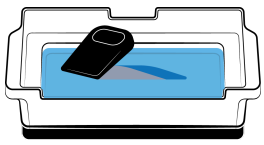


SprintRay Midas

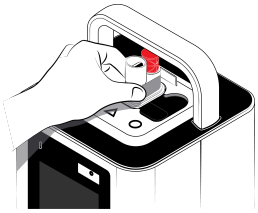
SprintRay capsule

4.1 Prepare and start the print job

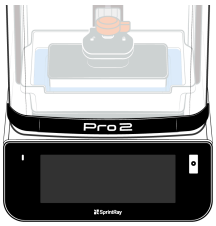
Pro 2 / Pro S	Midas
  **Locked** Ready to print	
Clean and install the build platform	Select job from Queue, scan the capsule
	
Install the resin tank	Prime capsule if indicated; remove film



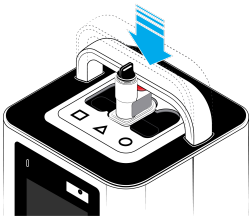
Fill and stir the resin if needed



Place as directed

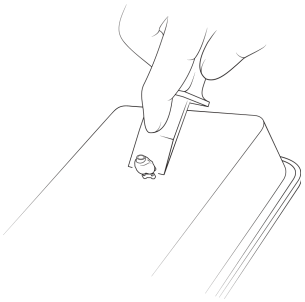
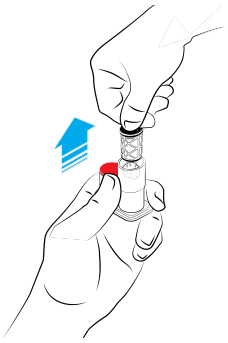


Go to Queue and start the print job



Start the print job

4.2 Remove your restoration

Pro 2 / Pro S	Midas
	
Remove the build platform, then gently remove the restoration	Gently pull the build platform out and remove the restoration by hand

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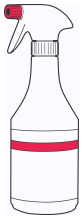
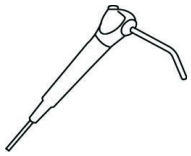
5. Wash with IPA

Tools

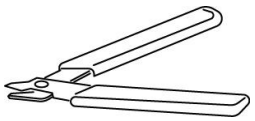
Micro applicator



Spray bottle with IPA 91%



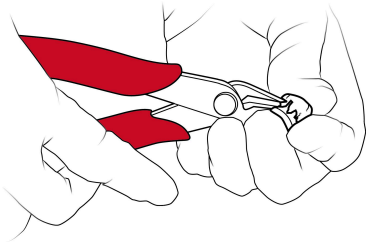
Compressed air



Snippers

5.1 Remove supports

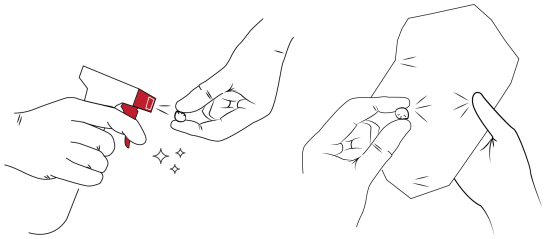
If any supports remain on the restoration, use flush cutters to clip them off. Don’t worry if small stubs are still left on the model; you’ll remove those later.



5.2 Spray and wipe

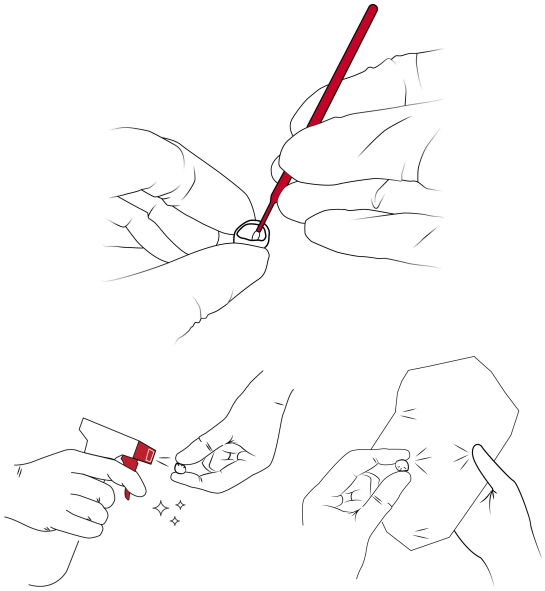
For most clinics, we recommend washing the restoration by hand. Resins with high ceramic content can develop a chalky surface if left in contact with IPA for too long.

Wipe all surfaces of the restoration with a soft towel. Spray with IPA, then wipe the restoration dry.



Use a micro applicator to clean the intaglio socket thoroughly.

Spray with IPA one more time, then thoroughly dry with compressed air. Do not let IPA stand on the restoration. Repeat if necessary.



> ⚠ *Do not let IPA stand on the surface of the restoration for more than 30 seconds, otherwise it may develop a chalky surface finish that will require sandblasting*

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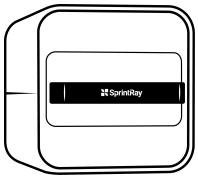
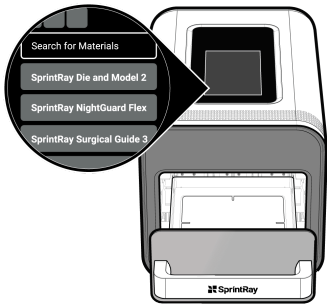
6. Post cure

Tools



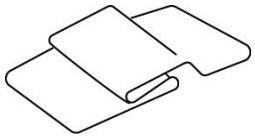
SprintRay curing device

Place the restoration in your SprintRay curing device and select the curing profile for your resin.



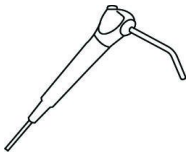
7. Clean with IPA

Tools



Soft lint-free towel

Spray bottle with IPA 91%

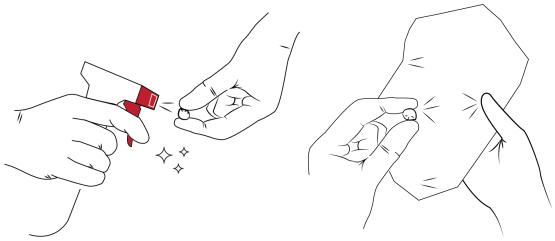


Compressed air

7.1 Spray and wipe the restoration

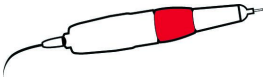
Spray the restoration with IPA, then wipe it clean with a soft towel.

Use compressed air to thoroughly dry.



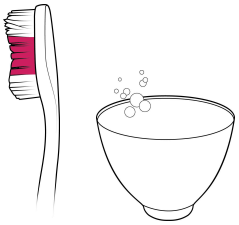
8. Characterize

Tools

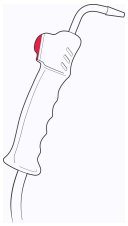


Lab handpiece

Crosscut bur



Toothbrush and soapy water



Steamer (optional)

8.1 Remove support stubs

Use a lab handpiece with a crosscut bur to remove any remaining stubs left by the support structures until the surface is smooth and uniform.

8.2 Characterize - validated partner workflow

Follow the workflow below for your preferred finishing type.

Staining/glazing protocol	**Polishing** protocol
Scan QR code for instructions or visit: sprintray.com/staining-protocol	Scan QR code for instructions or visit: sprintray.com/polishing-protocol

8.3 Disinfect

If available, disinfect the restoration using a steamer, then brush lightly with dish soap before placement. Make sure that the restoration is completely dry before cementation.

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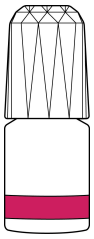
9. Cement

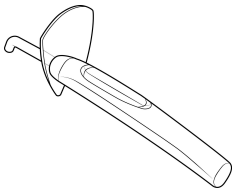
Tools

Ivoclean®



Adhese® Universal

Variolink Esthetic DC



Handheld curing light

9.1 Luting protocol - validated partner workflow

Follow the workflow below, depending on whether your restoration is temporary or definitive.

Definitive cementation protocol	**Temporary** cementation protocol
Scan QR code for instructions or visit: sprintray.com/def-cementation	Scan QR code for instructions or visit: sprintray.com/temp-cementation