Lucitone Digital Print Denture™ System

Resin Handling Instructions

This guide is intended for informational purposes only. Refer to the Instructions for Use (IFU) or Illustrated Technique Guide (ITG) for specific details on the Lucitone Digital Print Denture™ System.

- ✓ Always immediately cap the bottle after pouring the resin – ensure cap is tight.
- ✓ Immediately close the printer door after pouring resin.
- ✓ Do not leave the resin in the cassette/vat for an extended period of time.
- ✓ Minimize the exposure to ambient light with the resin in the cassette/vat.
- ✓ Immediately pour resin back into the bottle after the print job is complete – refer to the Recycle instructions in the IFU or ITG.
- ✓ Do not expose resin to excessive light or heat (always store the resin between 60°F/16°C and 80°F/27°C).

IMPORTANT: Not following the handling instructions can impact the lifespan of the material.

Printer	Material	Recycle Timeframe
Carbon® M-Series	Lucitone Digital Print™ 3D Denture Base	Up to 5 months
	Lucitone Digital Value™ 3D Economy Tooth & Trial Placement	
	Lucitone Digital IPN™ 3D Premium Tooth	
All other validated printer systems	Lucitone Digital Print™ 3D Denture Base	Up to 3 months
	Lucitone Digital Value™ 3D Economy Tooth & Trial Placement	
	Lucitone Digital IPN™ 3D Premium Tooth	

Understanding Denture Whitening

The whitening phenomenon is an esthetic variance related to changes to the refractive index of the denture surface. It is not an indication of micro porosities, and it is not a result of uncured resin.

What causes whitening?

Dentsply Sirona has found that whitening is typically caused by air inhibited resin, which changes the refractive index of the denture surface.

The most common workflow missteps that lead to whitening are:

Insufficient pre-cure cleaning	Residual resin from insufficient cleaning, “dirty IPA” or water can absorb into the newly printed denture causing whitening.
Residual IPA or Water	IPA or water may require a longer drying time depending upon your lab’s environment. If the denture is cured with entrapped IPA or water the resulting crosslinking during final cure could result in an unfavorable refractive index and whitening.
Under polished surfaces	1. Denture surfaces that are not polished to a high shine are more susceptible to whitening when insufficient cleaning or residual IPA moisture are present. 2. Remove excess Lucitone Digital Fuse™ Step 2 3D Denture Bonding Resin. When depressing the denture teeth into the pockets of the denture, sometimes Lucitone Digital Fuse Step 2 will ooze onto the surface of the denture. It is important to thoroughly remove this material. Surface exposedLucitone Digital Fuse Step 2 is susceptible to whitening.

Tips to Minimize Whitening

Drying

Using compressed air, sufficiently dry the denture before curing as described in the Lucitone Digital Print IFU. If you are unsure if the denture is completely dry, the denture can be bench set, uncovered, for additional time.

Start with 30 minutes, covered with a paper towel.

- Do not place the denture in a plastic bag.
- Do not expose denture to glycerin.
- Avoid exposure to ambient light and never exposure to direct sunlight.
- Ensure the dentures are not inadvertently exposed to the light from the UV tack curing light when sitting on the bench.

Lucitone Digital Fuse™ Step 3 Total 3D Sealer

Lucitone Digital Fuse Step 3 Total is a fast polymerization sealer. When potential for whitening is present, Lucitone Digital Fuse Step 3 Total can be used to effectively crosslink the denture surface by reducing air inhibition, creating a robust surface. Lucitone Digital Fuse Step 3 Total is applied to the newly printed denture creating an integral bond with the surface during final curing, eliminating the concern for delamination.

- Use Lucitone Digital Fuse Step 3 Total on dried denture surfaces, following the IFU.
- Ensure Lucitone Digital Fuse Step 3 Total is applied to areas where polishing is difficult and more susceptible to whitening.
- It is especially helpful to apply Lucitone Digital Fuse Step 3 Total to areas of the denture where Lucitone Digital Fuse Step 2 might have seeped onto the surface of the denture.
- Always use a dry brush when applying Lucitone Digital Fuse Step 3 Total to a denture.

Cleaning

Closely follow the Lucitone Digital Print IFU cleaning procedures.
Use clean IPA to get best outcome.

- Qty: 1 denture base / 1 container. Crowding more dentures / container may cause issues.
- Pre-wash: 2 min.
- Brush: remove any noticeable particles on the surface (important).
- Final Wash: 1 min (fresh IPA).
- Use compressed air to ensure no residual resin or IPA is visible on the denture surface .
- Clean Lucitone Digital Fuse Step 2 from the denture surface. Using a clean gauze pad, immediately whip away any Lucitone Digital Fuse Step 2 that might have oozed onto the surface of the denture. If a lot of Lucitone Digital Fuse Step 2 material is on the surface, a small amount of clean IPA can be added to the gauze to aid in removal. Thoroughly dry the denture prior to curing.
- Monitor the time closely, ensuring not to over soak the denture in IPA.
- Never allow the ultrasonic washer to heat the IPA.

Finish & Polish

Ensure the denture is polished to a high shine.

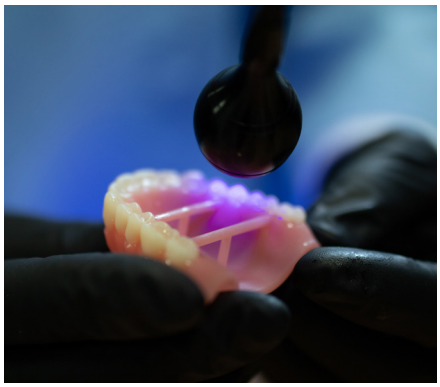
- A good guide is that printing lines are not observed.
- If not using Lucitone Digital Fuse Step 3 Total on the surface of the denture. Ensure surface areas exposed to Lucitone Digital Fuse Step 2 are polished to a high shine.

Additional Whitening / Discoloration Troubleshoothing

Cleaning	
Use ≥ 99% Isopropyl Alcohol (IPA) for first and second wash	The use of lessor concentrations of IPA can result in improper cleaning of excess resin, and result in whitening/discoloration.
Confirm only Lucitone Digital Print is being washed in each container	1. Washing multiple materials (ex: model resin and Lucitone Digital Print) in the same container could result in cross contamination and whitening/ discoloration. 2. Do not wash Lucitone Digital IPN denture teeth in IPA that was used to clean Lucitone Digital Print 3D Denture Base.
Do not use a steam cleaner on a Lucitone Digital Print Denture	The use of a steam cleaner can cause whitening/discoloration of the finished and polished denture. Dentsply Sirona recommends the use of an ultrasonic cleaner. Ensure clinician is not using a steam cleaner on the denture.

Fuse & Cure Troubleshooting

Fuse/Cure	
DS Digital Cure Large Capacity Unit Precuring Step	After applying Lucitone Digital Fuse Step 3 Total to printed denture teeth, tack cure the denture teeth prior to final curing in the DS Digital Cure Large Capacity curing unit using the UV Tack-Cure Light. For 1 minute, rotate the arch under the UV-Tack Cure Light ensuring light exposure to all tooth surfaces. The sealer will be slightly sticky/tacky to the touch - avoid excess handling.
Follow curing unit cool-down procedures	It is important to leave the denture(s) in the curing unit for the entire cool-down timeframe. Removing prematurely could result in the denture(s) not being fully cured which can lead to whitening/discoloration. • inLab Speedcure Processing Unit: 3-minute cool down for both cure cycles • DS Digital Cure Large Capacity Unit: wait until the temperature indicator reaches 50°C before removing the denture.
Follow validated tack curing and curing procedures for the Lucitone Digital Print Denture™ System	Inadequate tack curing or final curing can cause an air inhibition layer to be formed, which can lead to whitening. Validated curing units are the DS Digital Cure Large Capacity curing unit and the inLab Speedcure unit.
Confirm correct use of Lucitone Digital Fuse Steps 1, 2 & 3 Total for the bonding process	When using Lucitone Digital Fuse Step 1 3D Tooth Conditioning Agent with DS Multilayer PMMA denture teeth or IPN 3D Digital Denture Teeth, allow the teeth to air dry for 2 minutes (do not wipe dry). When using Lucitone Digital Fuse Step 2 3D Denture Bonding Resin, ensure that each tooth is tack cured for 10 seconds. Ensure that Lucitone Digital Fuse Step 3 Total is applied to the cervical areas of all carded teeth or milled teeth (avoid thick application or puddling). Ensure that Lucitone Digital Fuse Step 3 Total is applied to the entire surface of printed teeth (avoid thick application or puddling). Ensure that all excess Lucitone Digital Fuse Step 2 material is removed before tack curing and final curing.



Similarity Between a Shiny Car and a Denture

Dentures are certainly different than cars, but you can think of cleaning, surface prep, and sealing similar to the way your car has been painted with a great finish and shine.

Before painting, the car surface must be super clean.
Similarly, the denture must also be clean, before you lock-in that surface by curing in the DS Digital Cure unit.

You wouldn't paint when the car is wet.
Allowing the cleaned denture to thoroughly dry and evaporate remaining moisture or IPA will result in the best gingiva finish.

Clear coats preserve the finish.
Think of Fuse Step 3 Total as the "super sealer" that locks-in that polished look for dentures. It accelerates surface cross-linking to prevent oxygen effects that can lead to whitening.

"But I still see scratches in the paint..."
White spots in dentures are similar to scratches on the car. Surface defects from under polishing or not using Step 3 Total can lead to light refraction effects that accentuate surface imperfections. Dentures without Step 3 Total must be thoroughly polished (like waxing a car) to create a blended surface and lower effect of refracted light.

Lucitone Digital IPN™ 3D Premium Tooth Flowability Conditioning Procedure

The following procedures can be used if the Lucitone Digital IPN materials exhibits thickening that prevents flowability from the bottle or if crystallization/clumping is visible.

CAUTION:

- Open cap slowly as contents may be under pressure.
- Hot resin can damage printers. Refer to your printer's operations manual for acceptable resin temperatures.
- Care must be taken to avoid introducing air bubbles into resin. If air bubbles are entrapped in the resin, additional waiting time is needed before use.
- The Lucitone Digital IPN product label could detach from the bottle during heating. Reattach the label to maintain medical device traceability.
- Resin conditioning can be repeated up to 3 times per bottle.

Hot Water Procedure - Recommended

1. Boil water.

2. Carefully place bottle with cap tightly closed into water.
   Caution: Ensure water does not enter the bottle.

3. Heat for 20 minutes.
   Caution: Overheating could damage the resin.

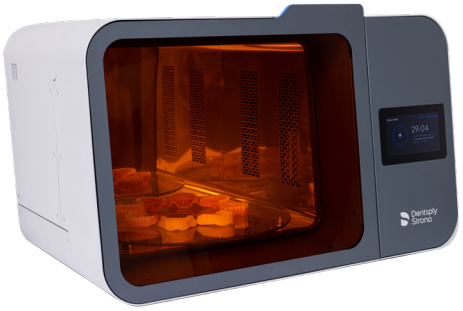
4. Remove from water using heat resistant gloves. Gently shake for 15 seconds.

5. Allow resin to set for 30 minutes, then gently shake for 30 seconds to ensure a homogeneous and smooth resin mixture.

6. Allow resin to cool for 1 hour.

Alternative Flowability Conditioning Procedures

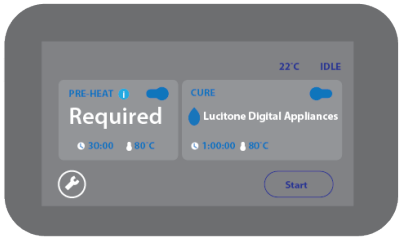
DS Digital Cure - Large Capacity



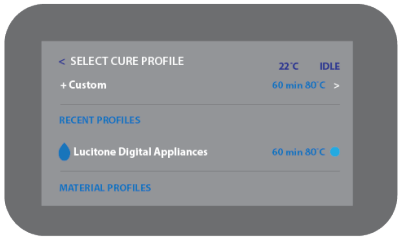
1. Place bottle with tightly sealed cap into a DS Digital Cure Large Capacity unit.

2. Heat for 90 minutes at 80°C with preheat cycle only.
To manually set the curing time and temperature:

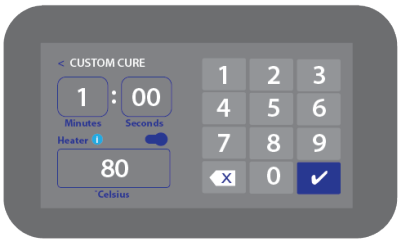
2.1 Select **Cure**. The **Resin Profile** menu appears.



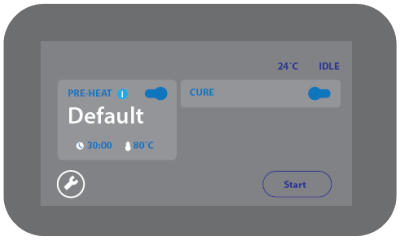
2.2 Select **Lucitone Digital Appliance** on the screen.



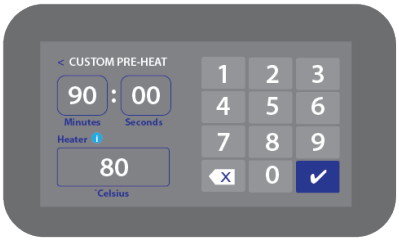
2.3 Select **Custom**. The **Custom Cure** screen appears.



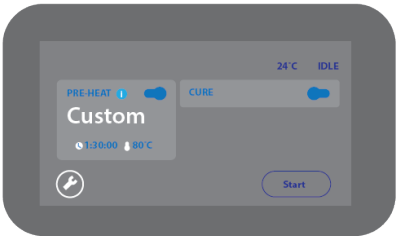
2.4 Input time (1 minute) and temperature should be 80°C on the touch screen. Select the check mark to confirm your selection.



2.5 Turn off Cure by swipe blue dot to left.



2.6 Touch preheat to get this screen, input time 90 minutes, then select blue checkmark.



2.7 Select **Start**.

3. Remove bottle from unit using heat resistant gloves. Gently shake for 15 seconds.

4. Allow resin to set for 30 minutes, then gently shake for 30 seconds to ensure a homogeneous and smooth resin mixture.

5. Allow resin to cool for 1 hour.

DS Digital Cure Unit Procedure

1. Remove turntable and place bottle with tightly sealed cap into a DS Digital Cure unit.
   - **Caution: To fit in the curing unit the bottle must be laid on its side. Ensure the cap is tightly attached to prevent leaking.**
   - Wipe clean around cap areas to prevent dripping in the curing unit.

2. Program a custom cycle for heating the resin:

```
 Preset Cycles
▸Custom Cycles

 Settings
```

2.1 From the resin profile screen, select **Custom Cycles.** The Custom Material Profile screen appears.
- The unit comes with 11 empty slots which are shown as Resin-1, Resin-2 and Resin-3.
- The system will automatically save inputs in each cycle until overwritten.

```
▸Resin-1
 Resin-2
 Resin-3
 Resin-4
```

2.2 **Select Resin-1.** The Resin profile's **Custom Settings** appears. Custom settings appear on 3 screens. Scrolling through each page using the following:
- "Back" goes to previous Resin-1 Settings page.
- "Next" goes to the next Resin-1 Settings page.
- "Exit" goes to main menu.

```
 Resin-1
▸Tack Cure Time:00s
 Cure Time:59:50
 Next
```

2.3 Set **Tack Cure** time to **0:00.**

```
 Resin-1
 Tack Cure Time:00s
 Cure Time:59:50
▸Next
```

2.4 Set **Cure Time** to **59 min 50 sec,** select **Next** to set the temperature.

```
 Resin-1
▸Start Temp:080˚C
 Target Temp:100˚C
 Next
```

2.5 Set **Start Temperate to 80°C.**

2.6 Set **Target Temperature to 100°C**, select **Next.**

```
 Resin-1
▸LED:000%
 Back
 Exit
```

2.7 Using Rotary Knob turn LED light intensity to 000%.

3. **Start the Recovery Cycle** by pressing the Start/Stop button.

4. Remove from unit using heat resistant gloves. Gently shake for 15 seconds.

5. Allow resin to set for 30 minutes, then gently shake for 30 seconds to ensure a homogeneous and smooth resin mixture.

6. Allow resin to cool for 1 hour.