

A pair of hands is shown holding a set of dentures. The dentures are white with a pinkish-red gum base. The hands are positioned to display the front view of the dentures. The background is a plain, light-colored surface.

DENTCA Dentures for Carbon printers

Denture Fabrication Manual
Using Dymax ECE 5000 or Dreve PCU LED

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DENTCA Dentures for Carbon printers

Using Dymax ECE 5000

*Except where noted, denture bases, teeth, and Try-In dentures are handled the same.

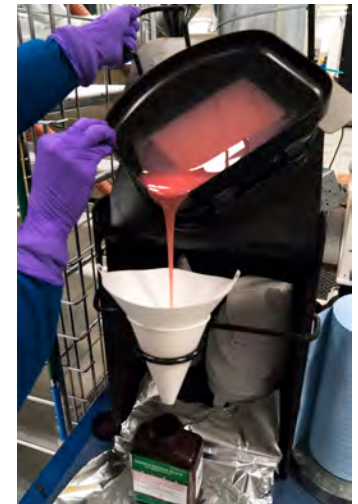
DISPENSING

- Select the appropriate shade of DENTCA Denture Base II for Carbon printers, DENTCA Try-In for Carbon printers, or DENTCA Denture Teeth for Carbon printers.
- Check the expiration date of the resin.
- Wearing proper Personal Protective Equipment, invert and shake the resin container at least 5 times to ensure the resin pigments are well-mixed.
- To reduce resin spills on the printer, carefully remove the Carbon cassette and place on a lined table or lab bench.
- Using Carbon's estimation tool, pour the desired amount of fresh resin necessary to print your part into the cassette. Ensure that the entire window surface is completely covered.
- Wipe the lip of bottle with a paper towel and replace the lid. Keep the container closed when it is not in use.
- Store the bottle in a dark cabinet for later use.
- For subsequent prints, use a soft silicone spatula to gently check the window for adhered pieces of partially-cured resin.



FILTERING

- DENTCA Dentures for Carbon printers resin can be re-used if filtered prior to returning to the bottle.
- Place the cassette on the Carbon Pour Stand and insert a new paper funnel cone and mesh filter into the metal holder.
 - Note: We recommend filtering with a Fine Mesh Nylon 190 micron filter.
- Ensure you match the appropriate bottle to the shade of resin left in your cassette.
- Tilt up the pour stand lid and use a soft silicone spatula to pour the remaining resin through the funnel and into the bottle.
- Wipe the spatula and edge of the cassette with a paper towel to reduce any resin drips.



DENTCA Dentures for Carbon printers

Using Dymax ECE 5000

*Except where noted, denture bases, teeth, and Try-In dentures are handled the same.

TOOLS REQUIRED

Washing:

Personal Protective Equipment, tray, paper towels, foil, part removal tool (yellow scraper), silicone tongs, labeled wash container, IPA, orbital shaker, lab timer

Bonding:

Personal Protective Equipment, tray, paper towels, foil, swabs, pipettes, cup, hand tools/bur, glass plate, Dymax ECE 5000 UV cure unit or gel nail/dental crown curing lamp

Curing:

Personal Protective Equipment, tray, paper towels, foil, 2 pairs of silicone tongs, lab timer, Dymax ECE 5000 UV cure unit, swabs, large binder clip, borosilicate glass dish (large), 2 glass plates, glycerol, oven mitts, polishing tools, water

ACCESSORIES DETAILS

Optional: Gel Nail Curing Lamp (36 watt, UV-A (340-480 nm)) or Dental Crown Curing Lamp such as Shofu Sublite V (150 watt Halogen lamp, UV-V (400-550 nm) – best is closer to 400 nm wavelength)

Dymax ECE 5000 UV cure unit with ECE Zip Shutter, ECE Light Shield, and #36970 Hg bulb (P/N: 43155 for North America, 43156 for Europe, 43157 for Asia)

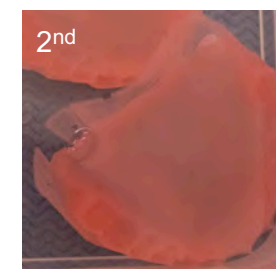
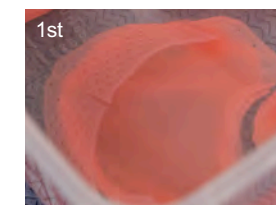
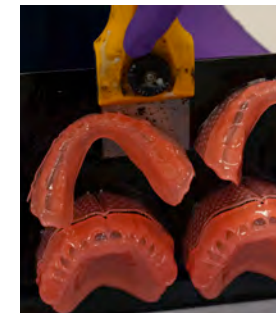
USP Grade glycerol ($\geq 99.5\%$ purity, CAS# 56-81-5) such as Sigma-Aldrich G9012

Transparent, borosilicate glass container
(such as Pyrex Basics 2Qt dish: 11.1" x 7.1" x 1.7")

2 transparent glass plates
(such as McMaster-Carr Borosilicate Sheet - 9" x 9" x 1/8")

WASHING PARTS

- Ideally within 1 hour of the print finishing, remove parts from platform.
 - Supports can be removed either before or after washing.
- Place parts in a labeled wash container filled with enough **fresh IPA** to cover parts.
 - Note: If you experience issues with parts damaged in the wash due to contact with other parts, you can complete 1st wash with parts still on the platform or use smaller containers to wash your parts separately. We do not recommend washing bases and teeth together.
- 1st Wash: Wash for **5 minutes** on orbital shaker at 140 RPM. For denture bases, start with cameo surface (tooth sockets) face down.
- Remove parts with silicone tongs and replace soiled IPA with **fresh IPA**.
- **Flip denture bases** over so cameo surface is now face up. (Flipping is not required for teeth.)
- 2nd Wash: Wash for an **additional 5 minutes** on orbital shaker at 140 RPM.



DENTCA Dentures for Carbon printers

Using Dymax ECE 5000

*Except where noted, denture bases, teeth, and Try-In dentures are handled the same.

DRYING PARTS AND CURING PREP

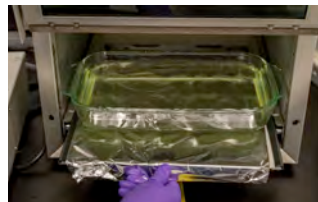
- Air dry parts on paper towel for **at least 30 minutes total**. Flip after 15 minutes. Compressed air can be used to shorten the wait time.
- Pre-warm glycerol bath using the Dymax ECE 5000 for **20 minutes or until at least 60°C**.
 - Fill large glass dish 2/3rd full with glycerol.
 - Place on lowest tray setting.
 - Close the chamber door.
 - Set lab timer to 20 minutes.
 - Set the Dymax Zip Shutter to “Manual”.
 - Clamp the actuator pedal with the large binder clip to begin UV cure. Start the lab timer.
 - Remove binder clip when timer shows 20 minutes has elapsed.

Note: The glycerol bath should reach 60°-70°C during this pre-warming session. Use silicone tongs and oven mitts when handling the bath components and consider a secondary-containment system (such as foil) to prevent accidental spills.

Subsequent cures will only require this pre-warming step if the glycerol temperature drops below 60°C.

CAUTION - BURN HAZARD: GLYCEROL BATH CAN REACH TEMPERATURES OF 90°C (~200°F) AND LEAD TO SEVERE BURNS.

- Only trained users should perform the glycerol curing step with caution and appropriate PPE.
- We also recommend placing a warning label on the window of the cure unit to alert all lab users to the potential hazard.



SETTING TEETH PLACEMENT (BONDING)

***Note:** This section is not applicable for fabrication of Try-In dentures.

- Remove remaining supports by hand, then residual support nubs from denture bases and teeth using a hand tool / bur.
 - **Note:** Take care not to break apart teeth segments.
- Check tooth fit in sockets (alveolus).
- Place a few drops of liquid denture base resin into the tooth sockets using a pipette.
- Place the corresponding teeth in the sockets and use additional resin to fill in any gaps.
- Use swabs to smooth over and remove any excess resin.
- Ensure teeth are correctly aligned and seated fully down into the socket. Check upper and lower denture occlusion.
- Position the denture flat on base with teeth facing up (cameo surface up) and briefly UV cure the denture on foil until teeth are secure (for example, **3-10 seconds** cure in Dymax ECE 5000).
 - **Note:** You can use the glass plate to cure your dentures above the glycerol bath to reduce handling of the hot liquid.
 - **Note:** For better occlusion, you can use a gel nail or dental crown curing lamp to cure while holding the teeth and denture base together in place by hand.



DENTCA Dentures for Carbon printers

Using Dymax ECE 5000

*Except where noted, denture bases, teeth, and Try-In dentures are handled the same.

FINAL DENTURE CURING

- Cure the dentures with cameo surface up (teeth facing up) in the pre-warmed glycerol in the Dymax ECE 5000 for **10 minutes**.
 - Arrange dentures so that parts are not overlapping or touching. You may need to add glycerol to ensure the parts are completely covered.
 - Gently lower glass plate on one side of the dish and slowly lower to the other side to minimize trapped bubbles. The glass plate serves to fully submerge the dentures in glycerol.
 - Close the chamber door.
 - Set lab timer to 10 minutes.
 - Set the Dymax Zip Shutter to “Manual”.
 - Clamp the actuator pedal with the large binder clip to begin UV cure. Start the lab timer.
 - Remove binder clip after 10 minutes has elapsed. *Otherwise, parts may experience excessive curing.*
- Using 2 pairs of silicone tongs, carefully lift hot glass plate and **flip dentures** such that teeth are facing down (cameo surface down).
- Place glass back on top and cure for an **additional 10 minutes** using the binder clip and timer method described above.

Parts may experience excessive curing if total cure time exceeds 20 minutes.



FINAL PROCESSING AND DISPOSAL

- Remove dentures from the glycerol bath using silicone tongs.
 - Note: Dentures will be very warm after removal from the glycerol bath.
- Once cool, wipe off excess glycerol with paper towel.
- Rinse with water to remove remaining glycerol (shiny finish).
- Dry thoroughly either by air drying or using compressed air.
- Polish dentures by conventional method.
- Dispose of glycerol as liquid hazardous waste each month (or sooner if it becomes cloudy or discolored). Consult your local regulations for specifics regarding the appropriate waste stream.



DENTCA Dentures for Carbon printers

Using Dreve PCU LED

*Except where noted, denture bases, teeth, and Try-In dentures are handled the same.

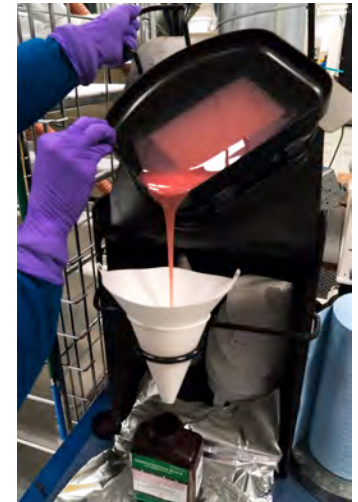
DISPENSING

- Select the appropriate shade of DENTCA Denture Base II for Carbon printers, DENTCA Try-In for Carbon printers, or DENTCA Denture Teeth for Carbon printers.
- Check the expiration date of the resin.
- Wearing proper Personal Protective Equipment, invert and shake the resin container at least 5 times to ensure the resin pigments are well-mixed.
- To reduce resin spills on the printer, carefully remove the Carbon cassette and place on a lined table or lab bench.
- Using Carbon's estimation tool, pour the desired amount of fresh resin necessary to print your part into the cassette. Ensure that the entire window surface is completely covered.
- Wipe the lip of bottle with a paper towel and replace the lid. Keep the container closed when it is not in use.
- Store the bottle in a dark cabinet for later use.
- For subsequent prints, use a soft silicone spatula to gently check the window for adhered pieces of partially-cured resin.



FILTERING

- DENTCA Dentures for Carbon printers resin can be re-used if filtered prior to returning to the bottle.
- Place the cassette on the Carbon Pour Stand and insert a new paper funnel cone and mesh filter into the metal holder.
 - Note: We recommend filtering with a Fine Mesh Nylon 190 micron filter.
- Ensure you match the appropriate bottle to the shade of resin left in your cassette.
- Tilt the pour stand lid and use a soft silicone spatula to pour the remaining resin through the funnel and into the bottle.
- Wipe the spatula and edge of the cassette with a paper towel to reduce any resin drips.



DENTCA Dentures for Carbon printers

Using Dreve PCU LED

*Except where noted, denture bases, teeth, and Try-In dentures are handled the same.

TOOLS REQUIRED

Washing:

Personal Protective Equipment, tray, paper towels, foil, part removal tool (yellow scraper), silicone tongs, labeled wash container, IPA, orbital shaker, lab timer

Bonding:

Personal Protective Equipment, tray, paper towels, foil, swabs, pipettes, cup, hand tools/bur, glass plate, Dreve PCU LED or gel nail/dental crown curing lamp

Curing:

Personal Protective Equipment, tray, paper towels, foil, 2 pairs of silicone tongs, lab timer, Dreve PCU LED with hot plate and pot and electrical timer, swabs, glass Pyrex dish (small), 2 glass plates (small), glycerol, thermocouple, oven mitts, polishing tools, water

ACCESSORIES DETAILS

Optional: Gel Nail Curing Lamp (36 watt, UV-A (340-480 nm)) or Dental Crown Curing Lamp such as Shofu Sublite V (150 watt Halogen lamp, UV-V (400-550 nm) – best is closer to 400 nm wavelength)

Dreve PCU LED unit

USP Grade Glycerol (≥ 99.5% purity, CAS# 56-81-5) such as Sigma-Aldrich G9012

Electric hot plate (such as Cusimax 1500W portable single countertop burner)

Stainless steel pot with pouring spout (such as T-fal 3Q C91124)

Electrical timer (such as Century Smart Digital Countdown Timer)

Thermocouple (such as BENETECH GM1312 digital thermometer for K/J/T/E/R/S/N)

Transparent, borosilicate glass container
(such as Circleware 23oz dish: 6" x 6" x 2.5")

2 transparent glass plates
(such as Sigma-Aldrich's Corning 75mm x 50 mm slides (CLS294775x50))

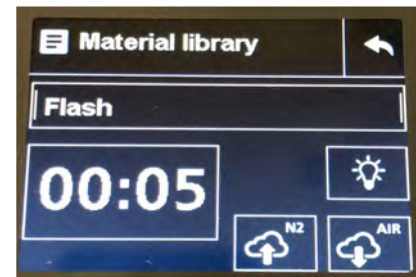
DREVE PCU LED PROGRAMMING

- Quickly press and hold rotary button while PCU powers up until Configuration Level menu displays.
- Use the access code **217** to enter admin mode and add two new programs:



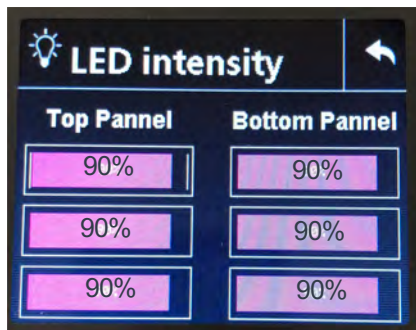
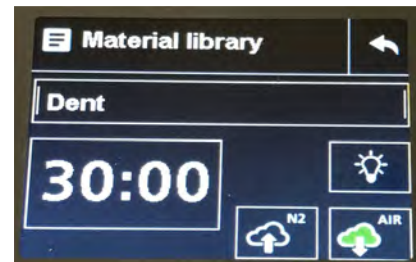
1. "Flash" Parameters for the Pre-Cure Bonding program:

Time – 5 seconds
N2 – Off
Air (Vacuum) – Off
LED Intensity – All at 90%



2. Parameters for the Dentca Denture program:

Time – 30 minutes
N2 – Off
Air (Vacuum) – On
LED Intensity – All at 90%



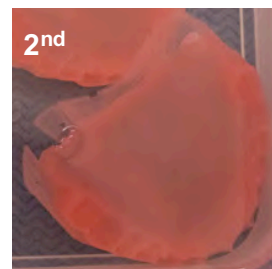
DENTCA Dentures for Carbon printers

Using Dreve PCU LED

*Except where noted, denture bases, teeth, and Try-In dentures are handled the same.

WASHING PARTS

- Ideally within 1 hour of the print finishing, remove parts from platform.
 - Supports can be removed either before or after washing.
- Place parts in a labeled wash container filled with enough **fresh IPA** to cover parts.
 - Note: If you experience issues with parts damaged in the wash due to contact with other parts, you can complete 1st wash with parts still on the platform or use smaller containers to wash your parts separately. We do not recommend washing bases and teeth together.
- 1st Wash: Wash for **5 minutes** on orbital shaker at 140 RPM. For denture bases, start with cameo surface (tooth sockets) face down.
- Remove parts with silicone tongs and replace soiled IPA with **fresh IPA**.
- **Flip denture bases** over so cameo surface is now face up. (Flipping is not required for teeth.)
- 2nd Wash: Wash for an **additional 5 minutes** on orbital shaker at 140 RPM.



DRYING PARTS AND CURING PREP

- Air dry parts on paper towel for **at least 30 minutes total**. Flip after 15 minutes. Compressed air can be used to shorten the wait time.
- Pre-warm glycerol bath using the pot and hot plate for **5-10 minutes or until at least 60°C**.
 - Fill the pot with at least 0.5 L of glycerol.
 - Set the hot plate to Setting 3 and electrical timer to 10 minutes.
 - Stir occasionally and monitor the temperature closely with a thermocouple until it reaches 60°-70°C.
 - Remove the filled pot from the hot plate. Even when off, the hot plate can continue to heat the glycerol to a high temperature.
 - Fill the small glass dish approximately halfway with the pre-warmed glycerol, leaving at least 1" buffer near the rim to grip the glass container.

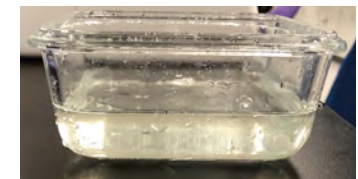


Note: The hot plate should be plugged into an electrical timer to automatically shutoff power after a set amount of time. This will reduce the risk of overheating the glycerol.

This pre-warming step will need to be performed after every cure to maintain the minimum 60°C temperature.

CAUTION - BURN HAZARD: GLYCEROL BATH CAN REACH HIGH TEMPERATURES AND LEAD TO SEVERE BURNS.

- Only trained users should perform the glycerol curing step with caution and appropriate PPE.
- We also recommend placing a warning label on the hot plate / near the pot filled with hot glycerol to alert all lab users to the potential hazard.



DENTCA Dentures for Carbon printers

Using Dreve PCU LED

*Except where noted, denture bases, teeth, and Try-In dentures are handled the same.

SETTING TEETH PLACEMENT (BONDING)

*Note: This section is not applicable for fabrication of Try-In dentures.

- Remove remaining supports by hand, then residual support nubs from denture bases and teeth using a hand tool / bur.
 - Note: Take care not to break apart teeth segments.
- Check tooth fit in sockets (alveolus).
- Place a few drops of liquid denture base resin into the tooth sockets using a pipette.
- Place the corresponding teeth in the sockets and use additional resin to fill in any gaps.
- Use swabs to smooth over and remove any excess resin.
- Ensure teeth are correctly aligned and seated fully down into the socket. Check upper and lower denture occlusion.
- Position the denture flat on base with teeth facing up (cameo surface up) and briefly UV cure the denture until teeth are secure (for example, **5 seconds** cure in Dreve PCU LED at 90% LED intensity).
 - Note: For better occlusion, you can use a gel nail or dental crown curing lamp to cure while holding the teeth and denture base together in place by hand.



FINAL DENTURE CURING

- Cure the dentures with the cameo surface up (teeth facing up) in the pre-warmed glycerol in the Dreve PCU LED for **30 minutes**.
 - Arrange dentures so that parts are not overlapping or touching. You may need to add glycerol to ensure the parts are completely covered.
 - Gently lower the glass slides on one side of the dish and slowly lower to the other side to minimize trapped bubbles. The glass slides serve to fully submerge the dentures in the glycerol.
 - If necessary, completely remove the glass platform from the chamber.
 - Carefully place the small glass dish into the center of the Dreve PCU LED chamber to prevent the container from touching the sides of the chamber. The small glass container may be slippery.
 - Close the chamber door and select the denture program (30 minutes, vacuum, 90% LED intensity).
 - Push the rotary button twice to select and start the selected resin program. Dreve PCU LED programming details are provided on the next page.

Note: **DO NOT flip dentures**. LED lights are located above and below the Dreve chamber to cure all sides of dentures at the same time.

Parts may experience excessive curing if total cure time exceeds 30 minutes.



DENTCA Dentures for Carbon printers

Using Dreve PCU LED

*Except where noted, denture bases, teeth, and Try-In dentures are handled the same.

FINAL PROCESSING AND DISPOSAL

- Remove dentures from the glycerol bath using tongs.
 - Note: Dentures will be warm after removal from the glycerol bath.
- Once cool, wipe off excess glycerol with paper towel.
- Rinse with water to remove remaining glycerol (shiny finish).
- Dry thoroughly either by air drying or using compressed air.
- Polish dentures by conventional method.
- Dispose of glycerol as liquid hazardous waste each month (or sooner if it becomes cloudy or discolored). Consult your local regulations for specifics regarding the appropriate waste stream.

