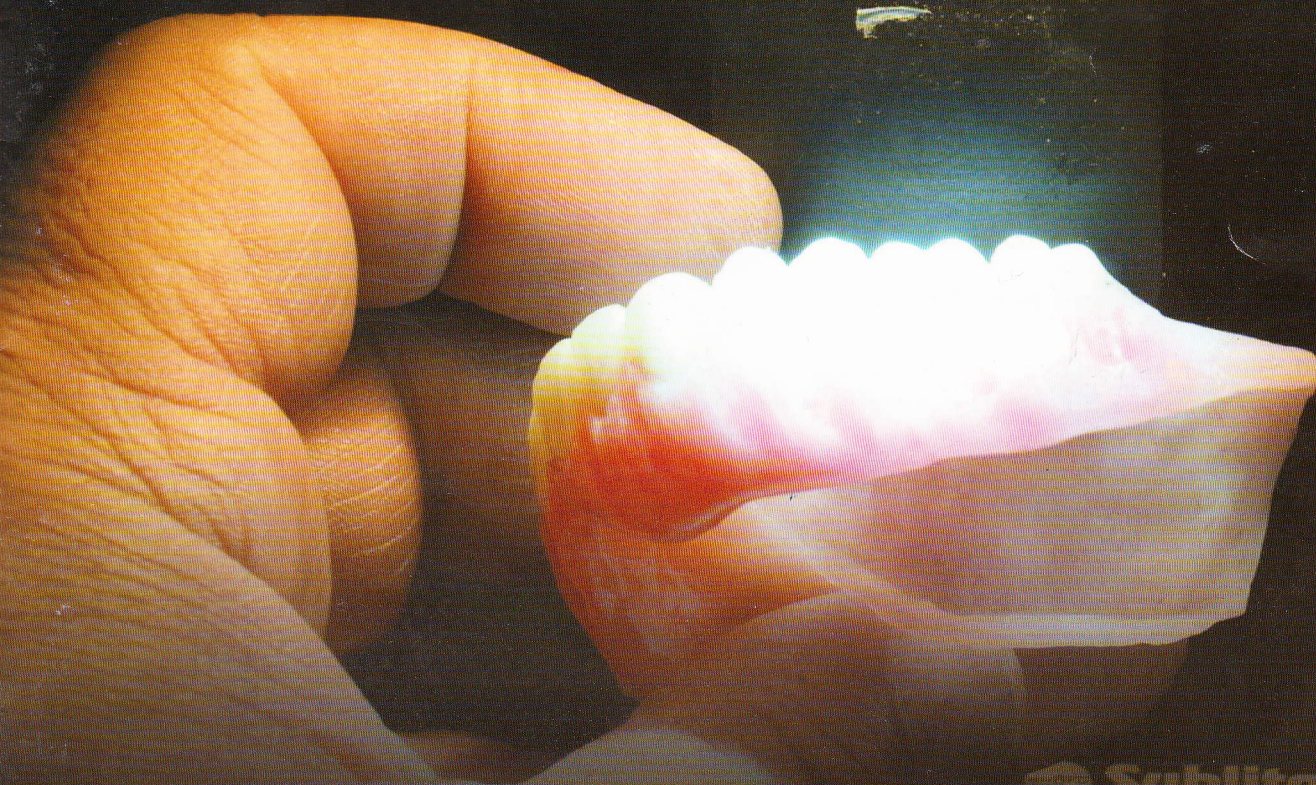
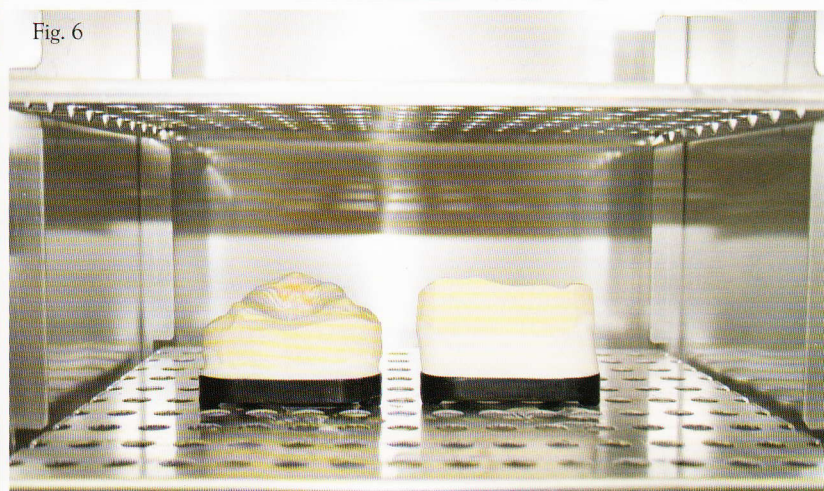
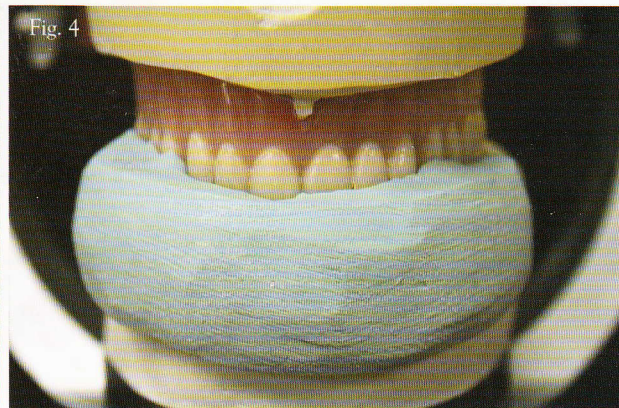
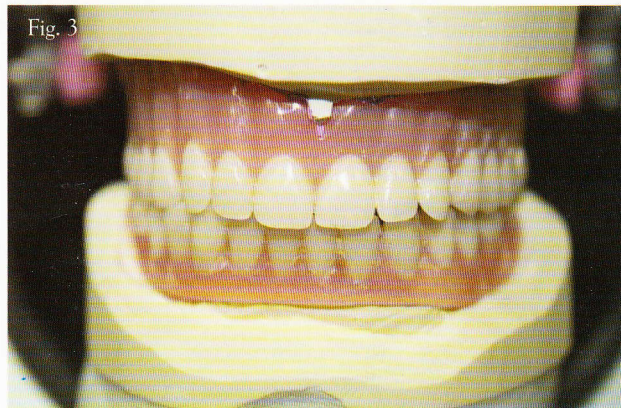
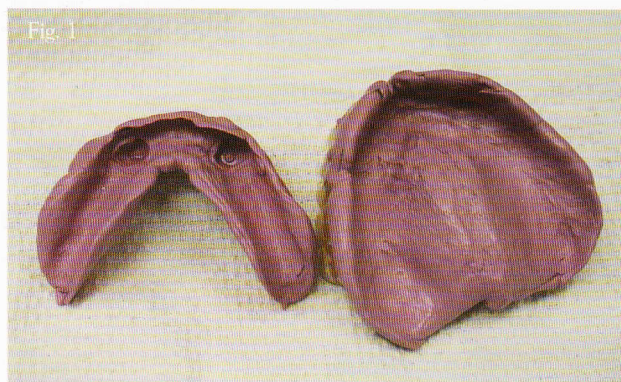


Light It Up: Fabricating Precise Dentures in Far Less Time

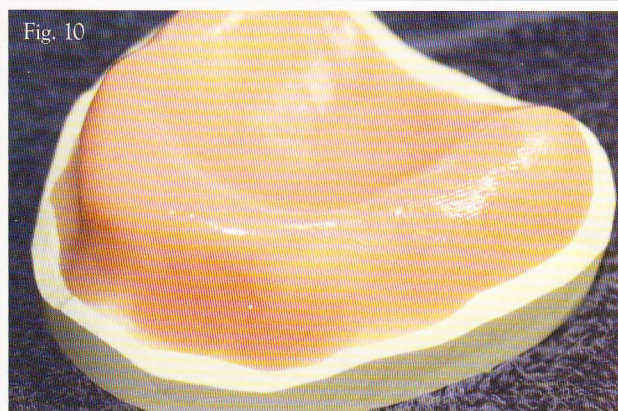
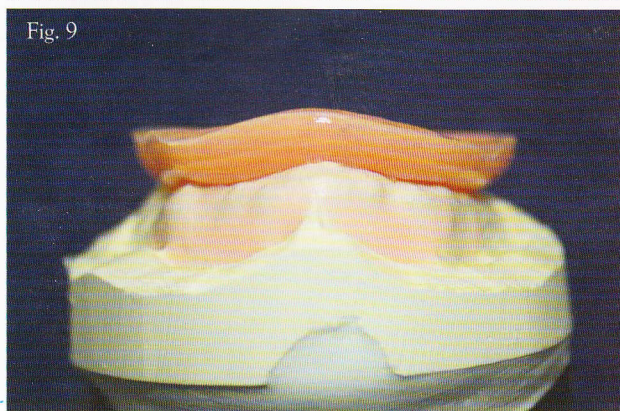
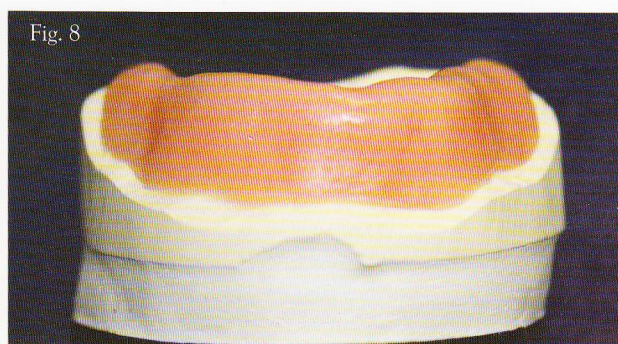
Jim Collis, CDT





Fabricating a full or partial denture try-in in wax and processing it using the traditional press pack technique with an overnight process, followed by the break out, finishing and polishing of the appliance is a lengthy procedure. It is both labor-intensive and time-consuming in the laboratory. Eclipse, a prosthetic resin system by Dentsply, provides a more efficient denture fabrication and processing technique and yields several other important benefits. The Eclipse denture try-in is fabricated from a combination of three types of resin (baseplate, setup and contour) instead of wax. The curing process is very fast. Once the resin try-in is approved, it goes directly to the curing stage which includes one hour in the Eclipse conditioning oven followed by a 10 minute cure in the Eclipse light cure unit. The denture is then ready to be finished. Once cured, Eclipse resin meets impact standards comparable to high impact acrylics available

on the market. The Eclipse system is also a tremendous timesaver. Since the try-in contains no wax, there is no flasking, no investing, no boilout, no packing and no overnight processing. This reduces the risk of processing error or changes in vertical dimension, and eliminates the risk of cracking the denture during the traditional break out. The Eclipse system is much more eco-friendly. There is no plaster dust or debris, no humidity from the boilout, no liquid wax mess, and no wax solvent or monomer fumes. The Eclipse resin is also biocompatible and monomer-free, a tremendous advantage for the technician and the patient. Finishing and polishing of the Eclipse processed denture is fast and simple. Because the resin is available in multiple shades as well as clear, the Eclipse system is very versatile. It can also be used for simple flippers, implant cases, orthodontic work and night guards.



placed (Figs. 6 to 10). The border was filled but not coming over the top of the land area. Similarly, a lower resin baseplate was formed. The resin on both baseplates was painted with Eclipse Air Barrier Coating and then placed into the Eclipse curing unit for 10 minutes at the appropriate setting for baseplates (Fig. 11). The baseplates were then bench cooled for about 10 minutes. At this point, baseplates were removed from the models and the borders trimmed or thinned as needed. (If this had been a case that did not have existing dentures, we would put wax rims on the baseplates, records would be taken, and then the case would be mounted and all wax would be completely removed from the surface of the mounted baseplates before proceeding to the next step.)

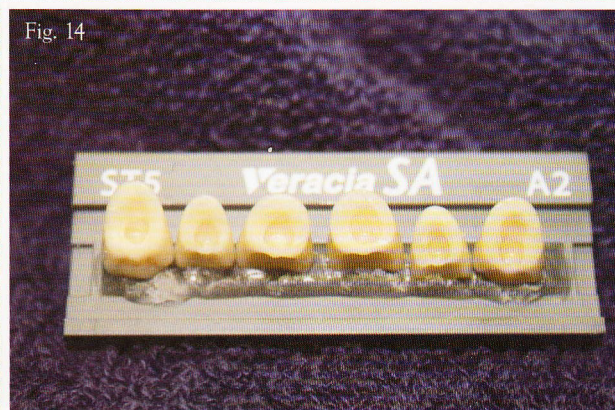
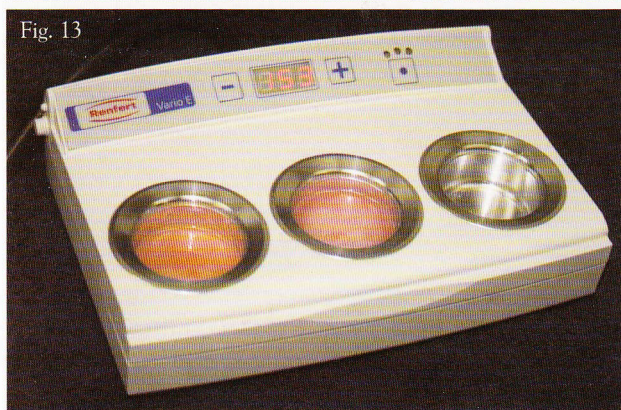
The entire surface of the baseplates was then roughened with a bur removing any air barrier and contouring around tooth-bearing areas (Fig. 12). A slight depression was formed just above the border areas that would act somewhat as a blending area when finalizing the application of the contour resin.

Next, the teeth were prepared for the setup. I chose to use Shofu Veracia SA teeth along with the Veracia SA lower Q3 Pack. These are beautiful semi-anatomical denture teeth composed of microfilled hybrid composite reinforced with layers of glass. These teeth are designed to self-articulate due to strategically placed fissures and grinding facets and are available with the Q3 Pack which allows the simultaneous and accurate setup of up to 4 individual posterior teeth at once (Figs. 14 and 15).

Each tooth was placed along the ridge of the baseplate and ground as needed to fit. Diatorics or retention slots were added. Shofu's Ceraresin Bond 1 was painted in the

The following case study is a step-by-step description of the fabrication of a full upper/full lower denture using the Eclipse system. The case study patient presented with existing attachments soldered onto two gold root caps on the lower cuspids (Figs. 1 and 2). The attachments were worn so it was the doctor's decision to cut the attachments off but to leave the root caps in place to maintain bone support. Impressions were taken inside the existing dentures. Models were poured and mounted on a fully adjustable articulator. A silicone index was made of the upper and lower anteriors to capture the position relative to one another and the ridge (Figs. 3 to 5).

Undercuts were blocked out utilizing hard blockout wax and the models were warmed in the Eclipse conditioning unit for 10 minutes to approximately 105°F/41°C. A wafer of the Eclipse baseplate resin was placed (rounded side down) over the crest of the upper ridge. The material was then slowly pressed down with the fingers to roll out bubbles while forming the baseplate leaving the borders a little thicker than the ridge areas where the teeth would be



diatorics and on any part of the tooth where it would come into contact with the Eclipse material. This bond etches the surface and dries quickly. Then Ceraresin Bond 2 was painted on the same surfaces and all painted teeth were put on a tray and placed in the Shofu Solidlite V unit to cure for about 3 minutes (Most light cure units will work) (Fig. 16).

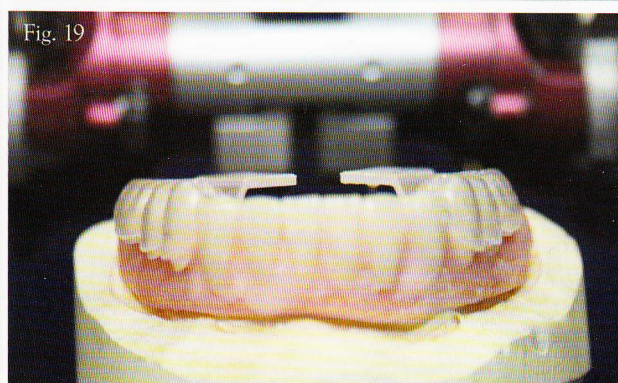
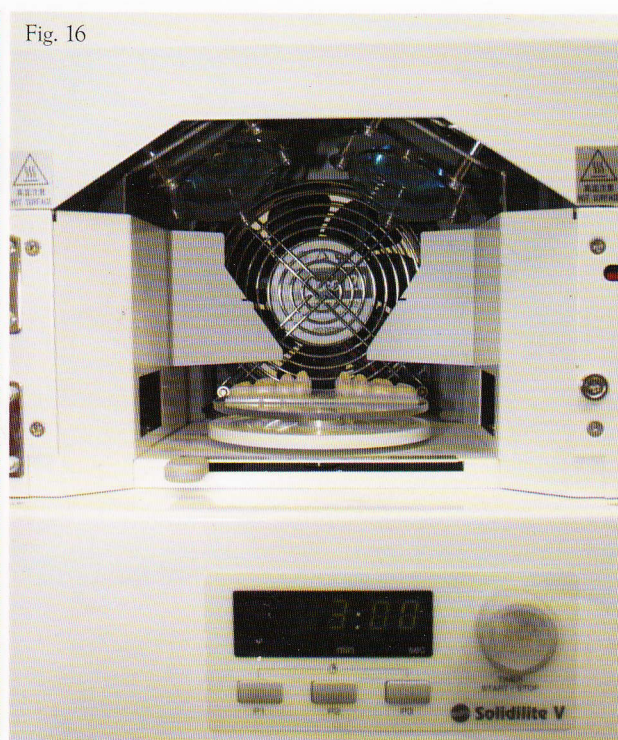
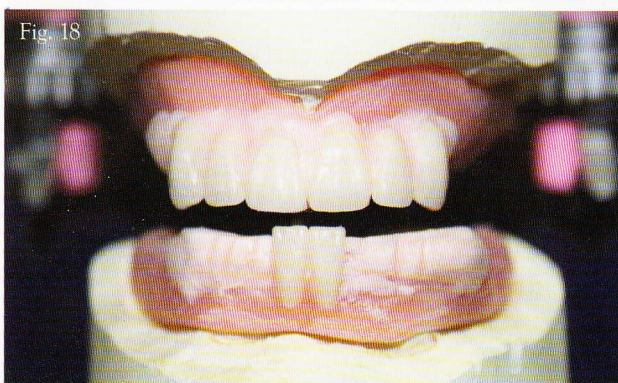
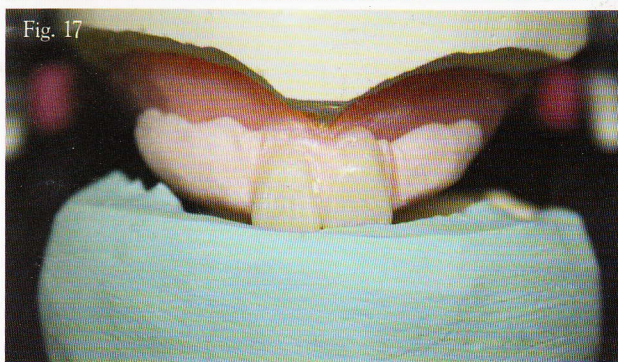
A piece of Eclipse's setup resin was cut in half lengthwise and applied to the tooth-bearing areas of the upper baseplate. The setup resin was then affixed with a small amount of setup resin softened in a well of a clean Renfert Vario electric waxer. The Renfert Vario waxer has 3 wells whose temperature can be individually controlled (Fig.13). Baseplate resin was placed in one well, setup resin in a second well, and contour resin in the third well. The silicone index was placed on the articulator. Using Renfert's Waxlectric II spatula, the setup resin affixed to the baseplate was softened on the area where the first upper anterior tooth was to be placed. There is a learning curve in adjusting to the texture of the setup resin. Be careful not to overheat (Fig. 17).

The anteriors were placed based on the indentations on the silicone index. A drop of setup resin was added to the diatoric area of each tooth being set to make sure it was completely filled. As each tooth was set, it was important to make sure that it was attached all the way around with no bubbles or space beneath. Neatness and cleanliness are

important because unlike a wax setup, this setup resin material is the material that will later be processed. The order in which the teeth were set was: the 2 central anteriors on the upper, then each lateral on the upper, then each cuspid on the upper. Then the silicone index was removed.

A piece of Eclipse setup resin was applied to the tooth-bearing areas of the lower baseplate and affixed with softened setup resin. The next teeth set were: the 2 central lowers, the 2 laterals on the lower, then each cuspid on the lower. After each lower tooth was placed, the movements were checked (Fig. 18).

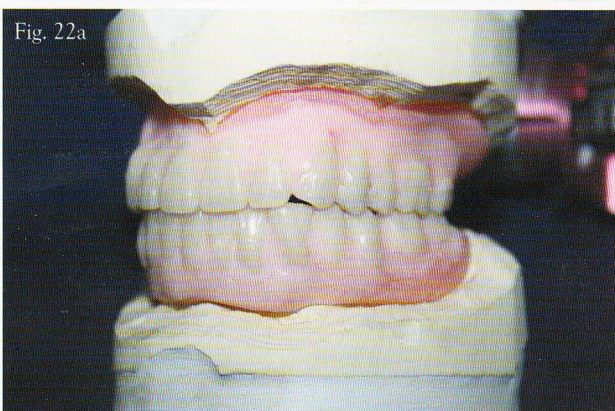
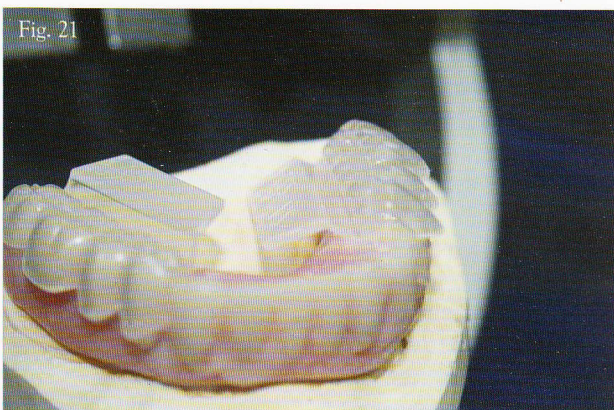
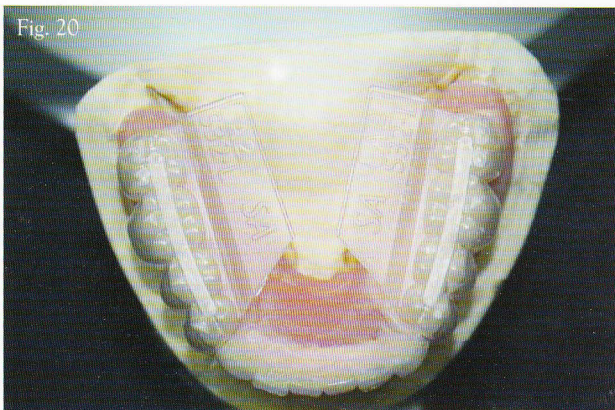
After the 6 anterior teeth were placed on the upper and lower, the posterior teeth were set. As part of Shofu's Veracia SA line, Shofu has created the Q3 Pack, which consists of four individual teeth set into an occlusal template for each side of the arch to facilitate a quick, precise setup. The teeth are separate within the template, so that once the template is removed the teeth can be individually rotated or moved for esthetics. A lower Q3 Pack was set on each side of the lower arch with a drop of setup resin being added to the diatoric area of each tooth. There is a notch on the Q3 Pack on the mesial of the first bicuspid (Fig. 19). The notch was placed on the distal of the cuspid and the Q3 Pack was pressed into the resin making sure that the distal of the second molar was no higher than 2/3 of the way up the retro-molar pad. There is a line on



the top of the Q3 Pack. This line was placed over the crest of the ridge. The occlusal plane, guided by the template, was leveled with the plane of occlusion from anterior to posterior and lingual to buccal (Fig. 20). The Q3 Pack was affixed to the arch using softened setup resin from the Renfert Vario waxer. The other side of the arch was set in the same manner with the occlusal templates lining up parallel with each other. Once the templates containing the teeth were placed in the setup resin and affixed, the template on each side was released by simply pressing down on the lingual of the template and up on the buccal collars (Fig. 21). Then, the upper posterior teeth were set using a Veracia SA standard 1x8 card. The upper teeth dropped right into place because the lower posterior teeth from the Q3 Pack are set into an ideal 20 degree Curve of Spee and Curve of Wilson (Fig. 22a). If it is the technician's preference to set the upper posterior teeth first, Shofu makes a Q3 Pack for the upper posterior teeth and then a standard 1x8 card can be used to set the lower posterior teeth. The Q3 Packs significantly reduce the time it takes to accurately set posterior quadrants by as much as 50 percent.

Next, Eclipse's contour resin was applied (Fig. 22b). It is like traditional waxing except that heated, softened contour resin is used instead of wax. Using the Renfert Waxlectric II spatula, contour resin was applied from the Renfert Vario well around the neck of each tooth and up into the depression that was made just above the border areas on the baseplates, contouring the entire surface of the baseplates (Fig. 23a). It is important to avoid spaces or entrapped air bubbles. Using a clean brush on a bench lathe at low speed, the surface of the contour resin was evened and smoothed by pulling the resin up into the proximals and off the buccal and lingual surfaces of the teeth (Figs. 23b and 23c).

The collars of the teeth were chiseled and anatomy was carved in and festooned. The more precise you are with your chiseling and anatomy at this point, the better the finished product will be because it is this resin material that is eventually cured, finished and polished. More precision at this stage will simplify the finishing and polishing stage. At this point, the surface of the baseplates is dull. The surface was smoothed using a low flame torch at a distance but extreme care is advised to avoid overheating. For those

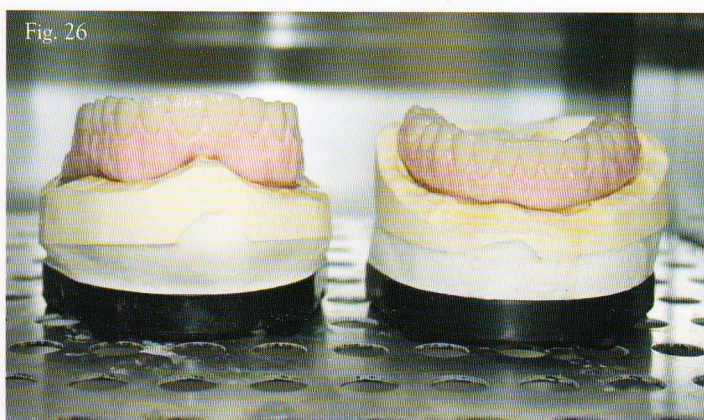
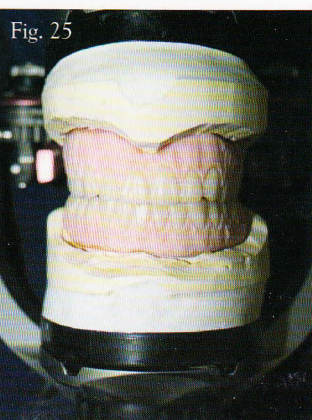


less experienced at working with the resin material, it is advised that they smooth the material by using the heat gun that is provided with the Eclipse system. The objective is to just wisp the surface rapidly to smooth. You do not want to overheat as this may cause slumping or loss of the contours (Figs. 24 and 25).

The case was sent out for a try-in in the black plastic bag provided by Dentsply advising the doctor to keep the try-in

in the bag, except when trying the dentures, to avoid extended exposure to light which could harden the case. When sending the case for try-in, the lab should include an extra strip of setup resin in the event that the bite requires adjustment. If the doctor wants to remove teeth to take a new bite, the doctor should warm the resin slightly with a warm wax spatula and simply pop off the teeth needing adjustment. The doctor would then replace the teeth with the extra piece of setup resin, take a new bite, and return the case to the lab to be rearticulated and reset.

The case study full upper/full lower did not require any adjustments at the try-in and was approved for processing. When the case was received at the lab, the occlusion was verified to ensure that nothing had shifted during transit. The dentures were placed in the Eclipse conditioning oven at 129°F/54°C for one hour (Fig. 26). Conditioning allows the three viscosities of the baseplate resin, the setup resin, and the contour resin to meld together so there will be no subsequent delamination. Once the dentures were removed from the conditioning oven, all exposed resin surfaces were



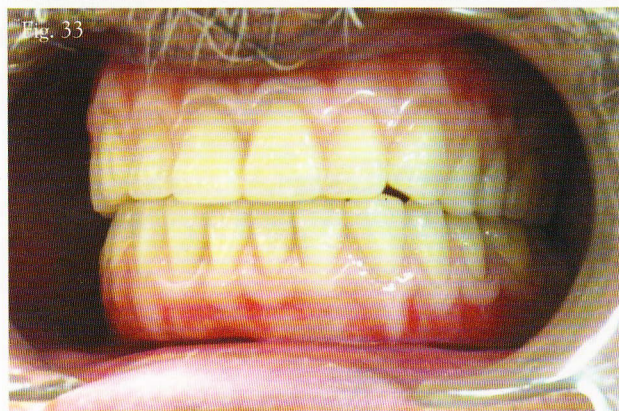
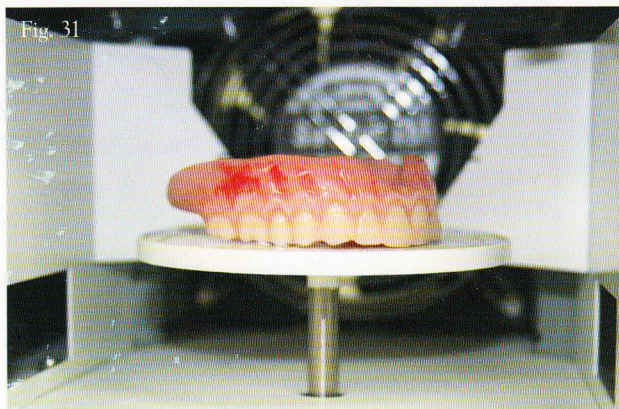
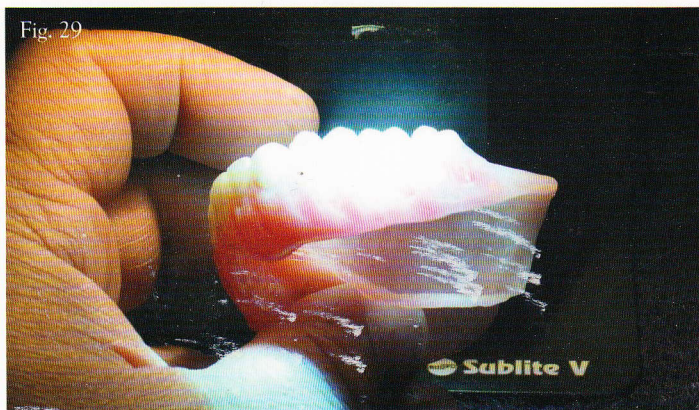
painted with air barrier. Then the dentures were placed in the Eclipse curing unit for a 10 minute cure at the appropriate cure setting. The cured dentures were removed from the curing unit, cooled to room temperature, and then cleaned to remove the air barrier (Fig. 27). The cleaning can be done with either soap and water or a steam cleaner. The dentures were then remounted to check occlusion. Articulating paper was used to check the bite. At this point, if the case had already been festooned at the try-in stage, then the dentures would just be removed from the models, pumiced and polished as you would with acrylic dentures. If additional festooning is desired before finishing and polishing, this can be done as you would with acrylic dentures using burs or arbor bands and then the dentures would be polished as usual.

The Eclipse resin yields denture bases that are extraordinarily beautiful in appearance after they are cured, finished and polished. In this case study however, the goal was to take the dentures to the next level in terms of exceptionally natural appearance by naturalizing the denture bases with Shofu's Ceramage. Ceramage is one of the best color composites on the market. It is composed of 73% Zirconia which adds to strength and gives a beautiful, natural appearance in terms of color translucency.


After the case study dentures were cured, cleaned and remounted to check occlusion, the process of naturalizing the dentures was begun. When naturalizing the dentures, it is important to begin with a clean surface on the dentures, free of any dust or ultrasonic cleaner residue. First,

Ceraresin Bond 1 was painted on all the buccal surfaces being naturalized and allowed to dry. Then Ceraresin Bond 2 was painted on the same areas and allowed to dry. Shofu Ceramage Gum Color Kit Flowable Red (F-Red) was chosen from among the various shades of Ceramage available to provide good color contrast. The Flowable Red was thinned with 1-2 drops of Shofu Lite Art liquid so that it could be applied like a translucent wash over the color of the Eclipse resin (Fig. 28). The wash was applied to one quadrant of the dentures at a time and then cured in Shofu's Sublite V for 10 seconds for each quadrant (Fig. 29). Next, Ceramage Flowable White (F-White) in its undiluted state was used to highlight the anatomy that had previously been carved into the resin at try-in. The Flowable White was applied to the root eminences 1-2 teeth at a time and cured for 10 seconds, continuing around the arch of each denture. The application and curing was done 1-2 teeth at a time so the Flowable White Ceramage would not flow too much before being cured (Fig. 30). The dentures were then painted with air barrier and put into Shofu's Solidlite V for a 3 minute cure (Fig. 31). The dentures were washed with soap and water to remove the air barrier (although an ultrasonic cleaner could also be used) then pumiced and polished as usual.

Once the dentures are in a high shine state, as an optional finishing touch, either the Eclipse resin or the naturalized Ceramage surface can be stippled with a Candular stipple bur on a bench lathe set to low speed on only the attached gingiva. After stippling, the surface of the



dentures would be pumiced very lightly with a brush on a bench lathe and then rinsed and polished back to a high shine.

Once you gain some familiarity in technique working with Dentsply's Eclipse resin material, you will find that your setups can be efficiently fabricated in a very clean and eco-friendly manner. If you choose to enhance the case by selecting the beautiful Shofu's Veracia SA teeth with the Q3 Pack posterior teeth, setup time will be significantly reduced. Processing the Eclipse resin is extremely fast. Once processed, the denture bases have durability comparable to high impact acrylic standards and the resin material is biocompatible and monomer-free. For a truly exceptional finished product, consider naturalizing the denture bases as was done in this case with Shofu's Ceramage. The case study patient was extremely pleased with the exquisitely natural appearance as well as the precise fit and occlusion of these finished dentures (Fig. 32 and 33). 



About the author

Jim Collis, CDT, has owned and operated Collis Prosthodontic Laboratory since 1980. The laboratory specializes in a wide range of removable prosthodontic appliances including: full and partial dentures, attachment cases, designed and scanned milled titanium hybrid bars, and removable/crown and bridge combination cases. The lab primarily serves a select clientele of dental offices in the western suburbs of Chicago.

Jim has presented numerous lectures and hands-on clinics at venues throughout the United States, Canada and Germany. He is an Advisory Board Member for the publication Spectrum Dialogue, The Voice of Techno-Clinical Dentistry, Palmeri Publishing Inc. and has published numerous technical articles. He is also a consultant for several companies in the industry. Jim previously served at Northwestern University Dental School as an instructor in the Junior/Senior laboratory for ten years. He possesses a degree in Dental Technology from Triton College, and has been a Certified Dental Technician for over thirty years.

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