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Titanal/ Counter Force^{®*} Patent

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Lancer Orthodontics has just received patent approval for Titanal/Counter Force. The Titanal/Counter Force shape provides permanently forged multi-dimension bends to counter unwanted tooth movements while preserving arch form. This permanent, overly contoured shape works constantly to eliminate the arch collapse, molar inversion, crown tipping into extraction sites and other undesired movements that can occur with regular nickel titanium arches when attempting demanding mechanics. Titanal's inherent chemical and forging superiority enables it

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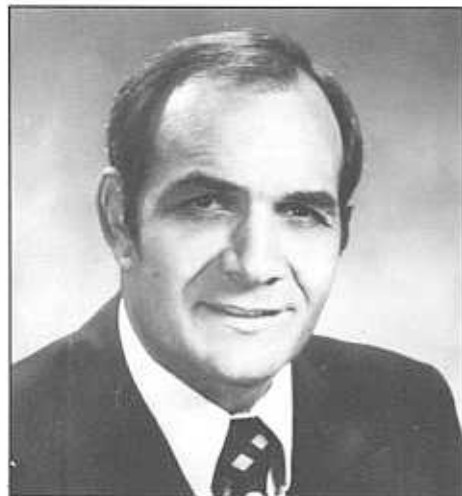
*patented

Shedding Light on Retainer Problems

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Variations in retainer design that are usually difficult to achieve with salt-and-pepper or vacuum and heat techniques are simple with light-cured acrylic.



I have used every technique—modern and ancient—for making orthodontic retainers, but I never made a really good fitting one until I used a light-cured acrylic. The superior fit of retainers made with light-cured acrylic is afforded by the close adaptation of the soft plastic with the model, the pre-cured trimming of the adapted acrylic and the full polymerization of the acrylic by the light.

TECHNIQUE

A flat sheet of unpolymerized acrylic 2 mm in thickness is the easiest polymer to adapt against the model and retainer wires (Triad VLC Denture Base and Orthodontic Material by Dentsply Co.). The wire ends are designed to fully engage the acrylic and not loosen. The strength of this resin is such that much of the palate can be cut away without weakening the maxillary retainer. The remaining resin can then be stored away from light and used again.

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Dr. White received his B.S. from the University of New Mexico and his D.D.S. and M.S.D. from Baylor Dental College. He practices in Hobbs and has satellite offices in New Mexico and Texas. He has published extensively and is currently Editor of the Journal of Clinical Orthodontics and the Rocky Mountain Society of Orthodontists Newsletter. He is past president of the Rocky Mountain Society of Orthodontists, the New Mexico Orthodontists Society and the Texas Tweed Orthodontic Study Group.

Retainers

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Coat the model with a liquid separating agent (Figure 1) and place a full sheet of light-cured acrylic underneath the wires (Figure 2). Lay another sheet of light-cured denture base material over the model and sandwich the wires between the two acrylic layers by pushing them together with digital pressure (Figure 3). Sandwiching wire between two layers of uncured acrylic is a predictable technique of securing the wire and preventing voids that often occur with other acrylic curing techniques.

A similar sandwich technique is used to reinforce the acrylic in break-susceptible areas of an appliance with screen wire mesh (available through Saturated Steam, Miami, FL). For instance, in the anterior lingual section of a mandibular Hawley retainer or over the occlusal surface of a splint (Figure 4). Finally, trim the soft acrylic with a sharp instrument (Figure 5). The pre-cure trimming and adaptation of the light-cured acrylic is, perhaps, the most useful feature of this technique, because the doctor can review the appliance design and make last minute changes before completing it. This flexibility obviates many misunderstandings between doctor and technician.

Trimming and shaping the acrylic with a sharp scalpel before curing saves finishing time and preserves the original design and close adaptation. Auto-cure acrylics, typically, are overbuilt and then trimmed. Controlling acrylic thickness is difficult with salt-and-pepper techniques and the close adaptation of acrylic to teeth is often compromised when retainers are trimmed after curing. Asymmetrical, bulky acrylic is never a problem with light-cured acrylics and the acrylic-tooth contact is trimmed only minimally after curing.

After the soft, photo-sensitive acrylic is trimmed, smoothed and reviewed it is placed in the Kulzer Dentacolor XS curing unit for 90 seconds (Figure 6). After removal only minimal polishing is necessary before the appliance is pumiced and polished (Figure 7). The integrity of the acrylic is not compromised by burr heat, nor is the acrylic adaptation changed by trimming. The pumiced appliance can be painted with Palaseal (Kulzer) and cured for 90 seconds in the Dentacolor XS unit so that the retainer will have a dense, glossy surface that endures throughout the retention period (Figures 8, 9).



Figure 1: Coating model with separating liquid.



Figure 2: Retainer wire placed over first layer of acrylic.



Figure 3: Sandwiching retainer wire with digital pressure.

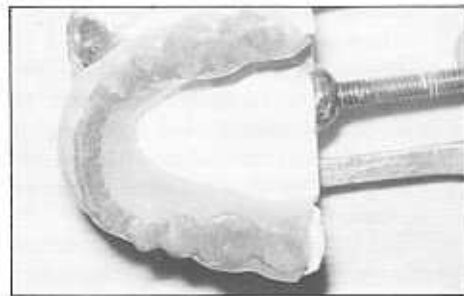


Figure 4: Sandwiching screen mesh wire in a mandibular splint.

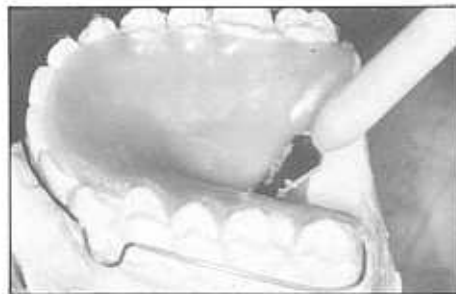


Figure 5: Trimming soft acrylic with a sharp knife.



Figure 6: Placement of retainer in Dentacolor XS curing unit.



Figure 7: Pumicing retainer.



Figure 8: Painting retainer with Palaseal.



Figure 9: Finished maxillary retainer.



Figure 10: Curing isolated areas with the Translux.



Figure 11: Durafill bond sealant added to cured acrylic.

VARIATIONS ON A THEME

Variations in retainer design that are usually difficult to achieve with salt-and-pepper or vacuum and heat techniques are simple with light-cured acrylic. For instance, it is easy to build an incisal ramp to help position the mandible forward with this kind of soft acrylic. A ramp or any other augmentation is best made by adding and shaping small amounts of acrylic and sequentially curing them with an intra-oral light such as the Kulzer Translux (Figure 10).

A few drops of Durafill bond sealant (Kulzer) moistens the interphase between the cured and uncured resin and strengthens the adhesion between the two layers (Figure 11). This step-by-step addition of acrylic allows the technician to control isolated, special areas without prematurely curing the entire retainer.

NOT ALL LIGHTS ARE EQUAL

Light-cure acrylics are activated by many kinds of light—incandescent, fluorescent, sunlight or strobe light, etc. Technicians who ignore this property may discover an unintended partial polymerization if a retainer is unintentionally exposed excessively to ordinary overhead fluorescent lighting. Ordinarily, photo-sensitivity is not a problem when making an appliance because only a short time is spent constructing it.

Although many kinds of light will cure photo-sensitive acrylic, not all of them cure with the same intensity of efficiency. I have used three types of light-curing units: one with a fluorescent bulb, one with halogen reflector bulbs and the Kulzer unit which uses a Xenon strobe bulb.

The Kulzer Dentacolor XS polymerizes the light-cure acrylic the quickest and most completely. The fluorescent bulb cures the least and the slowest. Whereas the Kulzer light completely cures the acrylic in 1½ minutes, the halogen unit requires a minimum of 10 minutes and the fluorescent bulb needs even more time. The Xenon

strobe bulb has an active life of 300 hours, but we have used it for more than a year without any maintenance.

LABORATORY PREDICTABILITY

Teaching lab technicians to make retainers with the Kulzer Dentacolor XS is much easier than with any other technique I've used. There is less guessing about the thickness of the acrylic and less problem maintaining the original design and fit. The accurate trimming and polishing of an ordinary acrylic appliance is difficult, time-consuming and unpredictable since it relies on constant technical and artistic judgement throughout the procedure. With a light-cure technique, those decisions are made during a reversible phase of appliance construction and there is no anxiety about irreversibly damaging the appliance. Technicians are not rushed at any part of the construction and they control the entire process rather than vice versa. Once they use a Kulzer Dentacolor XS, they will not gently return to an auto-cure technique.

Repairing retainers with a light-curing unit is also easy. The broken parts are freshened with an acrylic burr and a liquid sealant such as Durafill bond is painted on both sides of the fracture. A piece of new light-cure acrylic is added to the fractured area and pressed with the index finger until it blends smoothly with retainer acrylic. Blending is sometimes helped by painting the new and old acrylic with Durafill bond until the repaired area is smooth and symmetrical. The repaired retainer is then cured. Fractured areas can also be strengthened with screen wire mesh.

There are disadvantages with photo-sensitive acrylics; only one color of sheet acrylic now exists (pink) and making an attractive clear matrix for facial surfaces of teeth is almost impossible. But the ease of construction, tight fit, superior strength and lack of residual taste from unpolymerized acrylic more than make up for the few shortcomings. ■

TO ORDER: Dentacolor and Triad Components

Dentacolor XS—The Dentacolor XS polymerization unit, designed for photocuring of restorative materials, has proven to be the superior photocuring unit for retainers, splints and other appliances of a thickness up to 3.5 mm. A Xenon strobe light of extremely high intensity will completely polymerize appliances up to 3.5 mm thick within 90 seconds. An on/off switch controls the cooling fan and allows the strobe light to be operated. The unit must be closed to operate the high intensity light, ensuring eye protection. If the access door is opened for any reason, the high intensity light will shut off. A 30 or 90 second cycle may be selected. A meter on the underside of the Dentacolor XS measures the operating time of the Xenon strobe light.

Operating Voltage	117V/60 Hz
Connected Load	max. 1300 VA min. 45 VA
Dimensions	Width 6.8 in. Depth 13.9 in. Height 8.5 in.
Weight	21.1 pounds
Strobe Life	300 hrs. minimum
Polymerization Frequency	320-520 nm

Dentacolor XS Unit	\$1,800.00
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Triad VLC Denture Base and Orthodontic Material is a product of Dentsply, York Division and can be ordered from any dental supply house. The 2 mm thick pink sheet material is provided in a denture base shape, approximately 3½" by 2½". The sheets are packaged in boxes of 6, and sell at or about \$22.25 (\$3.71/sheet) or in boxes of 30 at or about \$73.50 (\$2.45/sheet).

Kulzer Palaseal 30 mil.	\$ 39.95
Kulzer Durafill Bond Sealant Kit	Reg. \$59.00—Special 15% discount
	\$ 50.15
Kulzer Translux Visible Light Unit	Reg. \$595.00—Special 15% discount
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Figure 11: Durafill bond sealant added to cured acrylic.

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