DENTAL ADVISOR™

Product insights you can trust.

MAR-APR, 2020
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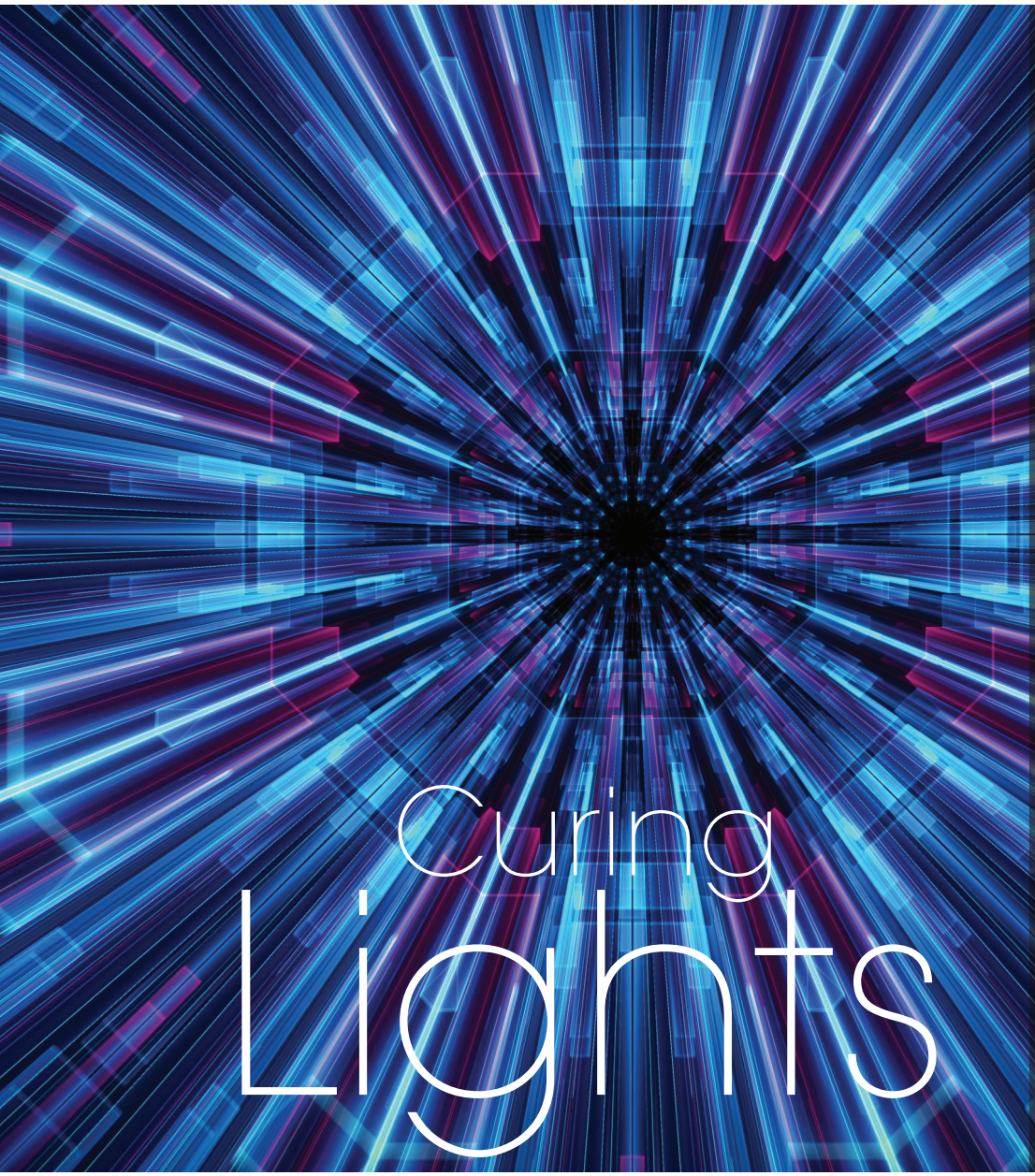

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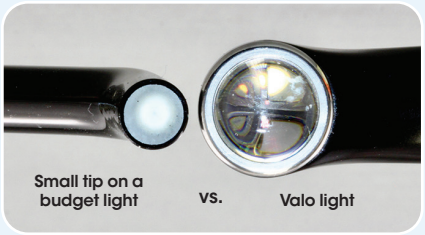
This month we have had the pleasure of working with Dr. Richard Price, a worldwide expert on curing lights. We've posed several questions our clinical evaluators and editors have regarding the trends in curing lights and what it means in changing the way we place and cure composites. Dr. Price has been the author and researcher of several important areas relating to curing lights, including the importance of beam collimation in providing a thorough cure. We are so grateful for the opportunity to work with him, and we know our readers will find the information both relevant and helpful.

As always, we appreciate your support of DENTAL ADVISOR. I welcome your feedback at drbunek@dentaladvisor.com.

— *Sabiha S. Bunek*

Dr. Richard Price is a prosthodontist and Director of Digital Dentistry in the Faculty of Dentistry at Dalhousie University. He received his BDS from the University of London, England and his DDS from Dalhousie's Faculty of Dentistry. He completed his specialty in Restorative Dentistry at the University of Michigan in 1984 and in 2001 he completed his Doctorate in Oral Technology and Dental Materials at the University of Malmö, Sweden. He is actively involved in research on dental resins, curing lights and teaching light curing. He has made numerous presentations, authored more than 160 peer-reviewed articles, and co-authored the chapter on Light Curing in the 7th edition of Sturdevant's textbook 'Art and Science of Operative Dentistry'.

Essential properties of modern curing lights



- First and foremost, the curing light **must be cleared/approved for use in your country.** Curing lights are classified as medical devices and **only approved medical devices should be used on patients.** So, beware of purchasing budget lights. Your reputation, license and even malpractice insurance may be at stake.

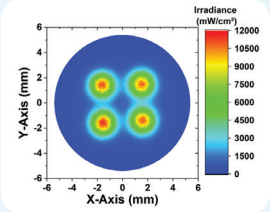
- The design of the light must allow you to **access all regions of the mouth with the tip perpendicular to the surface of the restoration.**

- Match the emission spectrum from the light to the resin that you are using. If your resin does not need violet light, there is no need to deliver violet light. **Energy in this region will just cause unnecessary heating.**

- If you want to use bulk-fill composites or want to **light cure the resin under an indirect restoration, you need a light with a wide active optical tip.** A 10-12 mm active optical diameter is recommended; however, when incremental filling and curing, then an 7 - 8 mm active optical diameter is acceptable.

- The output from the light should be stable throughout the exposure. **Many budget lights have very basic electronics and do not maintain a constant output as the battery discharges.** Quality lights are properly voltage regulated and thus are mostly unaffected as the battery discharges.

- **Light output should be as uniform as possible across the tip.** Some budget lights have rather poor optics and some regions across the tip deliver more than 7,000 mW/cm^2. This may cause uneven curing and can burn the gingivae.

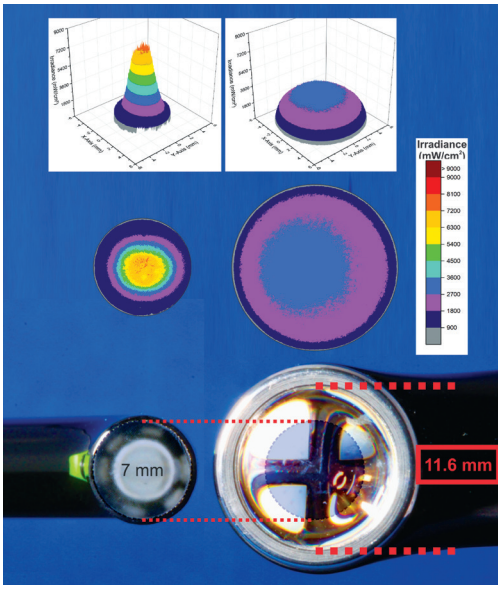


Beam profile of a curing light with four 'hot spots' of high irradiance.

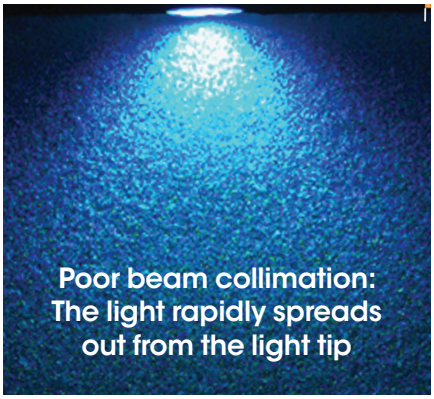
These 'hot spots' can burn four holes through a plastic shield in three seconds.

Could you explain to us what beam collimation is and its importance?

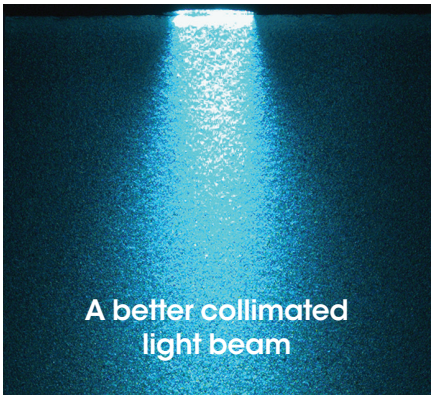
Most manufacturers report the light output at 0 mm distance from the light tip, and much dental research is conducted at 0 mm. The problem is that the dental light is rarely used at 0 mm distance. In fact, distances of 6 to 10 mm away from the tip of the light curing unit are common. Ideally, you want a light that still delivers a high irradiance at 10 mm. To do this requires a collimated beam. I recommend that manufacturers should report the output from their light at distances from 0 to 10 mm from the tip, not just at the light tip.



Irradiance beam profile of two lights that deliver a similar average power output. The left image has one peak of high irradiance and a large region of lower irradiance. The right image has a more even irradiance across the tip.



The light should be ***well collimated*** *so that the irradiance received over clinically relevant distances, up to 10 mm away from the tip,* ***does not fall by more than 50%.***



3M™ Elipar™ DeepCure-S LED Curing Light

3M Oral Care (3m.com/3M/en_US/dental-us)

Elipar DeepCure-S LED Curing Light holds true to its name. Due to optimized optics, you can be confident that your restorations will have a deep, uniform cure—from center to rim, from surface to cavity bottom and at clinically relevant distances.

Product features:

- A predictable, reliable cure, even at the bottom of the proximal box
- Significantly better depth of cure even when light positioning is difficult
- Better light uniformity and intensity distribution at clinically relevant distances
- Updated light guide geometry allows easy access to all tooth surfaces
- The angle of the light guide is designed to make it more comfortable for patients even if they have limited mouth-opening abilities
- One-piece, high-quality stainless steel casing is robust and easy to disinfect
- Simple two-button operation with one cure mode for all indications
- Charging base with built-in light intensity meter and battery charge indicator

Slim Blast™

First Medica (firstmedica.com/curing-lights)

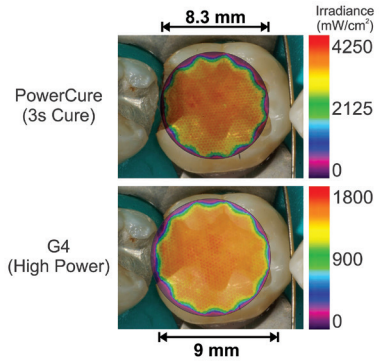
The ***Blast™*** family of curing lights takes advantage of third-generation, high power LEDs. Third generation light sources offer higher output, longer operating life and greater electrical and thermal efficiencies. These lights have a peak output very near the camphoroquinone (CQ) absorption maximum for high performance. Nearly all light-cured composite, cements and sealants are CQ based. LED light sources are designed to last the life of the unit and never need to be replaced.

- High power > 1,000 mw/cm^2
- Beeps at on/every 5 seconds/off
- 41% lighter, 26% thinner and 7% shorter than the popular ***Mini-Blast***
- Long-lasting Lithium-Ion battery
- 700 5-second cures while maintaining power output >1,000mw/cm^2
- Timer settings of 5, 10 and 20 seconds
- Removable glass tip, does not require sleeve that can obstruct work area, can be sterilized
- Metal case allows for easy cleaning
- Assembled in USA
- 2-year warranty

Q&A

Can you share some of the exciting research you have done in this area?

Two recent developments in curing lights are the Polyvision feature and good beam uniformity. Research on ***Valo Grand*** *(Ultradent)*, ***Bluephase G4, Bluephase PowerCure*** *(Ivoclar Vivadent)*, ***Deep-Cure-S*** *(3M Oral Care)* and ***SmartLite*** *(DENTSPLY Sirona)* has been promising. The beam uniformity from the ***Bluephase G4, Bluephase PowerCure,*** and ***SmartLite Pro*** is outstanding.



Beam profiles of the ***PowerCure*** and the ***G4*** superimposed over a molar tooth. Both lights deliver a very uniform irradiance. The ***PowerCure*** has a smaller tip diameter and a higher irradiance.

Q&A

Many of our consultants are skeptical about bulk-fill composites and using a fast curing time. What can you tell them to look for in terms of credible research as to the efficacy of this technique?

Bulk filling and bulk curing means fewer voids and no knit lines (voids and joints) between each layer. However, in order to do this, you need a composite that transmits more light to the bottom of the composite than conventional composites that are cured in 2-mm thick increments. Thus, bulk-fill composites do not look as esthetic as the best conventional composites. However, in the posterior region the esthetics of most bulk-fill composites are sufficient.

As you are placing the composite in larger amounts, a different chemistry is required that allows for better stress reduction. Most quality manufacturers incorporate some form of stress relief in their resin systems. Fast curing of composites is only recommended for products that are specifically designed to be cured fast, for example ***Powerfill*** from Ivoclar Vivadent. However, the 3-s ***PowerCure*** system is designed for posterior teeth, and the 3-second cure cycle has not been tested on deciduous teeth, so this cycle should not be used with younger patients. Ivoclar Vivadent recommends you only use their curing light, adhesive and composite system. This is potentially a disadvantage.

Although the light tip is close, it is at an angle. This will produce shadows and the resin at the bottom may not be cured.

Remember basic physics: If a resin manufacturer recommends using a curing light that delivers 1,200 mW/cm^2 for at least 10 s then they are recommending that the resin should receive 12 J/cm^2. To deliver the same energy in 1 s means that the light must deliver an irradiance of 12,000 mW/cm^2. No light does this.

Finally, if you do decide to adopt a 3-s cure, you must be very accurate with the positioning of your curing light tip. If you are off target for just 1s in a 3-s exposure, then 33% less energy is delivered. This could have unfortunate consequences (see photo at left).

Bluephase® G4

Ivoclar Vivadent (ivoclarvivadent.com)

Bluephase® G4 is an intelligent LED curing light thanks to its Polyvision™ technology that helps clinicians ensure a more effective polymerization of light-cured dental materials. Polyvision alerts the clinician if they move the curing light probe away from the tooth while curing and dynamically adjusts the curing time to compensate for the movement.

Polyvision is like a vehicle's lane departure warning system because it helps the clinician keep the curing light probe focused on the tooth for more effective polymerization of the dental material. ***Bluephase G4*** also features Polywave™ technology, which provides a broad wavelength spectrum of 385-515 nm. This allows the light to cure all dental materials on the market today.

Note: DENTAL ADVISOR selected ***Bluephase G4*** as 2020 Top Award Winner for LED Curing Light.

To learn more, please visit *ivoclarvivadent.us/explore/bluephase-g4*

SmartLite® Pro

DENTSPLY Sirona (dentsplysirona.com)

The new ***SmartLite® Pro*** is a unique modular curing device in remarkable, all-metal housing. It combines a sleek pen-style design with the advantages of a lightweight and well-balanced handpiece. The 360° rotateable tips and the low-profile head with 4 high-performance LEDs guarantee easy clinical access even in hard-to-reach areas.

Product features:

- Unique modular design with interchangeable tips for a variety of clinical indications
- Intuitive battery management including two LiFePO4 batteries for permanent availability
- State of the art optics for a homogeneous light distribution and excellent cure over distance
- Additional Transillumination Tip for the visualization of interproximal caries and fractures
- Large 10 mm active curing diameter to cover bigger restorations
- Easy one-button operation with audible and tactile feedback
- Futuristic multifunctional charging base perfectly complements the appearance of the light
- Embedded LEDs inform about the battery charging status.
- Besides a battery charging port, it features a Radiometer to check the light output and holding space for additional tips

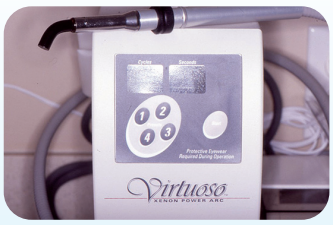
Q&A

We recently had a reader who reached out to us who was using a Halogen (QTH) curing light and wanted to replace it with a similar light. The clinician complained that LED lights were too expensive and liked their "good old" reliable light. What can you share with readers about how lights and composites work together and why it is important?

A photon is a photon, there is nothing magic about photons from LED lights as long as they deliver the same wavelengths (frequency) of light. However, LED lights have many advantages:

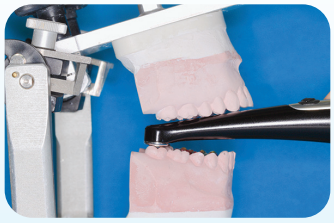
- In general, more power than the old QTH lights and some are more powerful than PAC lights
- Most LED lights are battery operated, but this means you should always have a spare fully-charged battery available
- Much smaller footprint on the counter
- No filter that will degrade over time
- The LED emitter lasts much longer than a QTH bulb
- Less noisy
- Some allow excellent access to the posterior teeth
- Some are extremely durable and have no fragile fiber optic light guide to break
- Most are easier to disinfect than QTH lights

Halogen light (QTH)



PAC light

Modern LED curing lights



The low profile head allows excellent access

Q&A

Should I be concerned about upgrading my Halogen or Plasma Arc light?

Good quality LED curing lights will deliver more power (mW) and a higher irradiance (mW/cm^2) than QTH or even PAC lights. So, if you want to cure your resins in less than 20 s per increment, you need a good curing light. If you are happy to use a QTH light for 40 to 60 s, do not mind having a cord, and that the light base has a large footprint on your countertop, that is fine. Remember to check the light output on a regular basis.

Q&A

How can dentists check their own curing lights for accuracy?

There are several studies that show the ***Bluephase Meter II*** from Ivoclar Vivadent is currently the best light meter that the dentist can buy. Personally I use it in the power (mW) mode rather than the irradiance mode, as the tip diameter can only be entered in whole numbers.

Alternatively, the ***checkUP™*** device and subscription service from BlueLight Analytics is useful as it also provides recommended exposure times for the light and composite that you are using.

Bluephase Meter II
(Ivoclar Vivadent)

checkUP™
(BlueLight Analytics®)

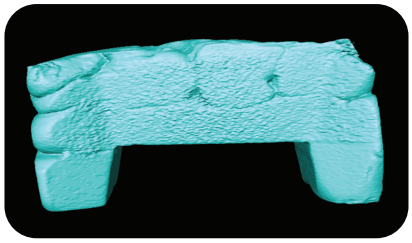
Curing Light Q & A

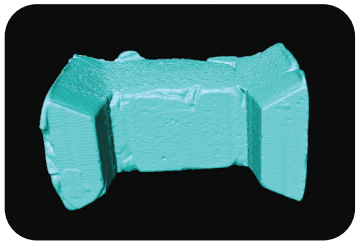
What are the most exciting things you have seen in the newest technology?

Polyvision, beam collimation and multifunction lights that can be used for more than just curing resins. Some lights can be used for caries detection and transillumination to identify stress fracture.

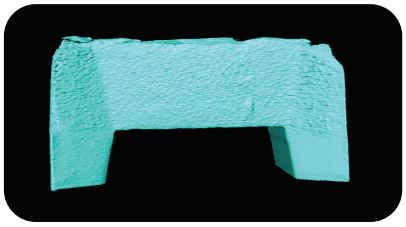
The use of 3-D micro-computerized tomography (microCT) allows a researcher to view cross-sections of restorations and measure features such as void volume, fit and shrinkage.

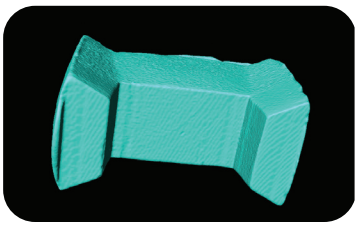
A poor Incremental Fill: Note the 'Knit Lines' between each increment of composite.





Snowplow and Bulk Filling: Note the absence of 'Knit Lines'. The restoration is a solid block of composite.





For those offices that are regularly placing composite restorations, can you share any tips that clinicians should be aware of in terms of technique that can affect clinical outcome? What clinical "side effects" can they expect if either their light, their composite, or their technique is not optimal?

Heating composite is my favorite technique. Although I do not believe that heating improves the degree of conversion or the polymerization of the resin, it does improve adaptation of the composite to the cavity walls. If you do not have a heater, you can put a small amount of flowable into the cavity and then directly inject composite which will 'snowplow' away the flowable and improve adaptation.

My opinions are based on my clinical experience, dozens of in vitro, but only one good vivo study. Based on these studies, I believe that under-cured resins are a significant cause of restoration failure due to fracture, secondary caries, or excessive wear of the restoration. Additionally, when dental composites are not optimally cured (and thus do not reach a sufficient degree of monomer conversion), they are far more likely to leach toxic substances and are less color stable. So, purchase a good quality curing light. Read and follow the instructions for use. The success of your restorations depends on how well they are cured.

WHAT'S NEW

Radii Xpert SDI (www.radiixpert.com)

Radii Xpert is a smarter curing light that incorporates the latest in LED technology to deliver targeted, consistent light for optimally cured restorations. Precision curing is achieved with unique target assist technology. A positioning light ensures light is correctly placed over the restoration being cured, with the right angulation to improve operator technique.

An optimally collimated beam ensures ***Radii Xpert's*** light intensity is maintained on the restoration being cured. Light intensity remains consistent over clinically relevant distances for better performance. The 1500 mW/cm^2 light intensity over a 4-mm aperture and wavelength of 440 – 480 nm, reliably cures all composites without the need for extended wavelengths. The quality LED produces a homogenous beam profile with reduced hot and cold spot variation. A built-in intensity indicator enables routine evaluation of intensity.

Smart technology includes an LCD display, countdown timer and ability to save a favourite setting. Multi-colored status rings display curing mode, charge level and attachment type with full-arch bleaching, diagnostic and orthodontic attachments available.

Radii Xpert is ergonomic with a 360-degree rotatable head and slimline design that can be held in a pencil or pistol grip. Heat sink and pulse technology provide enhanced heat management to ensure patient safety and comfort.

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Biomaterials Research Report

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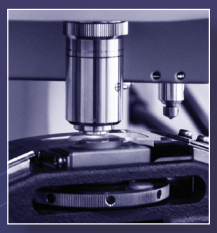


Number 131 – January 28, 2020

HVHA RH-Pro11 Sterilization Effect on Handpiece Performance

M. Cowen, J.M. Powers

Introduction:

A dry heat sterilizer which shortens sterilization cycle times to under 20 minutes and, through the absence of steam, reduces corrosion is a significant advance for reprocessing dental instruments. As the sterilization temperatures of 375°F (191°C) could decompose some hydrocarbon-based oil lubricants specific to handpiece reprocessing, the need for alternative lubricant systems which can sustain operating and sterilization temperatures up to 400°F may be needed. In the first phase of our validation of ***RH-Pro11 HVHA*** (High-Velocity Hot Air) sterilization system, we measured the performance of new and used handpieces before and after 250 sterilization cycles to validate the compatibility of the sterilizer and handpiece functionality. We used the handpiece manufacturer's lubricants every 10 cycles to see if there was any incompatibility of the lubricant with the sterilizer as well. The used Midwest handpieces had been previously reprocessed with hydrocarbon-based lubricants for an unknown number of cycles; however, the initial performance was within manufacturer specified levels. One previously used handpiece which showed a deterioration of performance was then cleaned and lubricated with a new synthetic food-grade, fluorinated high-temperature cleaning and lubricant system ***SteriKleen™*** and ***SteriLUBE™***, returning it to its initial manufacturer specified performance.

RH-Pro 11 HVHA

Conclusion:

The Bien Air electric ***CA 1:5*** handpiece, air-driven ***Tornado X LK*** and Midwest ***Phoenix*** showed no performance decrease after 250 sterilization cycles with the ***RH-Pro11 HVHA*** sterilizer. A used handpiece which previously was reprocessed with incompatible lubrication systems could be sterilized for 250 cycles and returned to original performance specifications with the ***SteriKleen™*** and ***SteriLUBE™*** systems.

EXPERIMENTAL DESIGN:

Equipment: DENTAL ADVISOR Handpiece Torque Test Platform and Instron 5866 universal test machine
Handpieces: New Bien Air Handpieces, ***CA 1:5*** electric handpiece [SN:19F0014] tested with KaVo ***ELECTROtorque Plus*** motor, and ***Tornado X LK*** [SN:19B0068] @ 46 psi, Used Dentsply Midwest Handpieces, ***Phoenix*** [SN:2187] and ***Tradition Pro*** [SN:4299] @43 psi.
Tests: Noise (dB), Speed (RPM), Stall Torque(N-cm), Power (W)

Methods:

Performance Testing: The handpiece was attached to the test platform in a handpiece holding assembly. A spindle with a brake sphere was inserted into the chuck of the handpiece and the holding assembly adjusted so that the spindle was aligned with the torque sensor. The speed of the spindle was measured with a Monarch Infrared speed sensor and ACT 3 Electronic Tachometer. The torque sensor was connected to the load cell of the Instron 5866 system on which the test platform was mounted. During the testing, the handpiece was pressed downward along the axis of the spindle shaft with varying loads so that the brake sphere was pushed against the brake, which was attached to the torque sensor. The friction of the brake sphere against the brake produced a torque, which was registered by the load cell as a force while the speed was measured. Several torque versus speed points were taken to define the torque versus speed curve for each handpiece and used to calculate power in Watts. The stall torque was determined as the torque produced at the point during loading when the rotation of the spindle running at maximum speed was braked to zero RPM. Noise level was measured according to ISO 14457 methods by measuring the A-weighted sound pressure 0.45 meters from the handpiece with a type 1 precision sound level meter (DSM403SD, General Tools & Instruments).

Sterilization: Handpieces were subjected to 250 sterilization cycles unwrapped using the ***RH-Pro11 HVHA*** system with 10-minute cycles under the "handpiece" setting. Every 10 cycles, the handpieces were removed, lubricated according to manufacturer instructions using ***Lubrifluid*** (Bien Air) or ***Midwest Plus Spray***, and operated for at least 60 seconds before the next 10 sterilization cycles.

Results:

Results Summary									
Manufacturer	New Bien Air Handpieces				Used DENTSPLY Sirona Midwest Handpieces				
Handpiece	***CA 1:5***		***Tornado X LK***		***Midwest Phoenix***		***Midewest Tradition Pro***		
Test	Control	After 250 cycles	Control	After 250 cycles	Control	After 250 cycles	Control	After 250 cycles	After Cleaning
Stall Torque, N-mm	> 4.5	> 4.5	2.2 (0.1)	2.3 (0.1)	2.2 (0.1)	2.2 (0.1)	1.9 (0.2)	1.5 (0.1)	1.9 (0.1)
Average Max Power, W	~45	~45	21.8	21.8	23	23	24.8	17.2	24.8
Free Running Speed, RPM	185,300 (900)	186,400 (1,100)	318,900 (500)	334,400 (1,200)	378,900 (3,830)	381,800 (4,800)	404,000 (1,200)	397,600 (4,900)	402,200 (2,400)
Average Noise, Decibel	57.5 (0.6)	58.3 (0.4)	59.8 (1.2)	59.6 (0.4)	57.2 (0.3)	57.7 (0.3)	53.3 (0.8)	55.8 (0.8)	53.4 (0.7)

There were no detectable differences in performance of noise generation, speed, stall torque or power output after 250 reprocessing cycles with the ***RH-Pro11 HVHA*** sterilizer for the two new Bien Air handpieces and the used ***Midwest Phoenix*** handpiece. As can be seen on the plot of the handpiece power measurements, the average performance measurements lie along the same curve with identical peak power. A stall torque for the electric handpiece could not be definitely measured because after the handpiece stalls, it generates a rapid oscillating force curve ranging from 3.5 to over 6 N-mm of torque. The noise level difference before and after reprocessing was less than a decibel difference for both handpieces and considered equivalent as small ambient noise changes may account for such a small difference. No visual differences were noted on any handpiece after the 250 sterilization cycles, though the used handpieces showed signs of corrosion around the spray ports prior to initial testing and remained unchanged.

The ***Midwest Tradition Pro*** handpiece did show a decrease in power and noise generation. To test if this is a result of degradation of lubricant, the handpiece was thoroughly cleaned using a synthetic fluorinated cleaner and lubricant system (***SteriKleen™*** and ***SteriLUBE™***) and discolored runoff was visibly expelled. The performance of the handpiece after additional cleaning returned to pre-sterilization levels indicating successful cleaning of the handpiece. Follow up testing of this cleaning and lubrication system may show its effectiveness to prepare a variety of used handpieces for this sterilization system or improve the performance of dirty handpieces to original specifications.

Figure 1: Bien Air CA 1:5 Power Curve

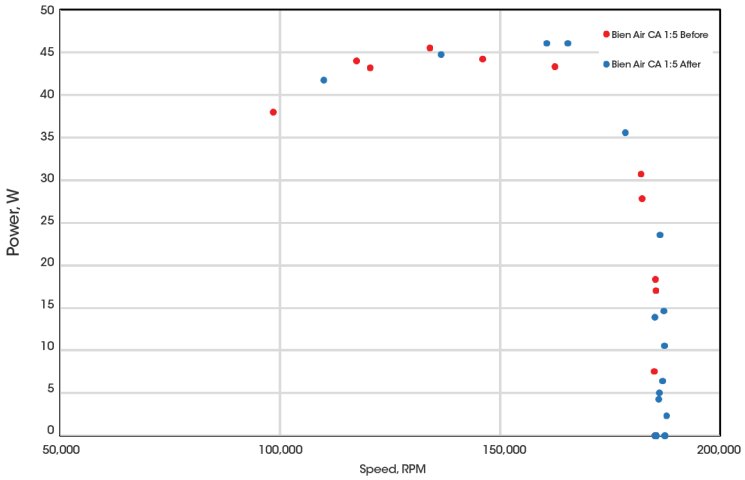


Figure 2: Bien Air Tornado Power Curve

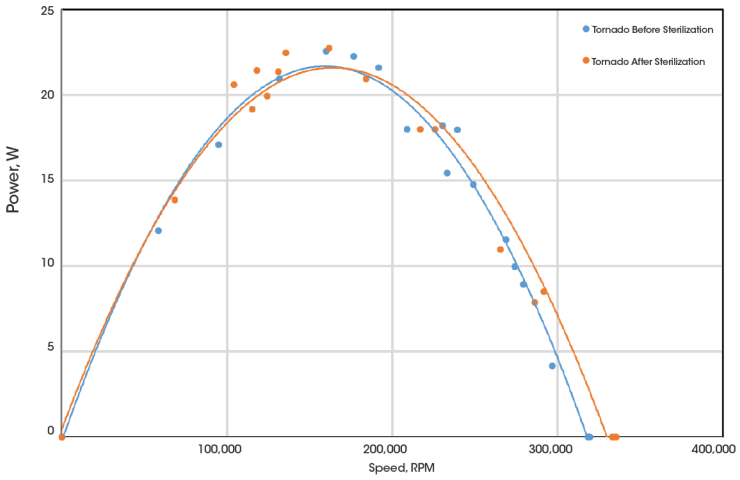


Figure 3: Midwest Phoenix Power Curve

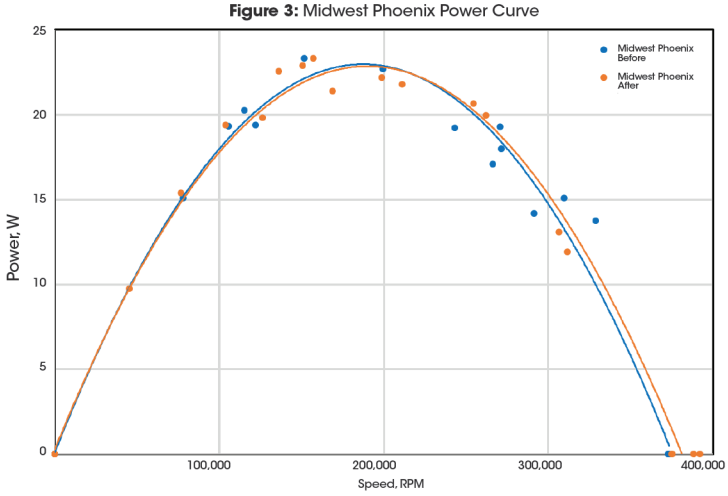
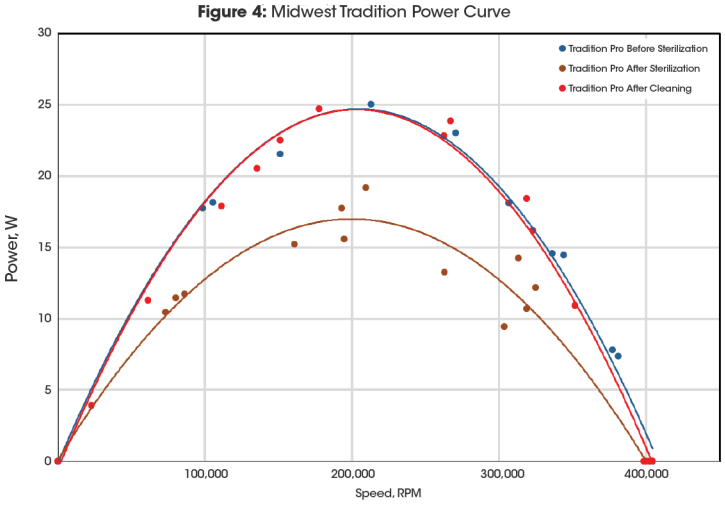


Figure 4: Midwest Tradition Power Curve



Figures 1-3: The new Bien Air handpieces and used ***Midwest Phoenix*** handpiece showed no decrease in performance after 250 sterilization cycles with the ***RH-Pro11 HVHA.***

Figure 4: The used ***Midwest Tradition Pro*** handpiece did show some decrease in performance and increased noise when lubricated with the hydrocarbon-based ***Midwest Plus*** after 250 cycles. The performance was able to be returned to baseline levels after cleaning and lubrication with the ***SteriKleen™*** and ***SteriLUBE™*** systems.

Surgical Face Mask with Bottom Gap Shield

++++

ETA Products, Inc. www.etaproducts.com

DENTAL ADVISOR ++++

39 CLINICAL EVALUATORS

1135 TOTAL USES

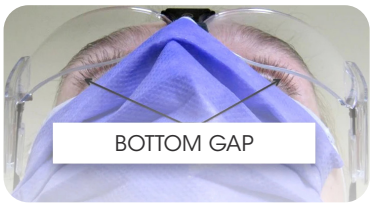
86% CLINICAL RATING

Key features: Face mask • Debris deflecting shield attached • Protects the "bottom gap," the most common pathway of debris to the eyes

Description

Surgical Facemask with Bottom Gap Shield is a Level 2 face mask that is:

- Combined with a bottom gap shield that deflects debris from the gap between the protective eyewear and face mask
- Designed to accommodate any size or style of glasses or loupes
- Less waste than a full-face shield mask
- Easy to adapt



Indications

- Any dental procedure in which a mask is worn, especially if there could be heavy spray or debris

Unique Attributes

- Designed to not interfere with line of vision
- Efficiently closes the bottom gap without the glare, discomfort, fogging, visual distortion, or condensation that are typically associated with full-face shields

Photo courtesy of Dr. Parimal Panchal

Photo courtesy of Dr. John Leitner

Evaluators' Suggested Uses

- "During surgical extractions with a surgical handpiece."
- "Great when trimming models in the lab."
- "Hygiene liked them during calculus removal, ultrasonic scaling, and air polishing."
- "Removing old amalgams or cutting off crowns."

"EXCELLENT PROTECTION FROM SPRAY/ DEBRIS, AND A COMFORTABLE FIT."

Evaluators' Comments

"I was surprised to see the debris on the gap shield, which means that is usually going in my face and potentially in my eyes."

"I used this mask 100% of the time with my microscopes. When I rarely back out of the eyepiece, I felt more protected than with a regular mask."

"Kept my loupes much cleaner."

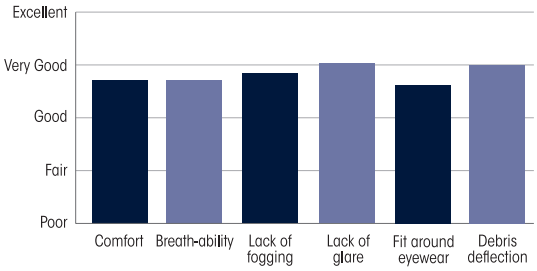
"Worked great in the lab trimming dies and models."

"Protection without distortion or feeling of confinement like wearing a shield."

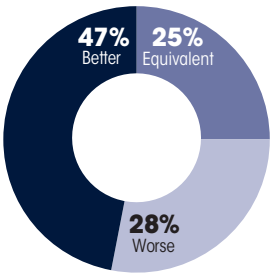
"When not looking through loupes, I had to bend my neck more to look down rather than just move my eyes."

"Took a little while to get used to having a shield there, as well as consistently getting the proper bend in the plastic shields to accommodate my style of eyewear."

Evaluation Summary:



Compared to Competitive Products:



Consultants who would:

73% Recommend to a colleague

Consultants who would want to stock in office:

52% Yes, in addition to current product

24% No, but I might want it for certain cases

Consultants who:

90% Felt this product was a more comfortable option than a full-face shield

EDITORS' CHOICE

PANAVIA™ SA Cement Universal +++++

Kuraray Noritake Dental www.kuraraydental.com

dentaladvisor.com RATING SYSTEM: Excellent + + + + + Very Good + + + + Good + + +

31 CLINICAL EVALUATORS

516 TOTAL USES

96% CLINICAL RATING

Key features: Self-adhesive resin cement (no separate bonding agent needed) ● Built-in silane coupling agent (no separate primers needed) ● Excellent bond strengths obtained by DENTAL ADVISOR Biomaterials Laboratory

Description

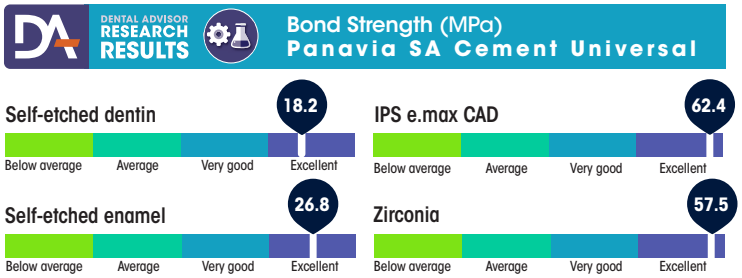
PANAVIA™ SA Cement Universal is a self-adhesive resin cement that:

- Adheres to virtually every material, including glass ceramics, without the need for a separate primer.
- Uses a unique silane coupling agent built into the paste – LCSi monomer – making the cement deliver a strong, durable chemical bond to porcelain, lithium disilicate and composite resin.
- Contains the original MDP monomer in the paste allowing for chemical adhesion with zirconia, dentin, enamel and metals alloys.

Indications

Cementation of:

- Crowns/bridges
- Inlays/onlays
- Adhesion bridges (Maryland Bridge)
- Splints
- Posts
- Prosthetics onto implant abutments



Unique Attributes

- Adheres to virtually all substrates, including Lithium Disilicate
- One single procedure
- Easy, gingival-friendly removal of excess cement
- No need for separate primers
- Can be stored at room temperature

Clinical Tips from Evaluators

- Place the mixed cement in the crown, and wipe the mixing tip along the margins to ensure cement on the margins. Place the crown and put floss between the contacts. Light cure the buccal and lingual to a count of five, pull the floss, and use an explorer to remove excess cement. Continue the light curing.
- You want to clean the excess by the recommended time as it is difficult to clean if it is left on too long.

"GOOD FLOW AND FILM THICKNESS."

Evaluators' Comments

"Very user-friendly".

"My assistant does not have to get it out of the refrigerator as it can be stored at room temperature."

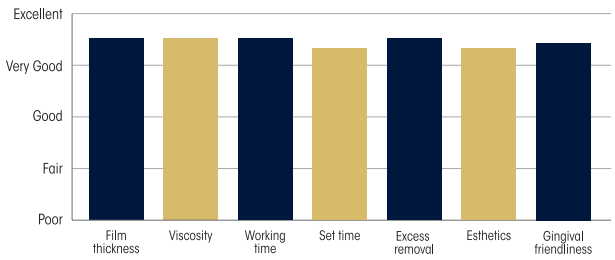
"Amazing viscosity, tack cure-ability and very easy cleanup."

"Great color match and I liked the universal ability to work with so many substrates."

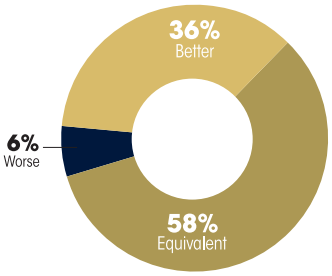
"Setting time takes longer than with PANAVIA 21."

"It seemed like it was sensitive to ambient light."

Evaluation Summary:



Compared to Competitive Products:



Consultants who would:

94% Recommend to a colleague

6% Not recommend to a colleague

Consultants who would want to stock in office:

23% Yes, instead of current product

58% Yes, in addition to current product

10% No, however I might want to order it for certain cases

EDITORS' CHOICE

Hedy® Polyisoprene Dental Dam

Hedy Canada hedycanada.ca

+++++

dentaladvisor.com RATING SYSTEM: Excellent + + + + + Very Good + + + + Good + + +

30 CLINICAL EVALUATORS

718 TOTAL USES

97% CLINICAL RATING

Key features: Non-latex, powder-free dental dam ● Similar physical properties to natural rubber ● Exceptional elongation, tear strength, and tensile strength

Description

Hedy® Polyisoprene Dental Dam:

- Non-latex
- Unique formulation that gives it similar physical properties to natural rubber, minus the potential allergen of latex protein
- Powder-free
- Superior elongation, tear strength, and tensile strength
- Light blue color
- Available in medium or heavy weight
- Available in 5" x 5" or 6" x 6"

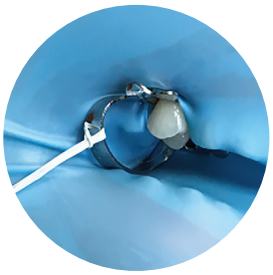


Photo courtesy of Dr. Johnna Mills

Indication

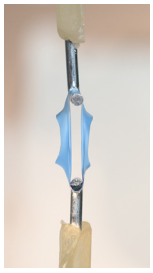
- Any procedure requiring dental dam isolation

Clinical Tip

- With confidence, you can treat it like a traditional latex dam.

DENTAL ADVISOR RESEARCH RESULTS

Hedy Polyisoprene Dental Dams demonstrated superior tear strength in the DENTAL ADVISOR Biomaterials Laboratory, even after being punched.



Unique Attributes

- Similar physical properties to natural rubber, while being latex free
- 1230% elongation
- Great tear strength, even after being punched

"THIS MATERIAL IS UNLIKE OTHER DAMS. IT HAS THE BEST QUALITIES OF LATEX AND NON-LATEX AND CAN BE STRETCHED SIGNIFICANTLY WITHOUT TEARING.."

Evaluators' Comments

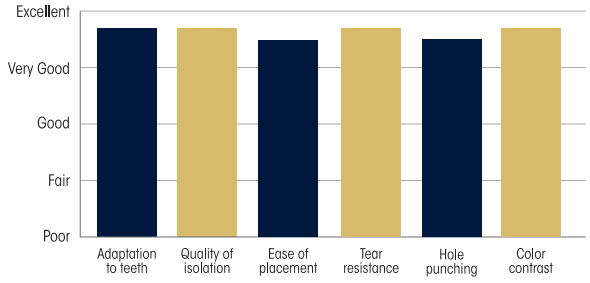
"They are simply wonderful! We had NO tears even when the hole punched was jagged, when flossing it through the contacts, or upon removal."

"The color of the dam is perfect - especially for shade analysis, selection or re-establishing it when restoring."

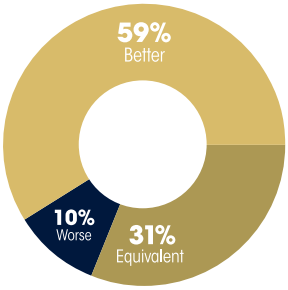
"Not as stretchy as my current rubber dam—but it's just different, not worse."

"It did not retract the lips and buccal mucosal tissues as well as my latex dam."

Evaluation Summary:



Compared to Competitive Products:



Consultants who would:

100% Recommend to a colleague

0% Not recommend

Consultants who would want to stock in office:

50% Yes, instead of current product

50% Yes, in addition to current product

EDITORS' CHOICE

PURELL® Healthcare CRT HEALTHY SOAP™ High Performance Foam

Purell www.gojo.com

+++++

dentaladvisor.com RATING SYSTEM: Excellent + + + + + Very Good + + + + Good + + +

48 CLINICAL EVALUATORS

2240 TOTAL USES

96% CLINICAL RATING

Key features: Healthcare-grade hand soap ● Increased removal of biosoil and microbes ● Removes germs and soil without antimicrobials

Description

PURELL® Healthcare CRT HEALTHY SOAP™ High Performance Foam is designed to optimize cleaning power better than regular soap.

- Improved ability to clean deep into skin's microscopic crevices.
- Lifts and washes away more than 99% of soil and germs.
- Designed to keep frequently washed hands irritation free.
- No harsh ingredients or common allergens.

Indication

- Handwashing in healthcare settings

Unique Attributes

- This healthcare grade hand soap removes 33% more biosoil than regular soap.
- Able to remove 99% of soil and germs without the use of antimicrobials.
- Formulated specifically for dry, sensitive skin and the frequently washed hands in healthcare settings.
- Rinses fast and clean for easy gloving. This additionally saves water.

"VERY SMOOTH, CLEAN FEELING."

Evaluators' Comments

"I found it is easier to glove up after rinsing and drying compared to other soaps."

"Washes off quickly and makes my hands feel very clean."

"My hands did not dry out and felt soft afterwards."

"It leaves the skin feeling great."

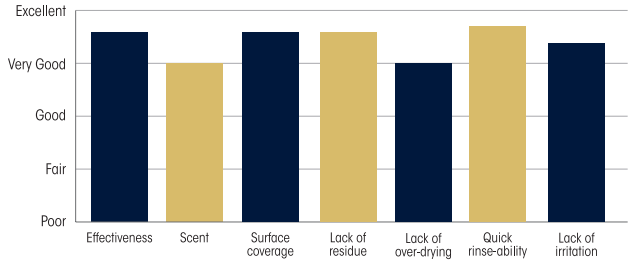
"I appreciated that there was little scent."

"I have a lot of irritation on my hands and have to use a steroid ointment to control it. I found this product caused less irritation and I was able to reduce the amount of steroid I use."

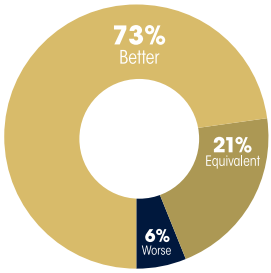
"Dried my hands more than I expected."

"It smells like hand sanitizer."

Evaluation Summary:



Compared to Competitive Products:



Consultants who would:

94%	Recommend to a colleague
6%	Not recommend to a colleague

Consultants who would want to stock in office:

69%	Yes, instead of current product
15%	Yes, in addition to current product
8%	No, however I might want to order it for certain cases

CLINICAL EVALUATION

OptiBond™ eXTRa Universal

++++½

Kerr www.kerrdental.com

dentaladvisor.com RATING SYSTEM: Excellent + + + + + Very Good + + + + Good + + +

DENTAL ADVISOR ++++½

29 CLINICAL EVALUATORS

749 TOTAL USES

93% CLINICAL RATING

Key features: Universal, light-cured bonding agent ● Two-bottle system
Do not need separate activator for dual-cured materials

Description

OptiBond™ eXTRa Universal is a two-component light-cured adhesive that:

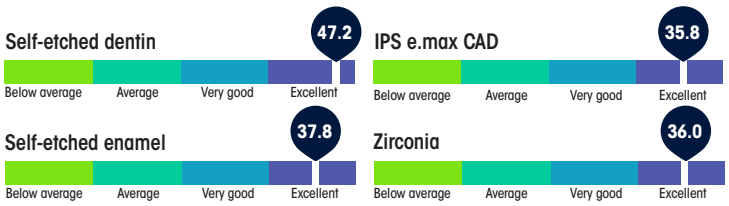
- Provides excellent adhesion to a variety of surfaces and substrates for direct and indirect applications
- Is a two-component formulation that brings together the power of a total-etch adhesive and the safety of a self-etch technique in one consistent protocol
- Prior to curing, ***OptiBond eXTRa Universal*** features a very low pH for effective enamel etching. After curing, the pH neutralizes, creating outstanding compatibility with virtually all types of cements, composites and core build-up materials, eliminating the need for any auxiliary product

Indications

- Light-cured composite and compomer restorations
- Porcelain, composite and metal-based inlays, onlays, crowns and bridges
- Composite/ceramic/metal repairs
- Cavity sealing for amalgam restorations
- Light-cured or dual-cured core buildups
- Cavity sealing as a pretreatment for indirect restorations
- Veneers
- Endodontic posts

"TWO BOTTLE SYSTEMS ARE STRONG, BUT THIS SYSTEM'S STRENGTHS STAND OUT!"

DENTAL ADVISOR RESEARCH RESULTS — Bond Strength (MPa) OPTIBOND eXTRa UNIVERSAL



Unique Attributes

- High bond strengths
- Can be used in place of silane and metal primers
- Does not need separate activator for dual cure materials

Clinical Tips from Evaluators

- For quadrant dentistry, there is enough to use in one unidose container.
- Be careful when applying - it can be a bit 'runny' and irritate the surrounding gingiva.
- Use a thicker microbrush with the primer to make sure it's adequately covering the surface.
- Make sure and blow air properly on adhesive until there is no movement.
- My last bottle of bonding agent was contaminated, and I had tons of de-bonded composites. I like the unit doses so that I know my bond isn't contaminated.

"NO POST-OPERATIVE SENSITIVITY."

Evaluators' Comments

"Wide range of applications. Can be used for virtually every situation - no etch required."

"Good wettability."

"I place engagers for Invisalign on porcelain crowns and I'm getting great retention."

"I liked that it has a thinner film thickness than most two-step bonding agents."

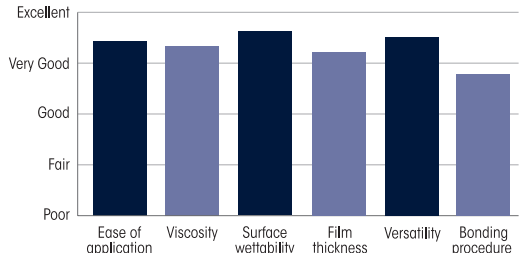
"Unidose containers have a flat bottom, so they are very stable."

"Being a two-step process does take additional time."

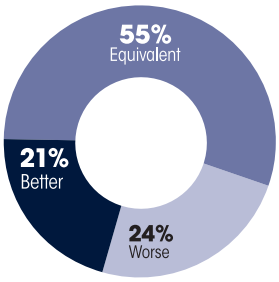
"The tabs on the unidose containers can be difficult to open - liquid can be lost."

"Application includes a 20-second scrub time."

Evaluation summary:



Compared to competitive products:



Consultants who would:

79% Recommend to a colleague

21% Not recommend to a colleague

Consultants who would want to stock in office:

14% Yes, instead of current bonding agent

48% Yes, in addition to current bonding agent

10% No, however I might want to order it for certain cases

ZR-Cem™ *powered by BJM Laboratories*

Premier Dental www.premierdentalco.com

++++ ½

DENTAL ADVISOR ++++ ½

29 CLINICAL EVALUATORS

93% CLINICAL RATING

Key features: Offers superior retention and marginal integrity for zirconia restorations ● No pre-treatment of intaglio surface needed ● Radiopaque

Description

ZR-Cem™ is a dual-cured, radiopaque self-adhesive resin cement that:

- Is formulated for the cementation of zirconia restorations
- Offers a working time of up to 2 minutes, and a setting time of 3 minutes at intraoral temperature.
- Has a gel state which can be achieved with a 2-second light cure or 1.5 to 2 minutes self-cure, at which time excess cement is easy to remove with a scaler or explorer before light-curing all surfaces for 20 seconds
- Includes a 5 mL syringe of the adhesive resin cement, 10 auto-mix tips, 10 large and 10 small intra-oral tips and a mixing pad.
- Should be refrigerated for maximum shelf life

Indication

- Adhesion of zirconia restorations

Clinical Tips

- Clean-up is much easier if you don't let it get too hard.
- Floss through contact points before the gel phase.
- Floss interproximally and leave the floss in place until the cement is fully cured.
- Use the intraoral tip for accurate placement of the material into the intaglio of the crowns.
- If you are using it for the first time, check the setting every 15 seconds as the material becomes very hard if left beyond the ideal time for clean-up.
- The mixing tip is small. We extruded the product onto a mixing pad and then mixed, reducing the amount of wasted product.

Unique Attributes

- Specially formulated for zirconia restorations to offer superior retention and marginal integrity
- No pre-treatment of the intaglio surface of the restoration is necessary when using this self-adhesive resin cement

"A PERFECT CEMENT."

Evaluators' Comments

"Does not affect the shade of translucent crowns."

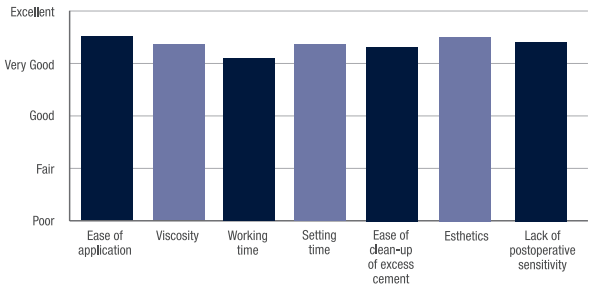
"This company has developed some very specific products that are perfect for their individual uses."

"The gel state clean-up prior to light curing was easier than a total self-cure, but the overall time spent due to the extra light-cure step was longer."

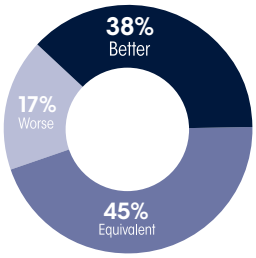
"A quicker setting/self-curing time would be helpful, and an initiator so that light-curing is not needed."

"I prefer letting it set undisturbed for 1.5 minutes rather a quick cure prior to excess removal."

Evaluation Summary:



Compared to Competitive Products:



Percentage of Consultants Who Would:

66% Switch to this product

12% Recommend this product

22% Add to armamentarium

CLINICAL EVALUATION

Take 1™ Retraction Paste

Kerr www.kerrdental.com

++++

DENTAL ADVISOR ++++

34 CLINICAL EVALUATORS

967 TOTAL USES

87% CLINICAL RATING

Key features: Retraction and hemostasis paste ● Two viscosities: High and Low ● Uni-dose delivery ● Dense foam retraction caps

Description

Take 1™ Retraction Paste unidose delivery, retraction and hemostasis paste:

- 15% aluminum chloride and kaolin clay provide hemostasis and gentle retraction
- Designed to deliver tissue displacement to enhance or replace a cord technique
- Universally compatible with standard composite dispensers

Indications

- Both traditional and digital impressions
- Veneer or crown cementation
- Class II, Class III, and V restorations

Photos courtesy of Dr. Gregg Fink

High Viscosity with compression cap

After retraction and hemostasis

Unique Attributes

- Each unidose is individually packed to keep material fresh
- Available in Low Viscosity and High Viscosity
  - **High Viscosity:** thicker paste to achieve gentle retraction and hemostasis without a cord
  - **Low Viscosity:** thinner paste to achieve retraction or replace the second cord in a double-cord technique while providing hemostasis
- Quick clean up with rinsing and air drying to remove residue
- Firm, dense foam compression caps

Clinical Tips

- If the patient has tight tissue, it is difficult to get the high-viscosity paste intra-sulcular. In these cases, it is better to use the "two-cord" technique replacing the second cord with the low-viscosity paste.
- Take a pre-impression bite and then apply the ***Take 1*** into the bite and reseat it for great hemostasis and retraction.
- Use of compression caps greatly increases amount of retraction.
- For the high-viscosity version, use a wet finger and pat in the material into the sulcus.

"EASY TO APPLY AND CLEAN - EXCELLENT PRODUCT."

Evaluators' Comments

*"The impressions obtained after using **Take 1** were smooth and detailed."*

*"The low viscosity is much better than **Traxodent.**"*

*"I do **Cerec** crowns every day and it achieves excellent hemostasis and retraction to view the crown margins."*

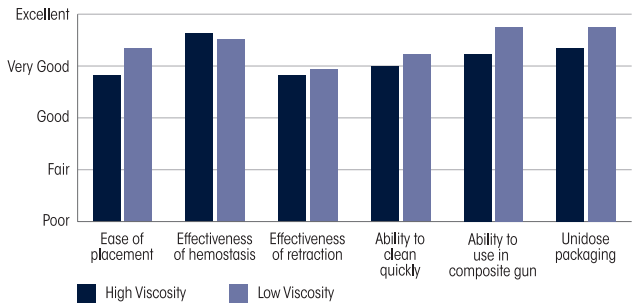
*"I used **Take 1** instead of a second cord in a two-cord technique. I hate packing cord and **Take 1** eliminated the need for the second cord effectively."*

"Does not retract tissue as well as the current product I use."

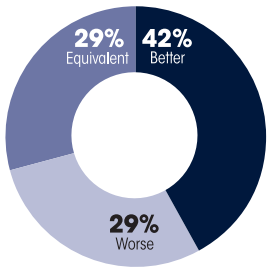
"The high viscosity was difficult to extrude, and the tip was too wide."

"If the tissue was compromised, the margin was not always picked up in the impression."

Evaluation Summary:



Compared to Competitive Products:



Consultants who would:

68% Recommend to a colleague

32% Not recommend to a colleague

Consultants who would want to stock in office:

21% Yes, instead of current product

38% Yes, in addition to current product

23% No; however, I might want to order it for certain cases

Clinical Evaluator SPOTLIGHT

Dr. Mollie K. Rojas

Shoreline Dental Chicago
Chicago, IL

What made you decide to become a DENTAL ADVISOR Clinical Evaluator?

My predecessor introduced me to DENTAL ADVISOR and I really wanted to take advantage of learning about products in early stages in a hands-on type of way. I've always liked the DENTAL ADVISOR website because I'm able to research other clinician's reviews regarding dental products in the marketplace and I'd like to be able to do the same for my own colleagues.

I absolutely would recommend becoming an evaluator to other dentists because the products that you review have already gone through a vetting process, so it's not like you're testing something that hasn't been approved. Being an evaluator is really about finding out if a particular product is something that you're actually going to utilize in your own practice. It's nice to able to give a stamp of approval to a product for the sake of your colleagues, while also determing if it's going to fit into your own techniques and practices.

Dr. Mollie Rojas with her business team, Anel (left) and Tasha (right)

SPECIAL THANKS TO:

Select Senior Clinical Evaluators (Over 20 years):

R. Fisher, OH · E. Katkow, MD · J. Lockwood, MI · G. Poy, MI · R. Trushkowsky, NY · P. Yaman, MI · K. Baker, TX · F. Berman, PA · J. Bostic, OH · L. Brimhall, MT · M. Briskin, NY · W. Brownscombe, MI · R. Ciccone, MI · C. Colbert, MI · M. Conrad, PA R. Dost, VA · J. Doueck, NY · M. Eannaccone, NY · K. Fairbanks, MI · M. Feinberg, NY · K. Fischer, IN · G. Franco, NY · N. Garlisi, OH · S. Graber, IL · P. Grandsire, NY · E. Gutman, NY · D. Haas, Ontario · K. Hamlett, TX G. Hart, OH R. Herwig, KS · J. Kaminski, MI · R. Kaprielian, NJ · M. Kastner, OH · D. Keren, NY · M. LaMarche, WA · J. Leitner, MI · S. Lever, MD · R. Lezell, MI · M. Man, NY · B. Manne, FL · N. Mansour, MI · N. Markarian, CA · C. McLaren, MI · J.W. Mikesell, IL R. Mizrahi, NY · G. Mosso, PA · E. Mosso, PA · J. Nash, MI · A. Nazarian, MI · R. Oshrain, NY · J. Paris, TX · D. Parris, GA · M. Patel, MI · D. Peterson, MD · T. Pieper, WY · D. Pitak, MI · V. Plaisted, NY · D. Qualliotine, NC · G. Raichelson, Ontario G. Reskakis, NY · K. Schwartz, FL · J. Shea, MO · B. Shumaker, NJ · B. Sims, NY · P. Symeonides, NY · H. Tetalman, OH · C. Trubschenck, CA · S. Ura, NH · W. Walcott, MI · M. Waranowicz, MI · L. Wee, MI H. Yeung, CA · P. Zanetti, MI · S. Zimmer, MI

Clinical Evaluators (19 years or less):

D. Aaron Matatiaho, CA · A. Albright, NY · B. Argersinger, NC · R. Arif, OH · P. Arsenault, MA · G. Ash, MI · S. Baker, GA · M. Bannan, NC · B. Barricklow, OH · L. Bartoszewicz, MI · B. Bauer, IL · J. Bechtel, MI · J. Bechtel, MI · M. Best, MI · L. Bishop, MI · T. Bizga, OH G. Bloomfield, MI · G. Bonior, MI · C. Brown, LA · E. Brust, MI · S. Bunek, MI · J. Bunek, MI · J. Bush, PA · H. Cadorette, MI · M.Capalbo, RI · M. Caligiuri, CA · P. Campo, NY · P. Cracchiolo, MI · D. Chacko, TN · P. Chaiken, IL · R. Cherry, FL · R. Chuang, CA M. Connelly, MI · S. Crawford, MI · J. Curley, NC · W. K. Dancy, GA · S. Dillingham, NY · K. Dobracki, MI · S. Doniger, IL · J&E Duski, MI · A. Dutko, MI · M. Egbaria, IL · M. Elford, MI · O. Erdt, MI · K. Evanoff, MI · M. Evers, OH F. Facchini, MI · F. Falcao, FL · L. Feldman, NJ · G. Fink, DE · M. Frankman, SD · M. Glovis, MI · C. Goldin, MI · M. Grant, MI A. Green, MI · R. Green, MI · B. Greenwood, UT · J. Griffin Jr., MO · K. Grindling, MI · P. Gronet, KY · R. Grossman, PA H. Gulati, MA · F. Haddad, MI · G. Haddad, CA · J. Haddad, MI · A. Hakhamian, CA · J. Hamerink, MI · W. Hanna, MI · A. Harris, OH · J. Hastings, CA · A. Hodges, NC · C. Huang, CA · M. Huberty, WI · J. Ireland, MI · S. Irwin, NJ · C. Jaghab, MI · J. Jaghab, MI W. Jenkins, MI · T. Jolly, TN · R. Juluri, IL · M. Kachi-George, MI · D. Kapp, NY · J. Kane, MI · Y. Kang, MA · J. Karam, MI · G. Karaouzas, MI · E. Kelly, GA · J. Kelly, GA · L. Kemmet, MN · M. Koczarski, WA · L. Knowles, MI · B. Kolb, MI · GA Krishnan, CA · E. Kuns, OH C. Laird, OR · T. Lam, CA · R. Le, NC · I. Levine, NY · E. Lowe, BC, CAN · J. Lue Yen, GA · A. Malkis, NY · C. Manduzzi, MI · J. Mangutz, MI · K. Mantzikos, NY · B. Mayday, MI · T. McDonald, GA · J. McLaren, MI · M. McMullin, MI · G. Meylan, MI · M. Migdal, MI · M. Miller, NC · J. Mills, MI · J. Minsky, CA L. Montes, NY · A. Moore, NC · L. Motyl, MI · M. Murphy, MI · M. Murrell, MI · L. Musgrave, MI · M. Nasif, MI · B. Neren, NY · J. Neuman, MI · J. Olitsky, FL · J. Olsen, MI · E. O'Niel, MI · F. Orlando, NY · S. Owens, MI · A. Paal, TX P. Panchal, NC · R. Parikh, IL · J. Parrott, MI · U. Patel, CA · D. Perkins, MI · N. Pelachyk, MI · B. Peterson, MD · W. Phillips, MI · S. Picazio, NJ · B. Picot, NC · C. Pike, MI · C. Piontkowski, MI · B. Pittsley, MI · J. Poskozim, IL · B. Pournaras, SC · A. Prince, UT D. Radtke, MI · G. Ramos, NY · C. Ramsey, FL · G. Rashall, TX · S. Reddy, MI · N. Rego, CA · J. Riggs, MI · M. Rojas, IL · J. Rowe, AR · J. Rubin, DC · A. Saddy, MI S. Salhadar, MI · P. Saurer, OH · P. Scalia, MI · C.Scanlon, MI · J. Schau, MI K. Schier, MI · A. Schraner, NY · V. Scola, CA · L. Seluk, MI · R. Selvan, NJ · Y. Shaheen, MI · M. Shapiro, MI · A. Shemesh, IN · E. Simanian, CA · S. Simos, IL · J. Slatkoff, FL · J. Smith, MI · C. Stevens, OK · B. Stieper, MI · R. Surana, CA · G. Sutton, CA G. Tarantola, FL · T. Teel, IN · C. & L. Thorpe, MI · L. Trost, IL · S. Uchil, MI · A. Valentine, MI · H. Vann, MS · C. Vinkovich, OH · J. Weinfield, MI · B. Wilk, PA · K. Wilson, MI · D. Wolf, MA · W. Wright, CA · Y. Yi, MA · D. Young, MI · S. Yun, MI M. Yurth, WA J. Zanetti, MI · A. Zucker, OH

Laboratory Consultants:

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