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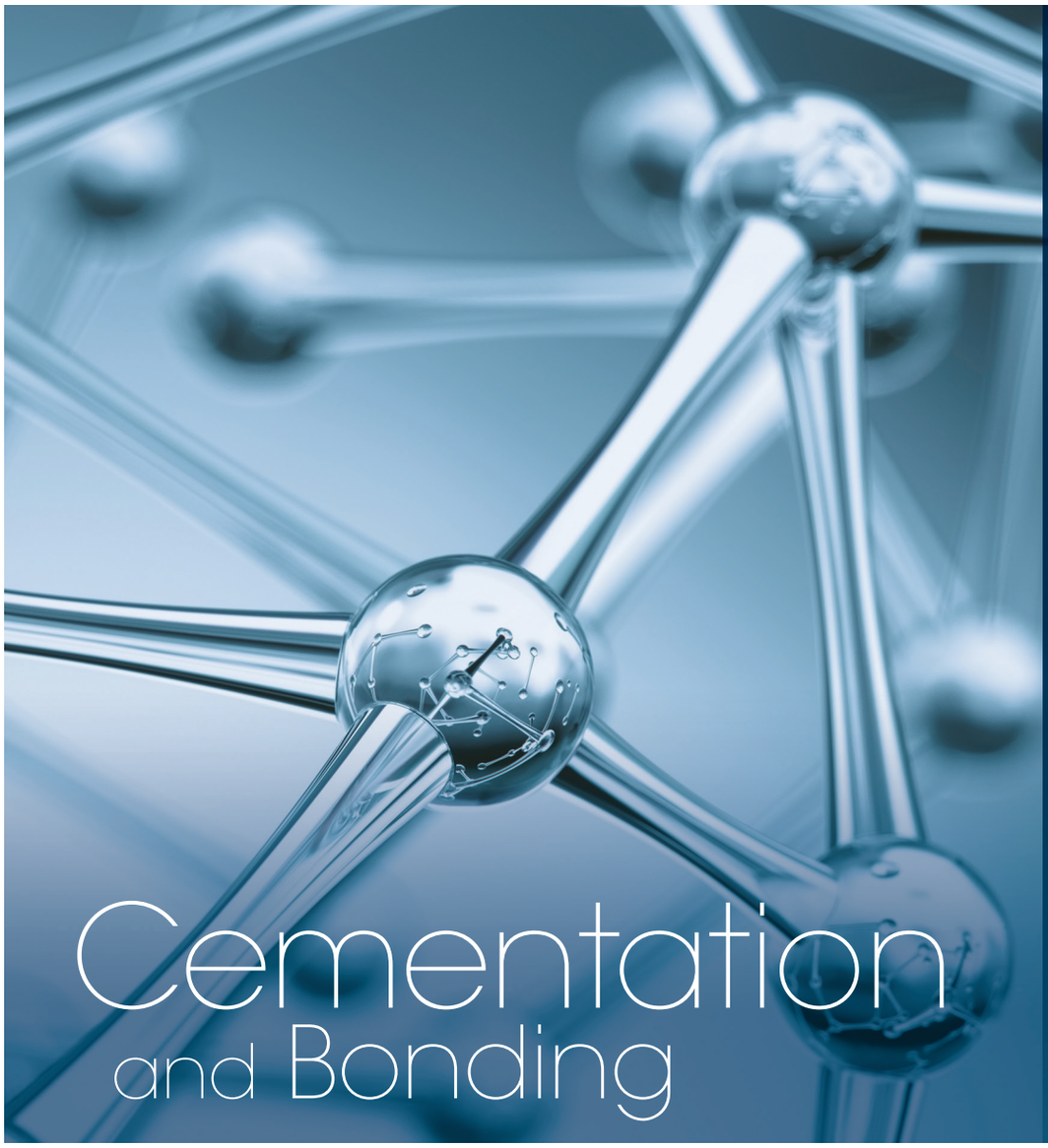
DENTAL ADVISOR™

Product insights you can trust.



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DENTAL ADVISOR
Product insights you can trust.

FROM THE DESK OF
Dr. Sabiha Bunek, Editor-in-Chief

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DENTAL ADVISOR
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As new ceramics are introduced, the cementation process continues to adapt and evolve. There are a number of new resin cements on the market, some of which combine existing materials for convenience and simplified procedures, and some that have entirely new chemistry; however, we have yet to see a true universal cement for all indications.

The focus of this issue is to provide you with a brief overview of the properties, classifications and advantages of various resin and conventional cements as well as describe what makes universal bonding agents "unique."

As always, I welcome your comments and suggestions; you can reach me at drbunek@dentaladvisor.com. Thanks for your continued support and reading!

— *Sabiha S. Bunek*

Cement Choices

All permanent cements can classified into one of two broad categories:

Traditional cements: (zinc phosphate, zinc polycarboxylate, glass ionomer, and resin-modified glass ionomer) are essentially "gap fillers," relying on micromechanical retention provided by the luting agent. Resin-modified glass ionomers (RMGI) are most commonly used in this category because they offer slightly better strength and adhesion, easy cleanup and lower solubility.

Resin cements: (self-adhesive, adhesive resin and esthetic resin) have gained popularity mainly because they address the shortcomings of luting cements: they exhibit high bond strength to tooth structure, higher esthetics and the lowest solubility of the available cements. They rely on both micromechanical retention and chemical bonding.

Selecting the Best Cement

There are many types of cement to choose from, and there is often more than one viable option.

An easy place to start in the decision-making process is by looking at the ***strength of the ceramic,*** as well as taking into account the ***retentiveness of the preparation.***

Generally, when esthetics is of high concern, low- to medium-strength glass ceramics (feldspathic, leucite-reinforced, lithium disilicate) are selected. A benefit of using high-strength cements (adhesive or esthetic resin) is that they will ***add strength to the entire restoration.***

When using a high-strength ceramic (zirconia) with a retentive preparation, a low-strength cement such as a self-adhesive resin cement or RMGI can be used because ***it is not necessary to rely on the cement for additional strength.*** Guidelines for cement selection based upon the strength of the ceramic and the retentiveness of the preparation are highlighted in the table below.

CERAMIC STRENGTH	PREPARATION	Resin-Modified Glass Ionomer	Self-Adhesive Resin	Adhesive Resin	Esthetic Resin (DC & LC)
LOW (feldspathic, leucite-reinforced)	Retentive			✓	✓
	Non-retentive			✓	✓
MEDIUM (lithium disilicate)	Retentive	✓	✓	✓	✓
	Non-retentive			✓	✓
MODERATE-HIGH (highly translucent zirconia)	Retentive	✓	✓	✓	✓
	Non-retentive			✓	✓
HIGH (zirconia)	Retentive	✓	✓	✓	✓
	Non-retentive			✓	✓

Simplifying Cementation:

Self-Adhesive Resin Cements

Self-adhesive Resin Cements

Self-adhesive resin cements are ***easy to use*** and provide low to medium bond strengths (4-16 MPa) to tooth structure. They ***do not require the use of a bonding agent*** on the tooth; however, some bonding agents recommended by manufacturers can be compatible with self-adhesive resin cements. Self-adhesive resin cements have a ***lower incidence of sensitivity*** than adhesive or traditional crown and bridge cements.

Advantages

- Easy to use (no etch or primer required)
- Less technique sensitivity
- Low postoperative sensitivity
- Easy cleanup
- Dual-cured

Disadvantages

- Can have a shade shift over time
- Clean up can be difficult if removal occurs after final set
- Isolation from moisture/contaminants is required

Tips for success:

- Remove excess during tack-cure phase
- If retention is in question, then priming the restoration and/or using a bonding agent may be a better choice
- Isolate well to avoid saliva contamination

Self-adhesive

Product	Rating
PANAVIA SA Cement Plus (Kuraray Noritake Dental)	**98%**
TheraCem (BISCO)	**97%**
RelyX Unicem 2 Automix Self-Adhesive Resin Cement (3M)	**96%**
G-CEM LinkAce (GC America)	**93%**

PANAVIA™ SA Cement Plus

(Kuraray Noritake Dental)

Awarded the Top Self-Adhesive Resin Cement in 2019, ***PANAVIA SA Cement Plus*** is a dual-cured, fluoride-releasing, self-adhesive resin cement which tolerates both moist and dry surfaces during bonding. With a working time of one minute; a tack-cure of two to five seconds; and a 10-second final cure, cementation is efficient with easy cleanup. It is indicated for placement of crowns, bridges, inlays, onlays, posts and cores, implant restorations, and adhesive bridges and splints. During testing in DENTAL ADVISOR's biomaterials lab, it demonstrated an excellent bond strength of >50 MPa to zirconia and lithium disilicate, and 26 MPa to unetched dentin. When evaluated, 100% of clinicians stated they would use this cement. ***PANAVIA SA Cement Plus*** received a 98% rating and Editors' Choice from DENTAL ADVISOR.

- "Very easy to use, a go-to material."
- "After spot curing, the excess peels right away from the margins."

RelyX Unicem 2 (3M)

RelyX Unicem Self-Adhesive Resin Cement is dual-cured and does not require separate etching, priming or bonding. RelyX Unicem 2 is available in a paste/paste formulation delivered via a Clicker or an automix syringe. Both formulations are indicated for the cementation of composite crowns, bridges, inlays and onlays; PFM and metal restorations, implant abutments and endodontic posts.

RelyX Unicem Self-Adhesive Resin Cement has proven to be very reliable over the 15-year recall period. Retention 108 (4.8%) of the recalled restorations debonded over the 15-year evaluation period. In 90% of these debonds, the cement was in the restoration and not on the prepared tooth. It was not unusual to notice grey or black stain on many of the debonded restorations.

INNOVATIVE CEMENT: CONTINUOUS ION-RELEASE

TheraCem™

(BISCO)

BISCO's next generation resin cement combines the benefits of bonding with the simplicity of a traditional cementing protocol. ***TheraCem*** is a dual-cured, calcium and fluoride-releasing self-adhesive resin cement indicated for luting crowns, bridges, inlays, onlays and all types of posts. ***TheraCem*** offers a high degree of conversion, and transitions from acidic to alkaline ph in minutes. Delivering a strong bond to zirconia and most substrates without the need to prime or etch, along with easy cleanup and high radiopacity, ***TheraCem*** offers clinicians reliable and durable cementation of indirect restorations.

G-CEM LinkAce®

(GC America)

G-CEM LinkAce® provides a simple solution for the most common challenges clinicians face during indirect restorative procedures. It offers the highest polymerization in self-cure mode, via an innovative initiator system. The proprietary phosphate monomers of ***G-CEM LinkAce*** provide a high bond durability to zirconia restorations that actually increases over time, a challenging achievement in one step. ***G-CEM LinkAce*** shows very low water sorption, is HEMA-free and delivers exceptional color stability, making it the ideal cement selection for all-ceramic and lithium disilicate crowns. It offers easy excess cement removal, 1-2 second tack cure, and is available in four shades.

Simplifying Cementation:

Adhesive Resin Cements

Adhesive Resin Cements

Adhesive resin cements provide medium-high bond strengths and are an ***excellent choice when retention is of concern*** with all restorative materials. They differ from self-adhesive resin cements because they require the use of a separate bonding agent on the tooth. One trend we are seeing from manufacturers is the bundling of their adhesive resin cements and universal bonding agents into pre-packaged kits. With universal bonding agents included in the kit, the clinician has the option for total-, self-, or selective-etching of the tooth. Indications for adhesive resin cements include all-ceramic crowns/bridges and inlays/onlays, high-strength ceramic (zirconia) crowns/bridges, Maryland bridges and posts (metal and fiber).

Advantages

- Can use with all restorative materials
- Can be used when retention is of concern
- Common shades: universal, translucent, and opaque
- Dual-cured

Disadvantages

- Can have a shade shift over time
- Cleanup can be difficult
- Isolation from moisture/contaminants required

Adhesive Resin

Product	Rating
G-CEM LinkForce (GC America)	**96%**
3M RelyX Ultimate Adhesive Resin Cement (3M)	**96%**
Duo-Link Universal (BISCO)	**93%**
PANAVIA V5 (Kuraray Noritake Dental)	**92%**

G-CEM LinkForce®

(GC America)

The ***G-CEM LinkForce®*** system features strong adhesion to all dental substrates in all indirect restorations, including crowns and veneers. The system is simple to use and contains all components needed for successful placements. In addition to superior adhesion, ***G-CEM LinkForce*** has excellent color stability and tooth-like fluorescence. It may be used in both light-cure and self-cure modes. ***G-CEM LinkForce*** may be used in conjunction with many restorative materials, including stacked feldspathic ceramic, pressed leucite ceramic, and lithium disilicate. The ***G-CEM LinkForce*** cement comes in four shades and is available with corresponding try-in pastes in each shade.

3M™ RelyX™ Ultimate Adhesive Resin Cement (3M)

When you need extra-strength bonding without the hassle of complex adhesive systems, choose ***3M™ RelyX™ Ultimate Adhesive Resin Cement*** in combination with ***3M™ Scotchbond™ Universal Adhesive.*** You'll get versatile, reliable adhesive cementation that's fast and easy to use—all with just two components.

- Proven, industry-leading bond strength
- Fast and easy procedure with only two components
- Total-etch, selective etch or self-etch procedures
- First-class esthetics with natural fluorescence

DUO-LINK UNIVERSAL™

(BISCO)

DUO-LINK UNIVERSAL™ is perfect for reliable, high strength cementation with easy clean-up. Its extremely high, consistent degree of conversion in both self-cured and light-cured modes is required by today's stronger restorations. In addition, ***DUO-LINK UNIVERSAL*** has low film thickness to assist in effective seating and offers diagnostic radiopacity for that perfect margin. BISCO's ***DUO-LINK UNIVERSAL*** kit is an adhesive cementation system designed to effectively address the cementation of all your indirect restorations for optimal performance and esthetics in one easy-to-use kit.

Panavia V5

Kuraray Noritake Dental

PANAVIA V5, the latest version of ***PANAVIA*** series from Kuraray America, is a dual-cured, fluoride-releasing, color-stable, universal adhesive resin cement. It is available as an all-in-one kit. The self-etching Tooth Primer contains the original MDP adhesive monomer; its new chemistry accelerates cement curing and provides for high bond strength to all tooth structure in the self-cure mode. The ***CLEARFIL CERAMIC PRIMER PLUS*** also contains MDP and a y-MPS silane monomer that enhances bond strength to restorative materials. In DENTAL ADVISOR'S bio-materials lab, ***PANAVIA V5*** demonstrated excellent bond strength at 44 MPa to dentin. Tack-curing can be achieved in 3 to 5 seconds using a blue LED light and final cure in 10 seconds. ***PANAVIA V5*** received a 92% overall rating from DENTAL ADVISOR.

Simplifying Cementation:

Esthetic Resin Cements

Esthetic Resin Cements

Esthetic resin cements generally contain an option for ***dual-cured or light-cured only polymerization.*** However, a few esthetic resin cement kits include light-cured only cements suitable for thin, all-ceramic restorations such as veneers and inlays/onlays. Light-cured cements are preferred due to their color stability and ***increased working time***. Light-cured resin cements do not contain an amine catalyst (found in many dual-cured resin cements), so there is ***less chance of shade shift*** over time that can result from oxidation of the amine catalyst. These cements typically require etching the tooth with phosphoric acid, followed by priming of the restoration and application of resin cement. Most manufacturers provide a variety of shades and corresponding try-in pastes, which makes them ideal for esthetic restorations.

Advantages

- Highly esthetic
- Light-cured or dual-cured
- Longer working time
- Color stable
- Highest bond strength to enamel and dentin with appropriate bonding agent
- Available in a variety of shades with corresponding try-in pastes

Disadvantages

- Most technique sensitive
- Isolation from moisture/contaminants required

Esthetic Resin

Product	Rating
Variolink Esthetic (Ivoclar Vivadent)	**98%**
NX3 Nexus Third Generation (Kerr Restoratives)	**97%**

Variolink® Esthetic
(Ivoclar Vivadent)

Variolink® Esthetic is an adhesive luting composite that offers clinicians incredibly easy clean-up, natural fluoresence and radiopacity. ***Variolink Esthetic*** is the successor to ***Variolink® II*** & ***Variolink® Veneer*** and is available in both light-cure (LC) and dual-cure (DC) versions. Each version is available in five shades: Light+, Light, Neutral, Warm and Warm+ for simplified shade matching. ***Variolink Esthetic*** contains the patented light initiator, *Ivocerin,®* which is 100% amine-free for enhanced shade stability. ***Variolink Esthetic*** is indicated for the adhesive luting of glass-ceramic, lithium-disilicate and composite restorations (0.16 mL each).

NX3 Nexus® Third Generation
(Kerr Restoratives)

Universally indicated for all indirect applications, ***NX3 Nexus® Third Generation*** is a permanent adhesive dental cement system with an innovative chemistry for unmatched esthetics, adhesion and great versatility. Delivery system choices include an automix syringe for dual-cure indications and a light-cure cement for multiple units where unlimited work time is needed. The automixing dual-cure cement can be used for all indirect applications, including veneers. With Kerr's proprietary amine-free initiator system and optimized resin matrix, ***NX3*** is the first truly color-stable adhesive resin cement.

Bioceramic cement

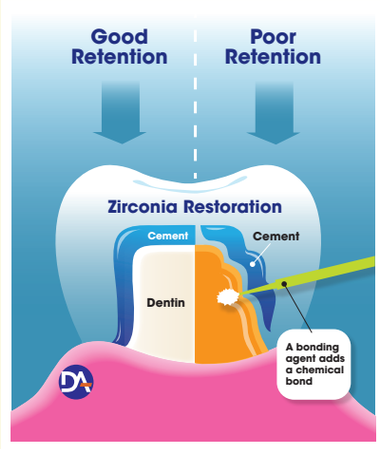
Bioceramic-based materials have been in use for over 30 years, but due to limitations in their physical properties, were mostly used for root canal sealing due to their biocompatibility and longevity. Recently, with Doxa Dental's advent of ***Ceramir,*** this class of material has proven to be a valuable addition in restorative cases.

Ceramir® Crown and Bridge is a self-adhesive bioceramic luting cement containing calcium aluminate, which promotes hydroxyapatite formation for permanent sealing and resistance to bacterial acid attack. The alkaline pH and high biocompatibility make this cement non-irritating to the pulp. ***Ceramir*** has also recently introduced a new *Quikcap* application method for faster and easier placement. This cement can be used with all high-strength indirect restorations, without any additional pre-treatment agents.

Question from the field

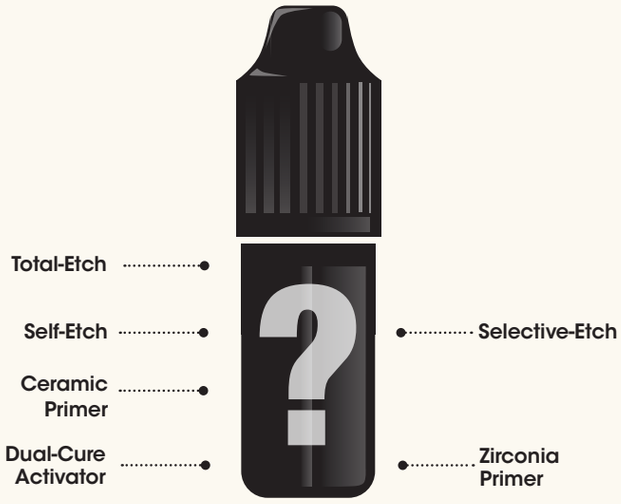
Q. What is the best cement for zirconia crowns?

A. It is best to base your decision-making process on the retentiveness of your preparation. If the prep has ***good retention,*** a conventional cement or self-adhesive cement can be used. If the prep is ***not retentive,*** we recommend an adhesive resin cement where there is an adhesive placed on the tooth prior to cementation.



Universal Bonding Agents

For the past two decades, total-etch bonding agents were categorized as 4th- and 5th-generation products, and self-etch bonding agents were categorized as 6th- and 7th-generation products. The new universal bonding agents have essentially replaced these total-etch and self-etch generations of bonding agents.



What is a Universal Bonding Agent?

New "universal" adhesives have gained popularity because they are designed to simplify the steps involved with direct and indirect bonding protocols. The idea that one adhesive system can be used with different etching techniques, can bond to the different substrates and can dual-cure, all without the use of separate activators or primers, is very appealing to clinicians. However, not all universal bonding agents can make that claim.

While the term "universal" implies the product can be used in all situations, ***it is important to understand that all manufacturers do not define "universal" the same way;*** it does, however, generally relate to two or more of the following:

1. ***Compatible with*** different etching techniques: total-, self-, and selective-etch mode.
2. ***Compatible with*** dual- and self-cured materials without the use of a separate activator.
3. ***Can be used as a*** primer for silica-based and metallic restorations.

CLEARFIL Universal Bond Quick
(Kuraray Noritake Dental)

CLEARFIL Universal Bond Quick is a fluoride-releasing, single-bottle, universal adhesive containing innovative MDP and amide chemistry that provides RAPID BOND TECHNOLOGY. This ground-breaking amide monomer rapidly permeates dentin and enamel, minimizing the risk of contamination and eliminating waiting time. The new amide chemistry also results in less fluid absorption. In DENTAL ADVISOR's biomaterials lab, ***CLEARFIL Universal Bond Quick*** demonstrated excellent bond strength to both enamel and dentin. Enamel shear bond strength was 43 MPa and 28 MPa respectively, using both a total-etch and self-etch technique. Dentin shear bond strength was 40 MPa and 41 MPa, respectively. ***CLEARFIL Universal Bond Quick*** standard is available in both bottle and unit dose delivery.

3M™ ScotchBond™ Universal Adhesive (3M)

3M™ Scotchbond™ Universal Adhesive is a single-bottle adhesive that provides uncompromising performance and bond strength whether used for direct or indirect restorations. Its simple application process helps the adhesive perform reliably, regardless of user technique. The product is moisture-tolerant, exhibiting high bond performance on moist and dry substrates. With ***3M Scotchbond Universal Adhesive,*** dentists have an easy-to-use solution that provides consistent results for all surfaces in total- or self-etch mode. It assures dentists of virtually no post-operative sensitivity—in both the total- and self-etch technique, and provides exceptional bond strength to dentin and enamel.

Universal Bond (Tokuyama)

Tokuyama's ***Universal Bond*** is a two-component, self-curing, universal bonding agent that can be used for self-etch, selective-etch and total-etch (etch and rinse) techniques. It is formulated to provide high-bond strength and reliable bonding for direct and indirect restorations, core build-ups and for the intraoral repair of restorations. There is no wait time after application, virtually no post-operative sensitivity and it does not require use of a separate primer or activator. ***Universal Bond*** is available in a kit containing one 5 mL bottle each of Bond A and B, 25 microbrushes and 15 mixing wells. Individual 5 mL bottles of Bond A and B are also available.

Futurabond U
(VOCO)

Futurabond U is the world's first universal adhesive in a *SingleDose* delivery system. Maximizing ease-of-use in terms of application and consistent long-term results, ***Futurabond U***'s nano-reinforcement delivers superior wettability and high bond strengths while minimizing the application time to a single layer (apply, dry and cure) in merely 35 seconds. For use with both direct and indirect procedures, ***Futurabond U*** does not require an additional activator or primer and can be used with all substrates. Indicated for self-etch, selective-etch or total-etch modes as well as with light-, dual- and self-cured materials, ***Futurabond U*** is the universal bonding agent that will satisfy all your adhesive dentistry needs.

Simplifying Cementation:

Universal Bonding Agents

The table below lists Universal Bonding Agents clinically evaluated by DENTAL ADVISOR.
As with any new dental material, be sure to thoroughly read the manufacturer instructions prior to use.

Product	Manufacturer	Indicated for all etching modes (Total-, Self-, and Selective-etch)	Separate dual-cure activator required (with dual-cure materials)	Primes Silica- and Zirconia- based ceramic and metal restorations	Clinical Rating
Scotchbond Universal Adhesive	3M	Yes	Yes***	Yes	**98%**
iBOND Universal	Kulzer	Yes	No	Yes**	**98%**
CLEARFIL Universal Bond Quick	Kuraray Noritake Dental	Yes	Yes	Yes	**98%**
All-Bond Universal	BISCO	Yes	No	Yes*	**96%**
G-Premio BOND	GC America	Yes	Yes	No	**96%**
Futurabond U	VOCO	Yes	No	Yes	**96%**
Adhese Universal	Ivoclar Vivadent	Yes	No	Monobond Plus recommended	**93%**
OptiBond eXTRa	Kerr Restoratives	Yes	Yes	Yes	Not tested

* Separate primer not required if bonding agent is light-cured

** Use of ceramic primer is recommended for silica-based ceramics

*** Dual-Cured Activator is not required if adhesive is paired with resin cement from same manufacturer

ONE COAT 7 UNIVERSAL
(Coltene)

ONE COAT 7 UNIVERSAL is a single component, light-cured, universal adhesive that provides exceptional bonding strength to enamel and dentin. It is used for all application techniques including self-etch, selective etch, and total etch. The excellent marginal seal provided by ***ONE COAT 7 UNIVERSAL*** helps minimize postoperative sensitivity. The improved dropper system dispenses consistently and works without silane or primer. ***ONE COAT 7 UNIVERSAL*** is also available in a practical, single-dose package for efficient application.

Adhese® Universal
(Ivoclar Vivadent)

Adhese® Universal is a light-cured adhesive for direct and indirect procedures. It has consistently high bond strength and virtually no post-operative sensitivity with any etching technique: self-etch, selective etch or total-etch. The revolutionary *VivaPen®* delivery form delivers up to 190 single-tooth applications, three times more applications per ml than the traditional bottle delivery form. This drastically decreases cost per application and contributes to more cost-effective treatments.

All-Bond Universal®
(BISCO)

All-Bond Universal® combines etching, priming and bonding in a single bottle. ***All-Bond Universal*** is now available in unit-dose packaging. The convenient, easy-to-handle, orange-colored unit-dose offers efficiency and ease of use. Unlike other one-bottle adhesives, ***All-Bond Universal*** can be used with both direct and indirect restorations, bonds to all indirect substrates, and is compatible to all composite and resin-based cements without an additional activator. The versatility of ***All-Bond Universal*** makes it an indispensable part of any dental practice.

G-Premio BOND™
(GC America)

G-Premio BOND™ is a universal, 8th generation bonding agent that is compatible with total-etch, self-etch and selective-etch techniques, providing excellent versatility. It is perfectly adapted to all direct restorations and can also be used to repair indirect restorations without the use of primer. ***G-Premio BOND*** can also be used in combination with a silane when repairing glass or hybrid ceramic, and is also ideal for hypersensitivity. It is available in a bottle (5 mL) with an easy-to-use flip-top cap and a silicone cover to enable more precise drop dispensing, and a 50 unit dose pack (0.16 mL each).

Simplifying Cementation:

Glass Ionomer Cements

Glass Ionomers

Since their introduction in the 1970s, numerous modifications have been made to glass ionomers, making them suitable for an array of modern-day clinical applications (including use as a luting agent). Glass ionomers are derived from an acid-base reaction between a basic glass powder (calcium fluoroaluminosilicate) and an acidic water-soluble polymer. During this hardening reaction, significant amounts of fluoride ions are released. Unlike resin cements, glass ionomer cements are hydrophilic and include water in their formulation, resulting in a moisture-tolerant material that directly adheres to tooth structure by a chemical bond. Additionally, because glass ionomers are set by an acid-base reaction, minimal shrinkage occurs.

They are classified as either conventional glass ionomer or resin-modified glass ionomer, which have resin added to the formula to improve physical properties. Both cements chemically bond to enamel and dentin, release fluoride, have a coefficient of thermal expansion similar to that of tooth structure, exhibit hydrophilic properties and are available in powder-liquid, paste, and encapsulated formulas.

Resin-modified Glass Ionomers

Resin-modified glass ionomers (RMGI) were developed in the 1980s to overcome the high solubility of conventional glass ionomers. The addition of resin to the glass ionomer formulation provides slightly greater bond strengths, releases a similar amount of fluoride and allows for the material to harden when light cured. Although they offer lower strength than resin cements, their adhesion is adequate for metal, metal-ceramic and high-strength ceramic restorations (zirconia) as well as for metal and composite fiber posts. RMGI cements are a great option in cases where moisture control is an issue or when fluoride release is needed.

GC FujiCEM 2 (GC America)

FujiCEM 2 is a second-generation resin-modified glass ionomer luting cement in paste delivery. It is indicated for a myriad of indirect restorations, including inlays, onlays, crowns and bridges, as well as materials made of metal, resin, lithium disilicate and zirconia. Powered by *F2 Flex Fuse Technology,* which incorporates high-elastic crosslinking monomers with a modified filler-surface treatment, it improves indirect restorations by offering increased strength, high fluoride release, low-film thickness and excellent marginal integrity.

Clinical Tips for GI & RMGI Cements

- **The bond-to-tooth structure is significantly reduced when the tooth is excessively dried,** which also contributes to post-cementation thermal sensitivity. Lightly moisten dentin using a micro-applicator or a damp cotton pellet so it is slightly glossy with no water pooling on the surface.
- **Do not place a bonding agent before placing a glass ionomer,** because it decreases fluoride uptake.
- **Light cure resin-modified glass ionomers from the buccal and lingual aspects** to allow cleaning of excess cement in the gel phase.
- **Because both glass ionomer and resin-modified glass ionomer products are water-based,** clinicians should be aware of the expiration dates of the products.
- **Glass ionomer and resin-modified glass ionomer cements tend to be more opaque than resin cements.** Do not use with all-ceramic restorations in the anterior region where esthetics is of concern.

Question from the field

Q: Why are self-etching bonding agents so popular in adhesive dentistry?

A: The major advantage of self-etching bonding agents is convenience, as they remove the need to etch the preparation. Removing that step saves valuable chair time, reduces sensitivity and minimizes the chance of your preparation becoming contaminated. These materials also exhibit great bond strength. Tokuyama's ***Bond Force*** is an ideal example of an effective self-etching bonding agent. ***Bond Force*** is a single-component (7th generation), fluoride-releasing bonding agent that is indicated for bonding of light- or dual-cured materials. DENTAL ADVISOR gave it a 5+ and 96% rating, as well as an Editor's Choice award.

BEAUTIFIL Flow Plus X

++++ ½

92% overall rating

Shofu
www.shofu.com

Description

BEAUTIFIL Flow Plus X is an ion-releasing, radiopaque, flowable, nanofilled hybrid resin. It is formulated to offer high compressive and flexural strength, low water sorption, and excellent handling properties. It contains patented nano S-PRG filler (400 nm) with a multifunctional glass core, providing for high radiopacity and light transparency that matches enamel for esthetics. The filler's glass ionomer phase around the glass core provides for fluoride release and recharge, and it releases strontium, aluminum, silicate, borate and sodium ions. The surface-modified outer layer provides for its strength and long-term stability. This material is also acid neutralizing. ***BEAUTIFIL Flow Plus X*** is available in 2.2 g syringes in two viscosities. F00 has minimal flowability, does not deform when layered, and is available in 15 shades. F03 is more flowable and available in 16 shades.

Clinical Tips

- Use ***Beautifil Flow Plus X*** for build-ups. It stays exactly where placed and cuts like dentin.
- The F00 is more stackable. It is good for small Class I and III restorations and works well for cervical restorations. F03 is great for Class V restorations.
- Use a fine-tipped explorer to help tease the material into small areas.
- After dispensing, let it sit for 10 seconds as it levels out.
- F00 is useful for areas adjacent to crown margins where recurrent caries was present and works nicely to add to temporary restorations.

"STACKABLE WHEN NEEDED AND FLOWABLE WHERE INDICATED. PLACEMENT IS EASY."

Evaluators' Comments

- *"I like that it is offered in two viscosities."*
- *"Easy to use, good flow, bioactive and versatile. A very good flowable composite."*
- *"Excellent polishability and shade match. The material picks up the underlying tooth shade."*
- *"Excellent dispensing. I liked that the syringe has a rotating finger rest."*
- *"It stops dispensing when you want it to, without drawing or dripping."*
- *"Resists slumping and allows you to better control placement of the final restoration."*
- *"Works well in distal proximal boxes, it stays put and doesn't flow all over the matrix."*
- *"I like that you don't have to use a second composite for the outer layer."*
- *"F00 was a touch difficult to extrude."*
- *"Difficult to flow into small areas."*
- *"I noticed a color shift in some restorations. The A2 shade was a bit dull and translucent."*

Indications

- Class I through V direct restorations
- Core build-ups

Unique Features

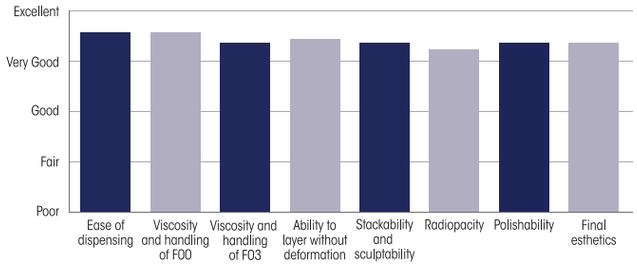
- Contains Giomer technology and patented nano S-PRG filler
- Stackable and sculptable
- High compressive and flexural strengths
- Low water sorption and shrinkage
- High level of polishability
- Chameleon effect
- Releases strontium, silica, aluminum, borate and sodium ions
- Releases and recharges fluoride for caries prevention

Evaluation Highlights

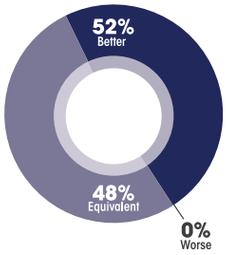
BEAUTIFIL Flow Plus X was evaluated by 27 consultants, with 645 total uses.

- Excellent handling properties
- Flowable, stackable and sculptable without slumping
- Versatile
- High strength
- Highly polishable and good esthetics

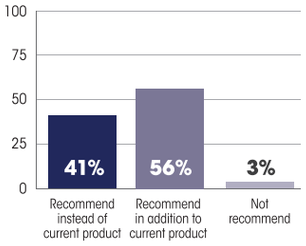
Key Features:



Compared to Competitive Products:



Percentage of Consultants Who Would:



BruxZir Solid Zirconia 6-Year Clinical Performance

98% overall rating

Glidewell Laboratories
glidewelldental.com

BruxZir #30

BruxZir Bridge #18-20

Description

A total of over 2450 ***BruxZir Solid Zirconia*** restorations have been placed and monitored over the past six and a half years. The restorations included single crowns, implant crowns and three-, four-, five- and six-unit bridges (Figure 1). The restorations were cemented with adhesive and self-adhesive resin cements.

Clinical Evaluation Protocol

1,383 ***BruxZir Solid Zirconia*** were recalled out of 2,450 total restorations placed. Among the recalled restorations, 47% had been in function for up to three years, 28% up to five years and 25% up to six or more years (Figure 2). The majority of restorations (67%) were fabricated by Glidewell Laboratories, while the remaining restorations (33%) were fabricated by Apex Dental Milling. These restorations were evaluated in the following areas: esthetics, resistance to fracture/chipping, resistance to marginal discoloration, wear resistance, and retention. They were rated on a scale of 1 to 5: 1 = poor, 2 = fair, 3 = good, 4 = very good, 5 = excellent.

Fig. 1: Distribution of ***BruxZir Solid Zirconia*** restorations at placement.

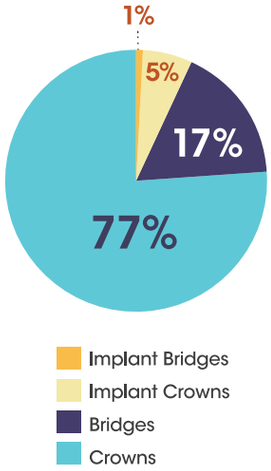
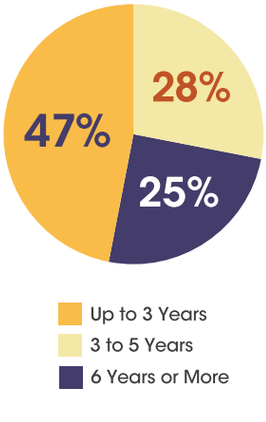


Fig. 2: Time in service for recalled ***BruxZir Solid Zirconia*** restorations.



Evaluators' Comments

- *"Nicest implant crown I have seen, with enough opacity to mask the metal abutment."*
- *"**BruxZir** has been a slam dunk restoration in my practice for almost six years with nice esthetics and no failures."*
- *"Just did a patient exam and she had two beautiful bridges - a five-unit bridge at 64 months and a four-unit bridge at 47 months."*
- *"I have been using **BruxZir** restorations for almost seven years and have not been disappointed, neither have my patients."*
- *"It gives me great pleasure to recall **BruxZir** restorations year after year and have such great outcomes."*

2019 Chicago Dental Society Midwinter Meeting

Dr. Robert Haraden and staff at the Chicago Midwinter Meeting show off their DENTAL ADVISOR Top Award banner for ***PinkBand.***

*"DENTAL ADVISOR put us on the map in a sea of dental products and helped us develop **PinkBand** even further with the feedback we received from researchers' comments."*

BruxZir Solid Zirconia 6-Year Clinical Performance (cont.)

Results at Six Years

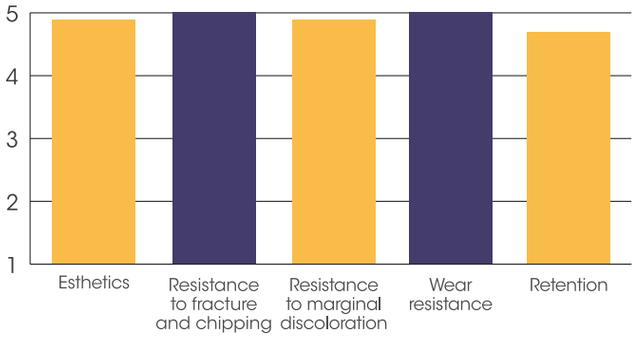
Esthetics

The esthetics of ***BruxZir Solid Zirconia*** restorations was excellent (Figure 3). This rating is based on the uniformity and consistency of the shades in comparison to other monolithic zirconia restorations. Zirconia restorations tend to be more opaque, but newer zirconias like ***BruxZir 16*** and ***BruxZir Anterior*** definitely exhibit greater translucency. Since many patients whiten their teeth, they actually like the opacity of zirconia.

Resistance to Fracture/Chipping

Chipping and fracture of ***BruxZir Solid Zirconia*** restorations have been practically non-existent (Figure 3). Only five single crown fractures have been observed, mainly due to insufficient clearance after tooth preparation. Having less than 1 mm clearance is not recommended for posterior teeth. Two, five-unit bridges fractured and were replaced with PFM bridges. In both cases, the clearance was minimal and the patients were heavy bruxers. Sufficient clearance is especially important in longer span bridges. Two additional crowns fractured after root canal treatment. It is advisable to use round, fine grit diamond burs to make the access opening.

Fig. 3: Results of ***BruxZir Solid Zirconia*** restorations at six years.



Resistance to Marginal Discoloration

Only eight (0.5%) of the ***BruxZir Solid Zirconia*** restorations exhibited slight marginal discoloration at the six year recall (Figure 3). The opacity of the crowns helps camouflage most staining and microleakage to a certain extent. Furthermore, microleakage is a function of the bonding agent and cement rather than the zirconia itself.

"BRUXZIR HAS BEEN A SLAM DUNK RESTORATION IN MY PRACTICE FOR ALMOST SIX YEARS WITH NICE ESTHETICS AND NO FAILURES."

Wear Resistance

Zirconia is a very wear resistant material and hardly any wear was observed on ***BruxZir Solid Zirconia*** crowns (Figure 3), while slight wear was observed on opposing enamel. More wear was noted on gold restorations when opposing zirconia crowns.

Retention

Ninety (3.7%) out of 2450 ***BruxZir Solid Zirconia*** restorations debonded and required re-cementation over the six-year recall period (Figure 3). This debonding rate is slightly higher when compared to non-zirconia crowns (2%) that DENTAL ADVISOR has documented over more than 20 years. It is advisable to prime zirconia crowns prior to cementation to improve retention. In fact, DENTAL ADVISOR observed that when primed, debonded crowns retained the cement on the internal surface of the crown but not on the tooth itself.

Conclusions

Over the six-year evaluation period, ***BruxZir Solid Zirconia*** has proven to be an excellent choice for all types of dental restorations because of its excellent esthetics and long-term dependability. It is highly recommended for crowns and bridges as well as implant-supported crowns and bridges.

DENTAL ADVISOR

At six years, ***BruxZir Solid Zirconia*** received a clinical performance rating of **98% +++++**

2019 Chicago Dental Society Midwinter Meeting

Deborah S. Laird, R.Ph. of Pierrel Pharma at the Chicago Midwinter Meeting displaying the DENTAL ADVISOR Preferred Product Award banner for ***GOCCLES.***

"The DENTAL ADVISOR rating lends credibility to the studies that we submitted for FDA approval. Having that clinical evaluation is very meaningful."

PRO-SYS VarioSonic Electric Toothbrush

+++++

EDITORS' DENTAL ADVISOR +++++ CHOICE

96% overall rating

PRO-SYS by Benco Dental
www.benco.com

Description

PRO-SYS VarioSonic Electric Toothbrush is a customizable, battery-operated electric toothbrush with five brushing intensities and a choice of five brush heads, resulting in 25 possible options for brushing. Several of the brush heads incorporate soft *DuPont Tynex* bristle filaments and microprocessor-controlled motion to deliver deep cleaning together with total comfort. The brush head movement offers optimized rotational velocity and dynamic motion. The brush heads are available in *Normal Soft* for healthy gums; *Extra Soft* with shorter bristles and a gentle curvature; *Hybrid Soft* with two types of bristle fibers to reach deeper between teeth; *Ultra Soft* with longer, curved bristles; and *Feather Soft* for sensitive teeth and gums. The five brushing intensities range from Mode 1 (most sensitive) to Mode 5, which is the strongest brushing intensity and designed for everyday cleaning of healthy teeth and gums. This brush also incorporates an automatic timer that guides patients through each quadrant of the mouth in brushing for the optimal length of time. Each brush includes five different brush heads, a power cord with USB, charging dock, travel case, and instructions for use.

Unique Features

- Five brush heads ranging from Normal Soft to Feather Soft
- Five brushing intensities to choose from
- Automatic timer to guide patients in brushing each quadrant
- Clinical-level oral hygiene without exerting excess pressure
- Fully-charged battery lasts up to 1 month

Evaluation Highlights

PRO-SYS VarioSonic Electric Toothbrush was evaluated by 13 consultants and 36 patients with a total of 1,802 uses.

- Five brushing intensities
- Five soft brush heads
- Automatic timer.

"WAS MORE COMFORTABLE TO HOLD AND EASIER ON MY GUMS THAN MY NORMAL BRUSH."

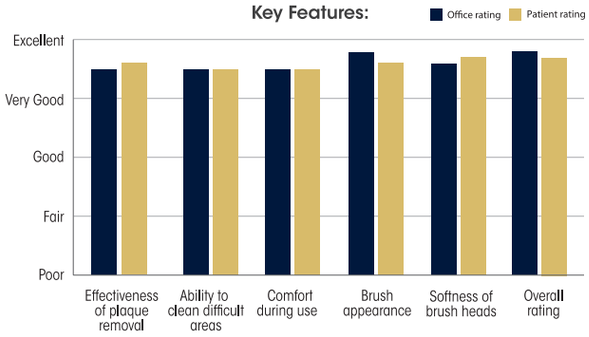
Patients' Comments

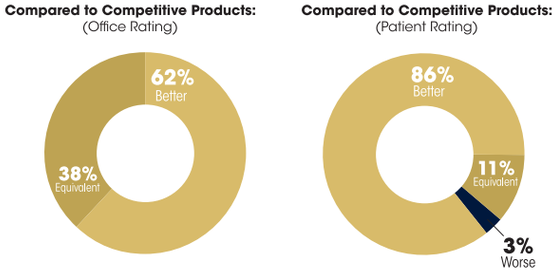
- *"Held its charge for my 10-day trip!"*
- *"Quieter than my Sonicare."*
- *"Lightweight with calm vibrations."*
- *"I was able to easily reach my back teeth."*
- *"You have to push through all the intensities if you need to turn it off before the timer is up."*

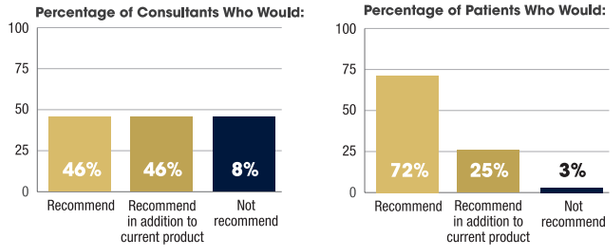
"VERY NICE BRUSH. IT WORKS WELL, IS QUIET AND EASY TO USE."

Evaluators' Comments

- *"I have used Sonicare and Oral-B and this battery outlasts them all!"*
- *"I liked the option of five intensities."*
- *"Definitely feels better than Sonicare or Oral-B."*
- *"The sonic noise bothered me."*
- *"I wish it had a pressure sensor and maybe a wave/massage function."*







CALAJECT

++++ ½

91% overall rating

Aseptico
www.aseptico.com

Description

CALAJECT is a computer-assisted local anesthesia device designed to help the clinician administer pain-free injections. The system controls the flow rate of the local anesthetic, delivering it smoothly and gently. The handpiece is designed to be vibration-free, tactile, and uses standard needles and anesthetic carpules. Its light pen grip provides a relaxed working position and good finger support. The control unit has a separate foot control and user-friendly touch controls. It displays the injection pressure, includes auditory signals indicating the flow rate, and incorporates an automatic shut-off for situations with excessive resistance. The carpule is visible during use, and easing pressure applied to the foot control provides for automated aspiration. ***CALAJECT*** is available in a kit containing one handpiece, a stand for the handpiece, a foot control, six cartridge barrels, and a charger.

Unique Features

- Vibration-free, tactile handpiece
- User-friendly touch controls
- Display of actual injection pressure
- Auditory signals indicating anesthetic flow rate
- Automated aspiration and automated shut-off

"SIMPLE CONCEPT, GREAT ERGONOMICS WITHOUT THUMB PAIN OR CONTORTION."

Evaluators' Comments

- *"Easy to see the remaining anesthetic, and listen to the auditory beep for speed/pressure."*
- *"I really liked the small footprint and high-tech look of the unit."*
- *"Easy to set up and load/unload."*
- *"No extra disposable tubing to deal with."*
- *"Every single patient loved it."*
- *"Injections take longer time in fast mode than from a standard syringe."*
- *"Modes 2 & 3 did not give me the flexibility to switch speed fast enough."*
- *"Some patients stated that they felt no difference with the **CALAJECT** compared to a syringe."*

Indication

- Procedures requiring local anesthesia delivery

Clinical Tips

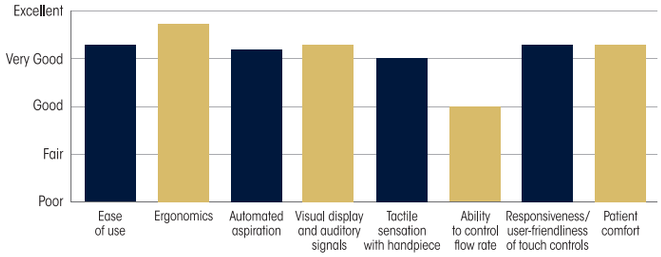
- Be patient, it's not as fast as a traditional injection technique. Technique mirrors the recommended injection times from academic sources, slower than in most clinical environments.
- Process gets easier after 10 to 15 uses.
- Still use topical/benzocaine prior to use.
- Adjust the volume of the "beep" so it is not too loud or distracting for the patient, and make sure that the cords are appropriately placed to prevent catching on the patient, doctor or assistant.
- The unit has to be set up in the right place to be efficient, and it takes time to re-load carpules for the doctor.

Evaluation Highlights

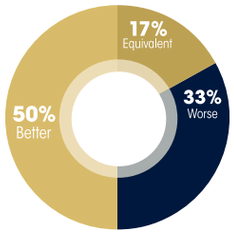
CALAJECT was evaluated by six consultants and used 153 times in total.

- Ergonomic unit with small footprint
- Good visual displays and auditory signal
- Controls flow of local anesthetic
- Automated aspiration

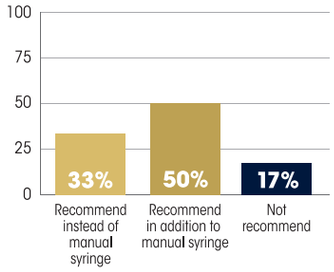
Key Features:



Compared to Competitive Products:



Percentage of Consultants Who Would:



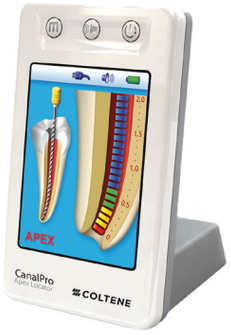
CanalPro Apex Locator

+++++

COLTENE
www.coltene.com

EDITORS' CHOICE DENTAL ADVISOR +++++

96% overall rating



Description

CanalPro Apex Locator is a digital device that indicates when an endodontic file reaches the apical foramen of the root canal. Measurements are made using high- and low-frequency AC signals and the impedance of the area of the canal is obtained during advancement of the file inside the root canal. The file position relative to the apex is then calculated using a proprietary software algorithm and displayed on the colored 3D panel screen. The Virtual Apex Function allows the clinician to mark a predetermined distance from the apex prior to measurement, with clear visual and audio notification once the file tip has reached the selected mark. ***CanalPro Apex Locator*** is designed to be user-friendly and ergonomic, incorporating audio feedback with volume control, a built-in demo mode, rechargeable battery, and automated off function after five minutes of non-use. It can be used under wet and dry conditions. ***CanalPro Apex Locator*** is available together with a charger, measuring cable, touch probe, two file clips, and five lip clips. Measuring cables, chargers and rechargeable batteries can also be purchased individually. File clips and touch probes are available in packs of two, and lip clips in packs of five.

Indication

- Root canal therapy

"THIS IS AN AMAZING APEX LOCATOR. THE VISUALS MAKE FINDING THE CANAL LENGTH SO EASY."

Evaluators' Comments

- *"Easy to use, accurate and reliable."*
- *"One can never get canals completely dry. I like not having to worry about that."*
- *"Great clip for holding the file."*
- *"I didn't have to move my file apically and back a few times to get a solid reading."*
- *"The visual display is excellent. Love the color display side by side graphics."*
- *"After a few procedures I came to have complete faith in the accuracy of the readings."*
- *"Love that it also gives you a reading beyond the apex."*
- *"Seemed to be very effective in moist conditions."*
- *"User friendly and compact."*
- *"Not good with metal restorative materials nearby."*
- *"The clip cord is too short to place this device on a counter top adjacent to the dental chair."*
- *"The file holder could be a little smaller."*
- *"A little difficult and some inaccuracy in wet canals."*

Unique Features

- Ergonomically designed
- Built-in demo mode and self-test
- Can be used under wet or dry conditions
- Includes audio feedback with volume control
- 3D color display with animation, showing the movement of the file in the root canal
- No need for signal filtering or noise elimination
- Signal intensity calculates the file tip position, making the measurement immune to electromagnetic interference

Clinical Tips

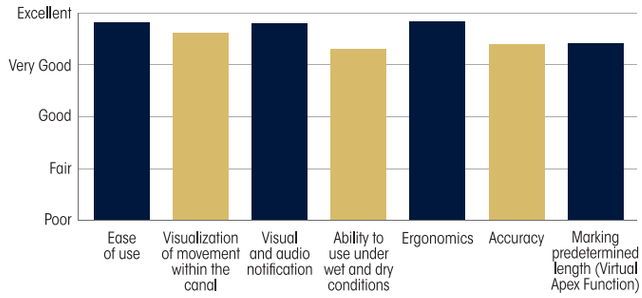
- Once a reading of apex is reached, ensure the reading moves up and down consistently with the file.
- Use a longer file than normal in order to have enough length to measure.
- Learn the audio 'beep pattern' so you don't need to look up at the display while working.
- The touch attachment really comes in handy when the file stopper is close to the handle and in a tight space like second molars.

Evaluation Highlights

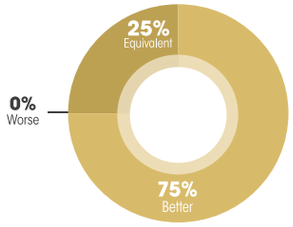
Canal Pro Apex Locator was evaluated by 20 consultants and used 316 times in total.

- Easy-to-use, accurate and reliable
- Excellent 3D visual display
- Allows marking to a pre-determined length
- Compact
- Ergonomic

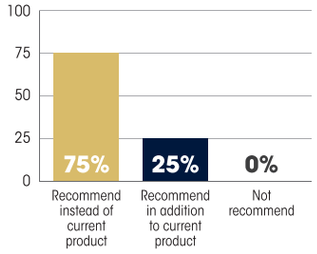
Key Features:



Compared to Competitive Products:



Percentage of Consultants Who Would:



OMNICHROMA

++++ ½

Tokuyama
www.tokuyama-us.com

EDITORS' DA DENTAL ADVISOR ++++ ½ CHOICE

94% overall rating

Description

OMNICHROMA is a universal, radiopaque, one-shade, resin-based composite. It incorporates Smart Chromatic Technology, a unique technology based on fillers that generate red-to-yellow structural color. As a result, the cured composite blends with the surrounding tooth structure of almost any patient. The composite contains uniform supra-nano spherical fillers and round fillers, fabricated with silicon dioxide and zirconium dioxide. Prior to light curing, the paste is opaque-white and transforms upon curing to blend with the surrounding tooth structure. For large Class III and IV restorations, a thin layer of ***OMNICHROMA BLOCKER*** can be applied on the lingual aspect of the preparation to prevent shade matching interference from the oral cavity. It can also be used to mask staining or to restore a highly opaque tooth, maintaining the ability of the composite to match the surrounding tooth structure. ***OMNICHROMA*** is available in syringes and pre-loaded tips (PLTs).

Unique Features

- Smart Chromatic Technology, with supra-nano spherical fillers and round fillers
- One shade matches all tooth shades from A1 to D4
- High compressive and flexural strength
- High polishability and luster
- Low polymerization shrinkage
- Wear- and acid-resistant
- ***OMNICHROMA BLOCKER*** masks stains in the oral cavity in large Class III and IV preparations

"ONE AND DONE. BLENDS IN A WIDE VARIETY OF SHADES AND ELIMINATES THE NEED TO CHOOSE ONE."

Evaluators' Comments

- *"The transition from opaque-white to tooth shade blending after curing is amazing."*
- *"Creamy consistency, stacks well and handles beautifully."*
- *"Easy to pack. Did not stick to instruments or pull away from the tooth during placement."*
- *"90% of the time, a perfect shade. Other times, the value was neutral or slightly translucent."*
- *"This concept could be a real game changer for everyday dental restorations."*
- *"Not well suited for extreme white (bleach) shades."*
- *"Somewhat opaque after curing, and it needs to be more radiopaque."*

Indications

- Anterior and posterior direct composite restorations
- Composite and porcelain repairs
- Direct, resin-bonded veneers
- Diastema closures

Clinical Tips

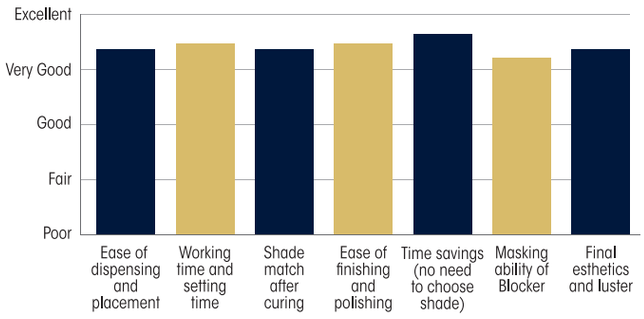
- Shield the material from the headlamp to prevent premature curing.
- Proper bonding procedure is vital for shade matching to work correctly.
- Incisal edges are tricky. This product is excellent in certain areas, not so much in others.
- The best product to fill in crowns with endo holes. The ***BLOCKER*** masks the metal and the resin matches nicely.

Evaluation Highlights

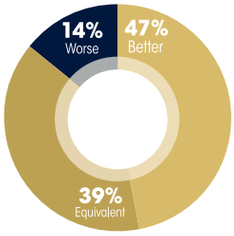
OMNICHROMA was evaluated by 36 consultants and used 757 times in total.

- One-shade composite that cures to match all shades from A1 to D4
- No need to match shades, saving time
- ***BLOCKER*** available to mask stains in the oral cavity
- Wear-resistant and acid-resistant

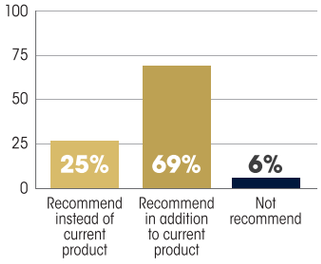
Key Features:



Compared to Competitive Products:



Percentage of Consultants Who Would:



Microflex® NeoSoft™ Gloves

++++

Ansell
www.ansell.com

87% overall rating

Description

Microflex® NeoSoft™ Gloves are single-use, disposable ambidextrous examination (medical) gloves. They are made of neoprene, latex-free, and designed to offer excellent comfort and softness, while providing protection for dental healthcare personnel during nonsurgical patient procedures. The *HYDRASOFT™* technology incorporated into the gloves helps to rehydrate dry and cracked skin and to improve skin condition. In addition, the gloves are ultra-lightweight for enhanced tactile sensitivity and incorporate textured fingertips for reliable grip in a wet environment. ***Microflex NeoSoft Gloves*** are available in extra-small, small, medium, large, and extra-large sizes - 100 gloves per box.

Clinical Tip

- You may want to order a size up from your usual glove size.

Indication

- Nonsurgical patient procedures

"EXCELLENT FIT—NON-SLIP AND GOOD TACTILE SENSATION."

Evaluators' Comments

- *"Soft, comfortable and very easy to put on."*
- *"Size seemed a little large. Nice fit when I tried the small size, I normally use a medium."*
- *"They felt great! They were soft and supple, not sticky or hot."*
- *"Long, stretchy, lightweight and strong."*
- *"These gloves helped to reduce skin irritation."*
- *"Our staff is anxious to buy them."*
- *"They did not fit well in the palm area. Not a good fit at the cuff."*
- *"We didn't notice much fingertip texturing, but the instruments didn't slip."*
- *"Made my hands sweat."*
- *"They tore easily. The first two gloves I tried tore at the same place on the index finger along a seam before even using them. "*
- *"My assistants complained of a bad smell when the gloves were removed. They did not seem to have an odor prior to wearing them."*

Unique Features

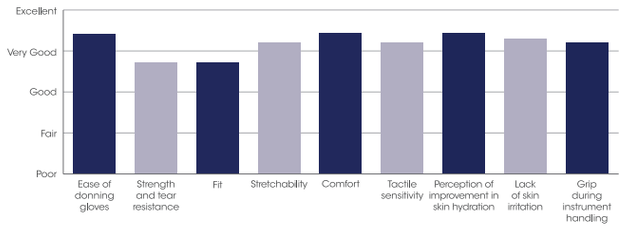
- *HYDRASOFT* Technology rehydrates dry and cracked skin and improves overall skin condition
- Ultra-lightweight design for enhanced tactile sensitivity
- Neoprene gloves
- Textured fingertips for a secure, reliable grip
- Soft texture

Evaluation Highlights

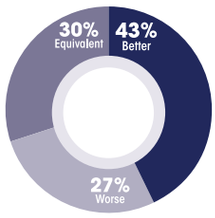
Microflex NeoSoft Gloves were evaluated by 40 consultants, with a total of 1,481 uses.

- Easy to don, soft and comfortable
- Lightweight and good tactile sensitivity
- Good stretchability
- Non-slip

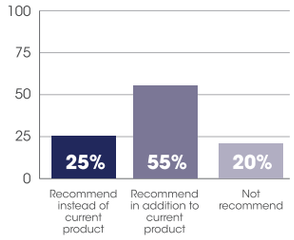
Key Features:



Compared to Competitive Products:



Percentage of Consultants Who Would:



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