

THE DENTAL ADVISORTM

"Improving Patient Care Through Research & Education"



Photography by John W. Farah, D.D.S., Ph.D., Ann Arbor, Michigan

Composite Cores

Advances in resin composite technology, along with the increased strength of dentinal adhesive systems, have made composite cores the material of choice for rebuilding and strengthening broken-down teeth before placement of an extra-coronal restoration. Esthetics, ease of placement, immediate crown preparation, high strength, and direct bonding to tooth structure are some of the benefits of using composite cores.

Today, there are many composite core buildup materials available to the dentist with a variety of features to consider, such as packaging, delivery technique, curing mode, availability of accessories, and cost. This issue of THE DENTAL ADVISOR compares nine features of 31 composite core materials.

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Composite Cores

Mode of Delivery

Many composite core materials utilize an automix delivery system, eliminating the need for hand mixing and ensuring a fast, homogenous mix. Dual-barrel syringes, automix cartridges, and unit-dose capsules allow direct placement onto tooth preparations. Other systems, supplied in tubs and syringes, can be loaded into small syringes for delivery after hand mixing.

Viscosity

Preferences for viscosity vary depending on the size and needs of the restoration. Most composite core materials come in a low to medium viscosity, allowing for flow into undercuts and in and around pins and posts. Higher viscosity materials may be useful for larger core buildups, where instrumentation and formability is desired.

continued on page 4

Product	Company	Packaging	Shades
Absolute Dentin	Parkell	Cartridge	3
ALPHA-CORE DC	Dental Technologies	Cartridge	3
BIS-CORE	Bisco	Syringe	2
Build-It FR	Pentron Clinical Technologies	Cartridge, Dual-barrel syringe	5
Clearfil CORE	Kuraray America	Tub	1
Clearfil DC CORE Automix	Kuraray America	Dual-barrel syringe	2
Clearfil PhotoCore	Kuraray America	Syringe	1
Clearfil PhotoCore PLT	Kuraray America	Unit-dose	1
CompCore AF Dual-Cure	Premier	Cartridge	3
CompCore AF SyringeMix Stack	Premier	Dual-barrel syringe	3
CORE-FLO	Bisco	Syringe, Tub	2
CoreRestore2	SDS/Kerr	Syringe	3
ENCORE AF	Centrix	Tub	2
ENCORE D/C Automix	Centrix	Cartridge	2
FluoroCore 2	DENTSPLY Caulk	Dual-barrel syringe	2
FormCore DC	J. Morita use	Dual-barrel syringe	1
HardCore	Pulpdent Corporation	Tub	1
LIGHT-CORE	Bisco	Syringe, Unit-dose	2
LuxaCore Automix Dual	Zenith Dental/DMG	Cartridge	3
LuxaCore Dual Smartmix	Zenith Dental/DMG	Dual-barrel syringe	3
MultiCore Flow	Ivoclar Vivadent	Cartridge	3
MultiCore HB	Ivoclar Vivadent	Syringe	3
ParaPost ParaCore	Coltène/Whaledent	Cartridge	2
ParaPost ParaCore Automix 5ml	Coltène/Whaledent	Dual-barrel syringe	2
RapidCore 50ml/RapidCore 25ml	Centrix	Cartridge	3
Rebilda DC	VOCO	Cartridge, Dual-barrel syringe	3
ROCK CORE	Danville Materials	Cartridge	1
SuperCure/SuperCure-Q*	Centrix	Unit-dose	2
Ti-Core Auto E	Essential Dental Systems	Dual-barrel syringe	1
Ti-Core Auto White	Essential Dental Systems	Dual-barrel syringe	1
Ti-Core Natural	Essential Dental Systems	Syringe, Tub	2

THE DENTAL ADVISOR Recommends:

Clearfil PhotoCore PLT (97%), LuxaCore Automix Dual (97%), LuxaCore Dual Smartmix (97%), ParaPost ParaCore (96%), Rebilda DC (96%)



Clearfil PhotoCore PLT
(Kuraray America)



LuxaCore Dual Smartmix
LuxaCore Automix Dual
(Zenith Dental/DMG)



ParaPost ParaCore
(Coltène/Whaledent)



Rebilda DC
(VOCO)

Fluoride	Cure	Flexural Strength, MPa	Flexural Modulus, GPa	Compressive Strength	Cost/ml	Rating
Yes	DC	Medium	Medium	High	\$1.98	na
Yes	DC	Med-High	Medium	Med-High	\$3.30	88%
No	DC	Med-High	High	High	\$9.40	na
Yes	DC	Med-High	Medium	High	Cartridge: \$3.52/ml; Dual-barrel syringe: \$3.75/ml	91%
No	SC	Medium	Med-High	High	\$4.89	na
No	DC	High	Med-High	High	\$13.88	ce
No	LC	High	High	High	\$12.99	92%
No	LC	High	High	High	\$18.81	97%
Yes	DC	Medium	Medium	Med-High	\$5.50	92%
Yes	DC	nt	nt	nt	\$9.80	ce
No	SC	Medium	Medium	Med-High	Syringe: \$7.44/ml; Tub: \$5.37/ml	87%
No	DC, LC	nt	nt	nt	\$19.18	na
Yes	SC	Low-Med	Medium	Med-High	\$7.11	na
Yes	DC	Medium	Low-Med	Med-High	\$3.80	na
Yes	DC	Med-High	Medium	High	\$14.94	na
No	DC	Med-High	Low-Med	High	\$11.98	ce
Yes	DC	nt	nt	nt	\$4.50	na
No	LC	Medium	Med-High	High	Syringe: \$9.42/ml; Unit-dose: \$16.26/ml	na
Yes	DC	Medium	Medium	Med-High	\$6.14	97%
Yes	DC	Med-High	Medium	Med-High	\$11.38	97%
Yes	DC	High	Med-High	High	\$6.35	94%
Yes	DC	Low-Med	High	Med-High	\$14.42	94%
Yes	DC	High	Medium	High	\$6.70	96%
Yes	DC	Medium	Medium	High	\$9.34	92%
Yes	SC	nt	nt	nt	25 ml: \$6.17/ml; 50 ml: \$4.89/ml	na
Yes	DC	Med-High	Low-Med	High	Cartridge: \$4.97/ml; Dual-barrel syringe: \$10.89/ml	96%
No	DC	nt	nt	nt	\$5.60	na
No	LC	Medium	Med-High	Med-High	\$18.44	94%
Yes	DC	Low-Med	Medium	Medium	\$10.83	91%
Yes	DC	Low-Med	Medium	Medium	\$10.89	na
Yes	SC	Low-Med	High	Med-High	\$8.15	89%

Property Test Results

Flexural strength, flexural modulus, and compressive strength are shown in the comparative table as ranges. The scales for the ranges are as follows:

Flexural Strength:

High: >140 MPa
Med-High: 120-139 MPa
Medium: 100-119 MPa
Low-Med: <100 MPa

Flexural Modulus:

High: >12 GPa
Med-High: 10-12 GPa
Medium: 7-10 GPa
Low-Med: <7 GPa

Compressive Strength:

High: >250 MPa
Med-High: 220-249 MPa
Medium: 180-219 MPa
Low-Med: <180 MPa

*Fast setting version

DC = dual-cured
LC = light-cured
SC = self-cured
ce = currently evaluating
na = not available
nt = not tested

EDITORS' NOTES: Only products evaluated by THE DENTAL ADVISOR have a rating listed and are eligible for listing as a recommended product. Some table information provided by manufacturers. Costs are listed for comparison only and are not used to calculate the ratings.

Composite Cores *continued*

Method of Placement

Size and location of core buildups influence the placement technique used by the clinician. To save time with fewer adjustments for larger buildups, core forms and matrix bands may be used. Core forms are also helpful in rebuilding teeth in the esthetic zone. For smaller buildups, including closing endodontic access openings, hand instrumentation may be sufficient.

Compatibility with Bonding Agents

Composite core materials are available as light-, self-, or dual-cured products. It is best to use the bonding agent recommended by the manufacturer. Generally, dual- or self-cured composite cores require dual- or self-cured bonding agents. Light-cured composite core materials provide optimum bond to tooth when light-cured bonding agents are used.

Color

Most composite core materials are offered in a variety of shades. In the posterior and subgingival areas of the mouth, where clear distinction between tooth and core material is desired, use of a contrasting color such as blue, gold, gray, or opaque white is indicated. In the anterior region, where esthetics is a concern, tooth-colored shades are ideal.

Fluoride Release

Most composite core products on the market release fluoride to help reduce demineralization or prevent secondary caries.

Retention

In the past many dentists used self-threading pins for retention, which have been shown to produce dentinal crazing, adversely affecting the integrity of the tooth. More recently, dentists have reduced their use of pins and rely more on the increased strength of bonding agents in conjunction with the use of retentive slots and grooves cut into tooth structure.

Accessories

The accessories included in a composite core kit vary considerably among products. Some kits may only include the composite, while more complete kits may include a bonding agent, mixing gun and core forms.

Clinical Tips

- If placing a post and core, the most important antirotational feature is a ferrule added circumferentially around the buildup, at least 1 to 2 mm in height.
- If a composite core material is being used for post cementation, use a self- or dual-cured bonding agent.
- To save material and ensure good margin visibility, place the composite core material after the tooth has been prepared for a crown.
- For large cores, build incrementally, curing each layer to allow the material to be stacked.
- When using intraoral tips in the canal before post placement, use slow, steady pressure as the tip is moved from an apical to a more coronal position to allow for the escape of trapped air.
- For the best results in deep dentin, use a dual-cure bonding agent.
- **Luxacore Smartmix Dual** is ideal for easy posterior placement. It has a compact, dual-barrel syringe delivery system and flows and adapts well to the tooth surface. ■

Other Featured Products



Build-It FR
(Pentron Clinical Technologies)



Clearfil CORE
(Kuraray America)



Clearfil DC CORE Automix
(Kuraray America)



**ParaPost ParaCore
Automix 5ml**
(Coltène/Whaledent)

Esthetic Posts

The use of metallic posts in the restoration of endodontically treated teeth has been a mainstay in dentistry. However, metallic posts have several clinically significant deficiencies. A dark shine-through effect may be evident when using metallic posts and cores. Metallic posts may also cause discoloration of the surrounding tissues due to corrosion products. The advent of non-metallic posts addresses these concerns. Carbon and glass fiber-reinforced posts have been developed with stiffness values closer to that of human dentin. Esthetic posts made from glass or quartz fiber allow improved esthetics when all-ceramic crowns are to be placed. With the wide range of non-metallic posts being introduced and used in clinical dentistry, it is important to understand the properties of these materials and their limitations.

Selection

Selection of an esthetic post depends on the requirements of the tooth. The basic function of a post is to provide sufficient retention for a core and/or crown and in some instances to provide lateral resistance for a tooth to masticatory forces, preferably without causing root fracture. While both metallic and non-metallic esthetic posts can provide sufficient retention, the resistance to lateral forces is different. Metallic posts are typically stiff and place more stress on the root structure. Non-metallic esthetic posts have stiffness closer to dentin, thereby minimizing the risk of root fracture. However, with insufficient coronal tooth or a small ferrule, the non-metallic esthetic posts may not provide adequate resistance to lateral forces, resulting in crown debonding, core fracture, or post failure. It is particularly important for anterior teeth

with little coronal tooth and posterior teeth with heavy occlusal forces to select a stiffer post. The post selected should have a root length at least as long as the coronal tooth height to be restored.

Retention

Retentive heads allow for better retention of a core, particularly for those teeth with shorter crowns. The diameter of a post has little effect on its retention; and, therefore, the diameter selected should be as closely matched to the canal size as possible without unduly widening the canal. Systems with more available diameters provide a better selection for matching different canals. Although parallel posts provide better retention than tapered posts, use of a resin cement to increase retention makes tapered posts a viable option. In cases where a significant portion of the canal is compromised, a tapered post may be a more conservative option.

Radiopacity

Knowing the radiopacity of the post is critical since follow-up radiographs need to be interpreted correctly to identify esthetic posts. Posts that are more radiopaque are preferable, although the use of a radiopaque cement may aid in post identification.

Cost

The cost of esthetic posts varies widely, but in general it is 1.5 to 2 times that of traditional pre-fabricated metal posts.

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Featured Products



Peerless Post
(SybronEndo)



Core-Post
(Den-Mat)



D.T. Light-Post
(Bisco, Inc.)



FibreKleer
(Pentron Clinical Technologies)



ParaPost Fiber LUX
(Coltène/Whaledent)



Snowlight
(Abrasive Technology)

Esthetic Posts *continued*

Bonding

Esthetic posts should typically be bonded with either self- or dual-cured resin cement. Eugenol-based endodontic sealers inhibit the set of resin cement; therefore, a non-eugenol sealer should be used when the placement of an esthetic post is anticipated. The apical portion of the post space should be accessed for etching and priming by special microbrushes designed for post spaces. If dual- or light-cured resin cement is to be used (only with specific systems that transmit light), the cement should be cured for a minimum of two minutes to ensure setting at the apical portion.

Clinical Tips

- If possible, the length of the post within the canal should be at least as long as the coronal tooth height to be restored.
- Select a post diameter as closely matched to the canal size as possible without unduly widening the canal.
- Select a stiffer post for anterior teeth with little coronal tooth and posterior teeth with heavy occlusal forces.
- Use resin cement to increase retention of tapered posts.
- Use posts with adequate radiopacity. ■

Product	Company	Material
3M ESPE RelyX Fiber Post	3M ESPE	Glass
ACHROMAT	AXIS Dental	Glass
ACHROMAT-T	AXIS Dental	Glass
Core-Post	Den-Mat	Glass
DentinPost	Komet use	Glass
DentinPost X	Komet use	Glass
D.T. Light-Post	Bisco	Quartz
FibreKleer	Pentron Clinical Technologies	Glass
FibreKor Post	Pentron Clinical Technologies	Glass
FRC Postec Plus	Ivoclar Vivadent	Fiber-reinforced composite
GF Glass Fiber Post	J. Morita use	Glass
GT Fiber Posts	DENTSPLY Tulsa Dental Specialties	Fiber
ICELight	Danville Materials	Glass
ICEPost	Danville Materials	Glass
Luscent Anchors	Dentatus	Resin fiber
Mirafit White	Hager Worldwide	Glass
ParaPost Fiber LUX	Coltène/Whaledent	Glass
ParaPost Fiber White	Coltène/Whaledent	Glass
ParaPost Taper LUX	Coltène/Whaledent	Glass
Peerless Post	SybronEndo	Glass
Snowpost and Snowlight	Abrasive Technology	Glass
Twin Luscent Anchors	Dentatus	Resin fiber

ADA ANNUAL SESSION

THE DENTAL ADVISOR invites you to join us at the 148th ADA Annual Session in San Francisco, September 27-29, 2007. Visit us at booth #1437 for the unveiling of our new website and register to receive a **FREE 1-year online subscription!** Learn how to find clinical evaluations, customize comparative tables, and search our database! The new website will also include long-term clinical reports and research reports, access to archives of past issues, a manufacturer directory, and course listings for the Education Center. Stop by for complimentary copies of the latest issues, including Buyers' Guides and the 2007 Preferred Products issue. Learn more about our Biomaterials Research Center, our Education Center, and our exciting new plans for the future. We look forward to seeing you in San Francisco!



Shape*	Tapered End	Vented	Retentive Head	Color-coded	Drill-matched	Diameters Available	Lengths Available	Cost**	Rating
Parallel	•			•	•	3	1	\$10.30	95%
Parallel		•	•		•	3	4	\$9.99	na
Tapered	•	•	•		•	3	4	\$9.99	na
Parallel	•					5	1	\$11.43	91%
Tapered	•			•	•	4	1	\$9.97	na
Tapered	•		•	•	•	4	2	\$10.06	na
Tapered	•			•	•	4	1	\$9.89	92%
Parallel, serrated, tapered	•	•	•	•	•	3*	2	\$7.10	na
Parallel			•	•	•	6	1	\$6.30	91%
Tapered	•				•	2	1	\$13.40	91%
Parallel	•				•	4	1	\$4.83	na
Passive parallel				•	•	3	1	\$8.90	na
Parallel	•			•	•	4	1	\$8.89	na
Parallel	•			•	•	4	1	\$8.89	na
Parallel	•			•	•	3	1	\$8.93	na
Tapered	•					3	1	\$5.08	na
Parallel			•	•	•	6	1	\$10.82	97%
Parallel			•	•	•	4	2	\$11.17	92%
Tapered	•		•	•	•	4	1	\$10.82	na
Tapered	•		•	•	•	4	1	\$10.99	na
Parallel	•			•	•	4	1	\$9.97	91%
Parallel with tapered midsection	•	•		•	•	3	1	\$9.46	na

*Each shape has three sizes

**Cost per post; includes the cost of accessories in the packaging

EDITORS' NOTES: Only products evaluated by THE DENTAL ADVISOR have a rating listed. Costs are listed for comparison only and are not used to calculate the ratings. Some table information provided by manufacturers.

ASSISTANT EDITOR PROFILE

Sabiha S. Bunek, D.D.S.

Dr. Bunek, who was born and raised in Ann Arbor, chose the University of Michigan School of Dentistry because of its excellent professional training and her affection for the diversity and vibrancy of her hometown. She joined Enspire Dental in 2006. Her career is devoted to promotion of proper dental care and alleviating patient anxieties about dental treatment. She applies her creativity and aesthetic principles to leading-edge cosmetic and restorative dentistry. And she regularly expands her expertise through her work as an assistant editor of THE DENTAL ADVISOR and continuing education courses. Away from the office, Dr. Bunek enjoys the outdoors, cooking, yoga, decorating, and traveling with her husband. Dr. Bunek is also a member of the American Academy of Cosmetic Dentistry. ■



3M ESPE
800.634.2249
www.3MESPE.com

Description

3M ESPE RelyX Unicem Self-Adhesive Universal Resin Cement

is an encapsulated, dual-cured resin cement. It is self-adhesive, requiring no tooth surface preparation such as etching or priming. The cement is filled 72% by weight and contains fluoride. **RelyX Unicem** is available in two capsule sizes (*Aplicap* and *Maxicap*) in shades A1, A2, A3-opaque, white opaque, and translucent. It is indicated for the cementation of metal, PFM, ceramic and laboratory composite crowns, bridges, inlays, onlays, and metal or fiber posts. It is not recommended for the cementation of veneers. Working time is two minutes for the *Aplicaps* and 2.5 minutes for the larger *Maxicaps*. The *Aplicaps* have enough material to cement one to two restorations, whereas the *Maxicaps* have enough material for three to five restorations. This product received a 98% clinical rating.

Suggested Retail Cost

- \$109.00/*Aplicap* trial kit (20 *Aplicaps* + hardware)
- \$319.00/*Aplicap* introductory kit (50 *Aplicaps* + hardware)
- \$234.00/*Maxicap* introductory kit (20 *Maxicaps* + hardware)
- \$237.10/*Aplicap* refill (50 *Aplicaps*)
- \$100.80/*Aplicap* refill A1 and white opaque (20 *Aplicaps*)
- \$185.70/*Maxicap* refill (20 *Maxicaps*)



Consultants' Comments

- ▶ "After four years of use, RelyX Unicem continues to be the most widely used cement in our office."
- ▶ "Simple cement for fiber posts."
- ▶ "Very few debonds."
- ▶ "Reliable cement."
- ▶ "Very mild cement regarding sensitivity at cementation."
- ▶ "Remove excess cement before it is fully set."

RECALLED AT 4 YEARS

Distribution of Restorations Cemented with 3M ESPE RelyX Unicem Self-Adhesive Universal Resin Cement

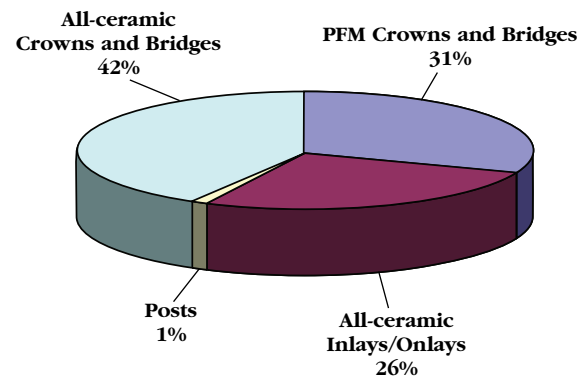


Figure 1

THE DENTAL ADVISOR

Venus flow + + + +

Heraeus
800.431.1785 • 914.273.8600
www.heraeus-kulzer-us.com

Description

Venus flow is a flowable, light-cured, hybrid composite containing 62% filler by weight. It is indicated for use as a base/liner; pit and fissure sealant; for Class V restorations; and minimally invasive Class I, II and III restorations. Shades available include A1, A2, A2.5, A3, A3.5, A4, B2, B3, OA2, SB1, SB2, SBO, T2, and base/liner white. This radiopaque composite is packaged with four, 1.8-g syringes of **Venus flow** in shades A1, A2, A3, and baseliner; 20 cannula tips; and accessories. **Venus flow** was evaluated by 33 consultants

in over 580 restorations. This product received an 88% clinical rating.

Suggested Retail Cost

- \$85.19/kit

Product Features

Consultants found the esthetics of **Venus flow** to be the most outstanding characteristic. It is easy to obtain a high quality finish with standard rotary instruments. The variety of shades is more than adequate for a flowable composite. Several consultants found that **Venus flow** was well suited as a liner for Class I and II restorations due to its



Clinical Evaluation Protocol

- More than 4,400 restorations have been cemented with **RelyX Unicem** over the past four years. These include all-ceramic inlays, onlays, crowns, bridges; PFM crowns and bridges; and posts (*Figure 1*).
- 1,560 restorations were available for recall.
- 230 of the recalled restorations were cemented for four years.
- Categories evaluated at recall include:
 - Postoperative sensitivity
 - Microleakage
 - Debonding

Clinical Observations

Postoperative Sensitivity

Since its introduction and subsequent monitoring over a four-year period, **RelyX Unicem** has had few reports of postoperative sensitivity. At four-year recall, 1.8% of patients reported occasional temperature sensitivity (*Figure 2*). Factors such as less manipulation of the prepared tooth and fewer steps for cementation may contribute to the low incidence of postoperative sensitivity.

Microleakage

Of the 1,560 restorations recalled, 4.2% had evidence of microleakage (*Figure 2*). One percent of the 1,560 restorations required replacement. Microleakage is exhibited by graying margins of all-ceramic restorations, resulting from improper isolation or improper pretreatment of the restoration. Microleakage can also result from excessive bruxism, causing compromise of the bond at the cervical margin and allowing the ingress of fluid and bacteria. The microleakage rate of

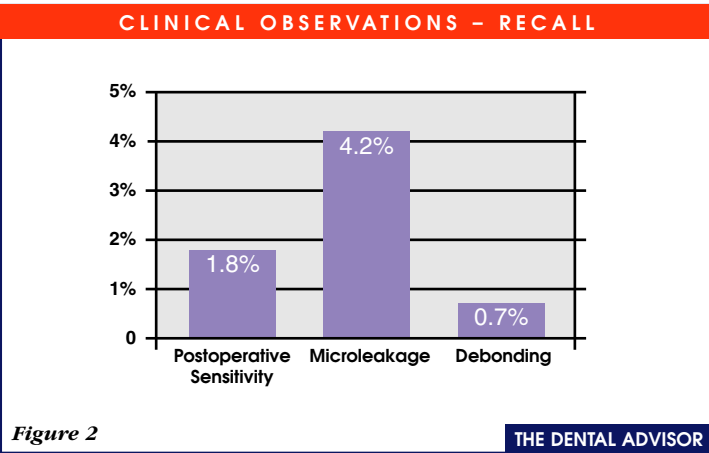
restorations cemented with **RelyX Unicem** is comparable to restorations cemented with a 5th-generation bonding agent and corresponding light- or dual-cured resin cement.

Debonding

A low debonding rate was documented over the four-year evaluation period. In over 4,400 restorations cemented with **RelyX Unicem**, 32 (0.7%) required re-cementation (*Figure 2*). These included 18 ceramic onlays, nine ceramic crowns, and five PFM crowns. Of the 18 ceramic onlays that debonded, 10 had little direct retention. In four of these debonding cases, a portion of the tooth fractured.

Summary

RelyX Unicem has proven to be an excellent and reliable self-adhesive resin cement in the four years since its introduction. ■



Consultants' Comments

- ▶ "Flow is great in a Class II box."
- ▶ "Good shade match and polishes well."
- ▶ "Express carefully to avoid extruding too much material."
- ▶ "I wish it were more radiopaque."
- ▶ "I would like to have a smaller cannula tip."

ease of flow and good adaptation to the preparation. For other situations, its viscosity is slightly too flowable; consultants would have preferred a more stackable formulation. The diameter of the cannula tip is larger than necessary, creating difficulties dispensing small amounts of material. Packaging is good, and

directions are concise and easy to follow. Several consultants reported having difficulty seeing the shade on the label and would like clearer markings. Seventy-three percent of consultants found **Venus flow** equivalent to or better than their current product. Fifty-six percent of consultants would switch to **Venus flow**, and 80% would recommend it to colleagues.

Clinical Tips

- Keep the cannula tip close to the surface receiving the composite to avoid creating a void.
- The base/liner material is a very opaque shade – do not use it in areas that may be visible. ■

Beyond™ Temporary Zinc Oxide Cement + + + + ½

Ada Products Company/Direct Dental Service
800.471.4411 • 800.342.5337
www.adaproducts.net
www.directdental-usa.com

Description

Beyond Temporary Zinc Oxide Cement is a non-eugenol cement for use with indirect temporary restorations. The material contains zinc oxide, strontium glass and methacrylates and does not inhibit setting of resin-based filling or luting materials. It is dispensed as a two-paste system from either a 25-ml automix cartridge or a 5-ml dual-barreled syringe, both with mixing tips. **Beyond Temporary Zinc Oxide Cement** has an opaque cream color, contains fluoride and is labeled as vanilla flavored. Working time is 45 seconds, and intraoral setting time is two to three minutes. Both the cartridge and syringe dispensing systems were evaluated by 29 consultants in over 560 procedures. This product received a 94% clinical rating.

Suggested Retail Cost

- \$63.95/cartridge kit
- \$25.45/syringe kit

Product Features

The convenient mixing and the dispensing of **Beyond Temporary Zinc Oxide Cement** directly into provisional restorations was recognized as the product's best quality. The automix feature results in homogenous cement and is especially convenient for multiple units to be cemented simultaneously. The viscosity of the material is low enough



Consultants' Comments

- ▶ "All the cement comes off with the temporary – the preparation is easy to clean."
- ▶ "Easy to mix – it is great to dispense directly into the temporary."
- ▶ "Thin film thickness and good flow."
- ▶ "The setting time is longer than I would like."

to allow easy seating of the temporary restoration. The setting time is long, but cleanup of set material is very easy. Like other zinc oxide temporary cements, the opaque color allows for easy identification during cleanup but is not optimal for highly esthetic anterior cases. Although the material was labeled as vanilla flavored, no scent or flavor was noted by patients or consultants. A few cases of postoperative sensitivity were noted. Fourteen percent of consultants reported lack of retention, resulting in temporary restorations requiring recementation. Overall, 82% of consultants reported the material to be equivalent to or better than their current temporary cement, 74% would switch to **Beyond Temporary Zinc Oxide Cement**, and 83% would recommend it to a colleague.

Clinical Tips

- For a cement-free preparation at removal, leave the tooth moist when cementing.
- Allow the cement to set for two minutes for easier cleanup. ■

TrollFoil + + + +

TrollDental use
800.537.8765 • 203.775.4342
www.trolldental.com

Description

TrollFoil is an articulating foil strip mounted on a blue plastic frame. The frame serves as both a handle and supporting rib, eliminating the need for separate forceps. The double-sided, 8-µm foil strip provides a blue marking area about 6 x 2 cm and is capable of marking natural and restored dental surfaces under wet or dry conditions. Repeated markings can be made with a single strip. **TrollFoil** is available in boxes of 500 and in a smaller version, **TrollFoil** "Mini", which is intended for marking one or two teeth. Thirty-two consultants used **TrollFoil** in over 1700 applications. This product received an 88% clinical rating.



Consultants' Comments

- ▶ "TrollFoil is great!"
- ▶ "I would like it without the built-in frame because I prefer using forceps."
- ▶ "I would like it in red."
- ▶ "The length of the foil is a little short. A longer size would reach second molars better."

Suggested Retail Cost

- \$64.00/box of 500

Product Features

TrollFoil is an excellent marking material, transferring well to enamel, dentin, amalgam, cast alloy, composite, and ceramic surfaces, whether wet or dry. The markings are

Avanté LED Curing Light + + + + ½

Pentron Clinical Technologies
800.551.0283 • 230.265.7397
www.pentron.com

Description

Avanté LED Curing Light is a cordless, high-power curing light that utilizes light-emitting diode (LED) technology. It provides a minimum of 1,000 mW/cm² and is compatible with materials containing camphorquinone photoinitiators.

Avanté offers the option of variable time settings: 10, 20 and 40 seconds and a one-second cure for tacking veneers and dual-cured resin cements. The lithium-ion battery provides portability while allowing full-power curing for up to 45 minutes.

Avanté is equipped with a safety feature that monitors the charging process to ensure that the battery is not overcharged or charged too quickly. This feature prevents degradation of the lithium-ion battery and helps maintain the light's performance. A light meter in the charger base allows the user to evaluate the performance of

the curing unit. Twelve consultants evaluated **Avanté** in over 345 clinical uses. This product received a 92% clinical rating.

Suggested Retail Cost

- \$999.00/unit

Equipment Features

Overall, consultants rated **Avanté** as a very good curing light. The small size, low weight, subdued noise level, and ability to access difficult areas of the mouth are the most outstanding features. All consultants found that **Avanté** was very effective when curing composites and bonding agents. Stability of the charger and assembly are both excellent. Several consultants found that using the **Avanté** to tack cure resin cements required no further curing to reduce the flowable characteristics of low-viscosity resin cements. The light does not over-cure cements during the tack-cure mode, making cleanup easy. According to most consultants, switching between time settings was not easy and the time settings were

inconvenient. Although the built-in light meter was a positive feature, most consultants did not use it often.

Clinical Tip

- Select the curing time before use. ■



Consultants' Comments

- ▶ *"Easy to get into tight spaces and quiet."*
- ▶ *"One-second tack cure works well."*
- ▶ *"I enjoyed the variety of tips included."*
- ▶ *"Takes too long to change time settings – plan on using one curing mode."*
- ▶ *"An included light shield would be very helpful."*

precise and well defined, resulting in easy-to-read indications of contact points and high spots. The color markings are easily wiped from dental surfaces, but tend to smudge on patients' lips and operators' gloves. The tear resistance, thinness, and ability to reuse/re-mark were impressive compared with similar materials. The frame maintains rigidity of the foil but does not have the strength to retract buccal tissues. For this reason some consultants preferred using forceps. The foil covers the frame on one side, obscuring the edge of the frame. This design leads to an occasional occlusion on the frame. Overall consultants found the concept of a built-in frame, eliminating the need for a separate holder, to be convenient. Sixty-eight percent of clinical consultants found **TrollFoil** to be equivalent to or better than their

current articulating paper or foil. Fifty percent would switch to **TrollFoil** and 61% would recommend this product to their colleagues.

Clinical Tips

- The unframed edge needs to be shallowly inserted at an angle to prevent incising on the frame.
- Dry the teeth for improved markings.
- For heavier marks on the teeth, coat the foil with petroleum jelly.
- Place foil in center of patient's mouth, as mouth closes the cheek will protrude away from teeth. Just before upper and lower arches touch, position foil between teeth. Instruct patient to bite down. ■

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Coltène/Whaledent, Inc.
800.221.3046 • 330.916.8800
www.coltenewhaledent.com

Description

AFFINIS PRECIOUS is an addition silicone wash impression material for use in conjunction with a putty or heavy-body material and independently for relining. The silver-colored light-body and gold-colored regular-body materials were designed to maximize the readability. Additionally, optimal flow properties were incorporated to help capture margin detail. Both provide a maximum working time of one minute and a minimum oral setting time of two minutes. The thermo-reactive formula of **AFFINIS PRECIOUS** was designed to use the warm intraoral temperature to cause a larger percentage of material to set in a shorter period of time once the tray with heavy body material has been seated. This may reduce the risk of distortion that can occur due to inadvertent movements of the impression. **AFFINIS PRECIOUS** is compatible with all dental stones and may be poured 30 minutes after taking the impression. The custom kit evaluated included two, 50-ml automix cartridges of both **AFFINIS PRECIOUS** light-body and regular-body materials; a 75-ml cartridge of **AFFINIS** heavy-body material; *Coltène Adhesive*; a dispenser gun; mixing tips; and intraoral tips. Twenty consultants used **AFFINIS PRECIOUS** in conjunction with **AFFINIS** heavy-body material to make more than 270 impressions. This product received a 95% clinical rating.

Suggested Retail Cost

- \$40.40/silver light-body single pack (two, 50-ml cartridges, 12 mixing tips)
- \$40.40/gold regular-body single pack (two, 50-ml cartridges, 12 mixing tips)



Product Features

The **AFFINIS PRECIOUS** kit evaluated included all materials needed to make impressions. Consultants appreciated the larger size cartridges of heavy-body **AFFINIS**. The viscosity and flow of the gold, regular-body wash is excellent, adequately covering the preparation and recording the marginal detail. The silver, light-body material has a lower viscosity and increased flow when dispensed around the preparation; however, when used in the maxilla, some consultants reported excessive flow and sagging. Consultants noted the high level of color contrast between the silver and gold colored wash and the caramel-colored heavy-body material. The concept of a thermoreactive material was intriguing to consultants as it pertained to the potential reduction in distortion that may occur during setting. The impressions are relatively easy to remove from the mouth and no tears were reported. No objections were noted to the taste or scent of the materials. Some consultants prefer a material that is less shiny, but the overall quality of the impressions was very good. In most cases, the reproduction of detail, lack of voids, and color contrast made the margins very easy to read. Sixty-six percent of consultants would recommend **AFFINIS PRECIOUS** to a colleague and found it equivalent to or better than their current impression material. Fifty-four percent would switch to **AFFINIS PRECIOUS**.

Clinical Tips

- Work quickly in the maxilla to avoid the light-body material running.
- With a thermo-reactive formula, ensure that tray loading and application of wash-material are completed at the same time. ■

Consultants' Comments

- ▶ *"The color contrast between the silver or gold wash materials and the caramel-colored heavy-body material was excellent."*
- ▶ *"Crowns all fit beautifully."*
- ▶ *"Good flow produced excellent detail and easy-to-read margins."*
- ▶ *"The silver light-body material is runnier than the gold and slumps in the maxilla."*
- ▶ *"The large heavy-body cartridge makes sense; we use much more heavy-body material each time we take an impression."*

MEDICOM, Inc.
800.361.2862 • 514.636.6262
www.medicom.com

Description

Duraflor is a 5% sodium fluoride varnish indicated for treatment of dental hypersensitivity, reduction of postoperative sensitivity, and prevention and control of caries. Each milliliter of **Duraflor** contains 50 mg of sodium fluoride, which is equivalent to 22.6 mg of fluoride ion. For the treatment of dentin hypersensitivity, two applications over several days are recommended for optimal results. **Duraflor** is available in 10-ml multi-dose tubes (bubblegum flavor), a newer unit-dose package of either 0.25-ml children's dose (bubblegum flavor), or 0.4-ml adult dose (raspberry flavor). The unit-dose package contains the varnish and a disposable brush in a blister pack and includes instructions for patient care after application. **Duraflor** was evaluated by 28 consultants in over 500 uses. This product received a 91% clinical rating.

Suggested Retail Cost

- \$29.50/0.25-ml 32-count kit
- \$31.00/0.4-ml 32-count kit
- \$140.00/0.25-ml 200-count kit
- \$145.00/0.4-ml 200-count kit
- \$26.95/10-ml tube

Product Features

The taste and scent of **Duraflor** were highly rated by consultants, hygienists, and patients. For young hygiene patients who cannot tolerate fluoride trays, this paint-on varnish provides an acceptable alternative. **Duraflor** was found by consultants to be highly effective in reducing sensitivity with a single application. The unit-dose



Consultants' Comments

- ▶ *"Very simple and easy to use."*
- ▶ *"Viscosity is similar to honey."*
- ▶ *"An excellent product for sensitivity – patients reported a dramatic decrease in sensitivity."*
- ▶ *"Duraflor worked great as a desensitizer after in-office whitening."*
- ▶ *"I would like to eliminate the yellow color and residue left on the patients' teeth."*
- ▶ *"Because the varnish is sticky, a residue tends to accumulate around the cap of the 10-ml tube."*

packaging was neater and easier to use than the 10-ml tube, and consultants liked the availability of two different package sizes. For single-tooth application, a small amount dispensed from the larger tube was preferred to avoid wasting material from a unit-dose package. Most consultants commented on the yellow color of **Duraflor**, some appreciated being able to see where they had applied the product, while others did not like sending their patients home with the yellow residue. The post-operative instructions were well received and helped explain home care to the patient. A few patients complained about the residue remaining on the teeth after application and that they had to manage home care after application. Ninety-three

percent of consultants found **Duraflor** to be equal or better than the current product that they were using for sensitivity. Seventy-seven percent would switch to **Duraflor**, while 88% would recommend it.

Clinical Tips

- Apply to a relatively dry tooth – it allows the material to adhere.
- Send leftover material home with the patient for another application.
- Use a brush applicator to work the material into furcation areas.
- Do not use suction while using **Duraflor** – it has a tendency to clog the suction tube. ■

Editors' Note: *The yellow residue fades and disappears within a day after application and will usually dry to a natural color if the application by the clinician is thin. The manufacturer reports that the ADA now accepts fluoride varnish as an off-label fluoride treatment.*

CLINICAL CONSULTANTS

K. Fischer, IN
 S. Galster, ND
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 I. Goldstein, NJ
 K. Goodman, MI
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 J. Nash, MI
 A. Nazarian, MI
 N. Nealis, IL
 L. Neuberger, ND
 C.J. Noe, MD
 P. Nolan, MI

Aegis ORTHO + + + +

Harry J. Bosworth Co.
800.323.4352 • 847.679.3400
www.bosworth.com

Description

Aegis ORTHO is a light-cured orthodontic adhesive indicated for bonding brackets and bands to enamel. The cement contains amorphous calcium phosphate (ACP), which the manufacturer reports accelerates the calcium phosphate remineralization process of the teeth. ACP is reported to help prevent demineralization attributed to microleakage or plaque accumulation associated with poor oral hygiene. Preparation of the teeth with phosphoric acid or a self-etching primer is necessary. The adhesive is then placed directly onto the bracket or band before placement on the tooth. Excess material is removed and the cement is light cured for 10 to 20 seconds. The standard kit contains three, 3-ml syringes of *Orthodontic Adhesive*, one, 3-ml syringe of *Bosworth 35% Acid Etch*; one, 6-ml bottle of *Aqua Bond* self-etch adhesive; and applicators. Seven consultants evaluated **Aegis ORTHO** in 83 clinical applications. This product received an 87% clinical rating.

Suggested Retail Cost

- \$190.00/kit



Consultants' Comments

- ▶ "Great product – bracket does not move around during placement."
- ▶ "Etchant is too thick – hard to spread on the tooth."
- ▶ "Good bond strength."
- ▶ "Easy to clean up."

Product Features

The viscosity of **Aegis ORTHO** adhesive was rated as an advantageous characteristic by the consultants. The adhesive is tacky enough to prevent sliding of brackets before light curing, making bracket placement easy and accurate. Most consultants were pleased with the cure time and reported few bond failures. The packaging was rated highly, but some consultants found the instructions to be confusing regarding preparation of the teeth. The kit does not include instructions for the use of the self-etching primer. The concept of ACP was well accepted by clinicians, but effectiveness of remineralization could not be determined during the evaluation period. Fifty-seven percent of the consultants rated **Aegis ORTHO** equivalent to or better than the

material they were currently using. Twenty-nine percent would purchase the material for use in their own practice, and 57% would recommend it to a colleague. ■

Editors' Note: *Aegis ORTHO can be used with phosphoric acid etching or a self-etching primer. THE DENTAL ADVISOR recommends the use of the self-etching primer.*

Futurabond NR SingleDose + + + + ½

VOCO GmbH
888.658.2584
www.voco.com/use

Description

Futurabond NR SingleDose is a 6th-generation (Type II), light-cured, self-etching bonding agent. It is indicated for use with all light-cured direct composite restorations.

The adhesive is Nanofiller Reinforced with 20-nm particles of silica. The single-dose pack is activated when the first blister is compressed and liquid A mixes with liquid B contained in a second blister. The applicator is used to pierce the second blister, coating the tip with adhesive.



The adhesive is scrubbed into the tooth for 20 seconds, air-dried for five seconds and light-cured for 10 seconds. **Futurabond NR SingleDose** contains 0.1 ml of material and is available in a 50-count kit or a bulk 200-count kit with instructions, applicators, and accessories. Thirty consultants used **Futurabond NR SingleDose** in over 700 clinical procedures. This product received at 92% clinical rating.

Consultants' Comments

- ▶ "I liked the product a lot."
- ▶ "I did not have any complaints of postoperative sensitivity."
- ▶ "Coats the tooth well."
- ▶ "Single-dose packaging prevents evaporation of liquids."
- ▶ "Adhesive is difficult to remove from the blister packaging."

The Razor Carbide + + + +

AXIS Dental Corp
800.355.5063 • 469.635.6100
www.axisdental.com

Description

The Razor Carbide burs are designed for rapid reduction of all dental materials including amalgam, porcelain, various metal alloys, and tooth structure. The sharp tip and blade design are reported to improve cutting performance, particularly for crown removal and endodontic access openings. The burs are constructed in one piece and are available in six specialty shapes:

- H245RZ-FG – Long Pear
- H330RZ-FG & H331RZ-FG – Pear
- H557RZ-FG – Flat End Cylinder
- H1557RZ-FG and H1558RZ-FG – Round End Cylinder with various diameters and head sizes.

The burs are supplied in packs of 10 or 100 and can be used for multiple procedures. Twenty-six consultants evaluated two of **The Razor Carbide** burs (H331RZ-FG and H1558RZ-FG) in 482 clinical cases. This product received an 86% clinical rating.

Suggested Retail Cost

- \$27.00/10 count package
- \$265.00/100 count package

Suggested Retail Cost

- \$105.95/50-count kit

Product Features

Futurabond NR flows nicely, has excellent surface wettability, and spreads evenly when air-dried. The short time required for each bonding procedure, the lack of any postoperative sensitivity and the ease of band removal were rated as excellent qualities of **Futurabond NR SingleDose**. The adhesive was easy to use and consultants appreciated the single-step procedure. The all-in-one packaging of **Futurabond NR SingleDose** provides plenty of fresh material for each use and is easy to activate; however, some challenges were noted by consultants. The adhesive can be difficult to get to and see if the blister foil is not pushed back and once the blister is pierced, the flexible construction can impede removal of the

Product Features

The bulk packaging of **The Razor Carbide** is efficient but may be of concern for cross contamination. The burs fit well into a variety of different handpieces and are concentric. The cutting efficiency and clogging resistance of new burs were reported to be very good, although the cutting effectiveness and durability for multiple uses are dependent on the materials that have been previously cut. The cutting efficiency of the two shapes evaluated was rated as very good for amalgam, noble metals, and tooth structure and noticeably less for base metals and porcelain. Sixty-five percent of the consultants rated **The Razor Carbide** equal to or better than similar burs they were using and 60% would recommend them. ■

Consultants' Comments

- ▶ *"The burs cut smoothly through metal and did not seem to dull rapidly."*
- ▶ *"The burs initially cut aggressively and remained clean and free of debris during use."*
- ▶ *"The bur worked better on metals than it did on porcelain."*
- ▶ *"I prefer H1558RZ-FG over H331RZ-FG because the diameter is larger, allowing better control."*

liquid. Eighty-four percent of the consultants found **Futurabond NR SingleDose** equivalent to or better than the adhesive they are currently using, 75% would recommend it to a colleague and 64% would switch.

Clinical Tips

- Pierce the blister with the applicator tip, and then push the foil back to increase the size of the opening.
- After activation, maintain finger pressure on the blister pack to prevent the liquid from flowing back into the first chamber.
- Apply to the surface at least two to three times to ensure that all surfaces are well covered.
- Protect from ambient light. ■

CLINICAL CONSULTANTS

E. Odenweller, OH
R. Oshrain, NY
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D. Parsons, NY
M. Patel, MI
T. Paumier, OH
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S. Young, NY
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J. Zanetti, MI
P. Zanetti, MI
G. Zann, FL
S. Zimmer, MI

LABORATORY CONSULTANTS

Alpha Dental Studio, MI
Nellmar Laboratory, LLC, MI

Bisco, Inc.
800.247.3368 • 847.534.6000
www.bisco.com

Description

BisCover LV is a liquid polish for a wide variety of restorative uses. **BisCover LV** has a lower viscosity than original **BisCover** and is universally curable with LED, PAC, and halogen lights. It may be used to finish and seal all direct or indirect composites, provisional restorations, and acrylic appliances. It may also be used before or after orthodontic bracket placement or after whitening to help seal the enamel. It is designed to reduce the number of polishing products needed while providing a long-lasting esthetic finish. For placement on cured composite, it is recommended to etch before applying **BisCover LV** and then to light cure for 30 seconds. The kit includes a 5-ml bottle of **BisCover LV**, a 5-g syringe of etchant, applicator brushes, and accessories. **BisCover LV** was evaluated by 29 consultants in over 600 restorative uses during a three-month evaluation period. This product received a 95% clinical rating.

Suggested Retail Cost

- \$72.00/kit

Product Features

Consultants who had used original **BisCover** found the thinner viscosity of **BisCover LV** and its ability to be cured with an LED light to be very beneficial. The surface finish was described by consultants as "glossy," "smooth," and "esthetic." **BisCover LV** is easy to use with minimal steps. One of its most valuable uses was on multi-unit provisional restorations, as it eliminates the usually cumbersome polishing steps. The bristle



Consultants' Comments

- ▶ "Provides a smooth, glossy surface."
- ▶ "Much easier to dispense than original **BisCover**."
- ▶ "Helps cover small defects in a composite."
- ▶ "Cures great with an LED light."
- ▶ "Works great for multi-unit temporaries."
- ▶ "High gloss and no staining on temporary crowns after three to four weeks."
- ▶ "I would prefer a shorter curing time."
- ▶ "Has a slight yellow tint after curing."

brush included in the kit makes application into grooves and coverage of flat surfaces easy. After light curing, there is no sticky, oxygen-inhibited layer on the surface as with many similar products. The slight yellow color of the polish is apparent on very white restorations and when multiple coats are applied. All consultants found **BisCover LV** to be equivalent or better than their current surface sealer or glaze and would recommend it to a colleague. Ninety-three percent would switch from their current surface sealer to **BisCover LV**.

Clinical Tips

- Use a high quality sable brush to apply **BisCover LV** in a thin layer – do not air thin.
- Place two coats for a harder surface.
- Avoid placing **BisCover LV** on the interproximal contact areas of provisional restorations. ■

Editors' Choice Award

An Editors' Choice award is given to products recognized by our editors as being one of the most unique or significant products in an issue.

Shared Secrets:

Enhance Your Practice with Esthetic Dentistry's "Best Kept Secrets"

John W. Farah, D.D.S., Ph.D., Editor

Sept. 14, 2007 Northern California Dental Society (Red Bluff, CA)
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Oct. 5, 2007 Third District Dental Society (Albany, NY)
Nov. 2, 2007 Tulsa County Dental Society (Tulsa, OK)
Dec. 6, 2007 Detroit Clinic Club (Detroit, MI)

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Invite Dr. Farah to be your next guest speaker!

For information on attending a lecture or scheduling Dr. Farah to speak to your dental group, please contact:
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