

THE DENTAL ADVISORTM

"Improved Patient Care Through Research"



Photography by Gloria G. Poy, R.N., D.A., Hartland, Michigan

Update: Flowable Composites

In recent years many manufacturers have introduced flowable composites, often marketed alongside more viscous, all-purpose composites. Flowable composites have less filler, in some instances 25% less, than all-purpose composites. Less filler results in a product that many clinicians feel offers better adaptation to cavity walls when used under packable composites.

This issue of THE DENTAL ADVISOR reviews and compares 16 flowable composites. Also included in this issue is a new feature comparing five different, highly-rated impression materials and naming the "Best of the Best."

Vol. 22, No. 4
May

2005

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EDITORS' CHOICE

1-YEAR CLINICAL PERFORMANCE

LUMINEERS BY CERINATE 16
(Pressed ceramic system)

Ratings

Excellent	+++++
Very Good	++++
Good	+++

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SUBSCRIPTION INFORMATION
\$99 one year/10 issues
\$187 two years/20 issues
\$258 three years/30 issues
Canada add \$10 per year
Airmail overseas add \$20 per year

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Update: Flowable Composites

Flowable composites are syringeable, can be placed precisely and cured incrementally. Their physical properties allow clinicians to use these products successfully to repair crown margins and ceramic fractures. When selecting a flowable composite, it is important to consider radiopacity. When using the flowable material as a liner under a more traditional composite or under a packable composite, a radiolucent flowable material may be mistaken for recurrent decay. Flowable composites with higher radiopacity, however, are less translucent, which may produce an undesirable esthetic outcome for Class V applications.

Difficulties with flowable composites are most often encountered when the product is misused in large restorations or in areas where occlusal forces will cause rapid premature wear. Additionally, because flowable composites are associated with high polymerization shrinkage, it is important to incrementally place and cure them. With a greater availability of shades and improved physical properties, flowable composites will remain part of the armamentarium of most restorative dentists.

Applications

- Conservative Class I restorations
- Facial composite veneers
- Coverage of enamel hypoplastic defects
- Small carious pits and fissures
- Cervical abfraction lesions
- Cervical caries
- Root surface caries
- Repairs of crown margins
- Sealants

Other Featured Products



Flow-It ALC
(Pentron Clinical Technologies)

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

Product	Company	Shades	Fluoride Releasing	Radiopaque*	Delivery System	Cost/ml, \$	Rating
3M ESPE Filtek Flow	3M ESPE	6	Yes	Yes	Syringe	\$37.85	94%
4 Seasons Flow	Ivoclar Vivadent	8	Yes	Yes	Syringe	\$23.90	91%
Admira Flow	VOCO	7	No	Yes	Syringe, unit dose	\$22.45	93%
ÆLITEFLOW	Bisco	13	No	Yes	Syringe	\$10.66	92%
ÆLITEFLOW LV	Bisco	2	No	Yes	Syringe	\$10.66	na
Esthet.X Flow	DENTSPLY Caulk	7	Yes	Yes	Syringe	\$27.55	92%
Flow-It ALC	Pentron Clinical Technologies	26	Yes	Yes	Syringe	\$8.45	92%
Flowline	Heraeus Kulzer	9	Yes	Yes	Syringe	\$21.53	88%
GRADIA DIRECT Flo	GC America	7	Yes	Yes	Syringe	\$23.13	na
GRADIA DIRECT LoFlo	GC America	7	Yes	Yes	Syringe	\$23.13	na
GrandiO Flow	VOCO	10	No	Yes	Syringe	\$29.48	93%
Heliomolar Flow	Ivoclar Vivadent	7	Yes	Yes	Syringe	\$26.73	94%
Palfique Estelite LV	Tokuyama Dental	5	No	Yes	Syringe	\$19.76	96%
PermaFlo	Ultradent	9	Yes	Yes	Syringe	\$12.50	91%
Tetric Flow	Ivoclar Vivadent	12	Yes	Yes	Syringe, unit dose	\$23.86	98%
Venus Flow	Heraeus Kulzer	14	Yes	Yes	Syringe	\$21.50	na

*Products have various levels of radiopacity.

Advantages

- Easy to place
- Good adaptation to small, narrow areas
- Low modulus of elasticity for use in abfraction lesions
- Good polish

Disadvantages

- High polymerization shrinkage
- Lower strength – not good for large restorations
- Poor wear resistance
- Greater susceptibility to staining

Clinical Notes

- Shade selection should precede tooth preparation as the tooth may become desiccated with isolation
- Use a total-etch or self-etch bonding agent
- Most useful shades – A1, A2, A3, B2, C3
- Finishing sequence – gross reduction with flame-shaped diamonds, 16-fluted finishing burs, abrasive-impregnated rubber finishing cups
- Polish with polishing paste
- When restoring isolated pits or fissures, flowable composite can be used with air abrasion and sealant to complete the restoration ■

THE DENTAL ADVISOR Recommends:

**Tetric Flow (98%),
Palfique Estelite LV (96%),
3M ESPE Filtek Flow (94%),
Heliomolar Flow (94%),
Admira Flow (93%)
GrandiO Flow (93%)**



Tetric Flow
(Ivoclar Vivadent)



Palfique Estelite LV
(Tokuyama Dental)



Heliomolar Flow
(Ivoclar Vivadent)



GrandiO Flow
(VOCO)

Consultants' Comments

PUTTY

Aquasil

- ▶ "A bit too firm, harder to mix than others."

Flexitime

- ▶ "Indents and flows well."
- ▶ "Smooth mix, sets quickly."

Genie Ultra

- ▶ "Patients like the berry smell and taste."
- ▶ "Very easy to incorporate."

Virtual

- ▶ "Easy to scoop, easy to mix and not sticky."
- ▶ "No streaks when mixed – color makes it easy to read details."
- ▶ "Patients liked the mint smell."

LIGHT BODY

AFFINIS Light Body

- ▶ "A bit runny."

Flexitime

- ▶ "Excellent viscosity – flows well and stacks nicely."

Genie Ultra

- ▶ "Nice viscosity – flows easily when air is directed at it."

Virtual

- ▶ "The viscosity could be lower for better flow."

PUTTY/LIGHT BODY COMBINATION

Aquasil/Aquasil Ultra XLV

- ▶ "Very easy to read margins with bright orange color."

Flexitime

- ▶ "Light body and putty blend very well."
- ▶ "Excellent detail – easy to read margins."

Genie Ultra

- ▶ "Light body and purple putty provide excellent color contrast."

Five impression materials highly rated by THE DENTAL ADVISOR are compared to determine the "Best of the Best." The impression materials were regular-set addition silicones with two viscosities, putty and injectable light body. The ratings, as previously determined by THE DENTAL ADVISOR, are shown in **Table 1**.

Table 1

Company	Putty	Light Body	Rating
Coltène/Whaledent	AFFINIS Putty Soft	AFFINIS Light Body	4.5+/92%
DENTSPLY Caulk	Aquasil	Aquasil Ultra XLV	4.5+/93%
Heraeus Kulzer	Flexitime	Flexitime	5+/97%
Ivoclar Vivadent	Virtual	Virtual	5+/96%
Sultan Chemists	Genie Ultra	Genie Ultra	5+/96%

"Best of the Best" Criteria

Both viscosities were evaluated and rated on a 1-5 scale (1 = poor, 5 = excellent).

Putty

- Ease of mixing – Easy to incorporate base and catalyst
- Lack of stickiness – Does not stick to fingers or scoops
- Flows at seat – Not stiff, flows and adapts to teeth and trays
- Blending of light body and putty – Blends well with light body without displacing it completely

Light Body

- Viscosity/flow – Extrudes easily from cartridge
- Stackability – Flows well, but stacks; not runny
- Color differentiation – Good color contrast between putty and light body allows for easy reading of margins
- Lack of voids/porosity – Hydrophilic, adapts to preparation well; no voids or air bubbles

Table 2

Putty	AFFINIS Putty Soft	Aquasil	Flexitime	Genie Ultra	Virtual
Ease of mixing	4.00	4.50	4.75	5.00	4.75
Lack of stickiness	4.50	5.00	4.75	4.75	5.00
Flow at seat	4.50	4.50	5.00	4.75	4.75
Blending of light body and putty	4.00	4.75	4.75	4.75	5.00
TOTAL	17.00	18.75	19.25	19.25	19.50
Light Body	AFFINIS Light Body	Aquasil Ultra XLV	Flexitime	Genie Ultra	Virtual
Viscosity/flow	4.00	5.00	5.00	4.75	4.50
Stackability	3.50	4.50	5.00	5.00	4.75
Color differentiation	4.25	4.75	5.00	5.00	4.75
Lack of voids/porosity	4.50	5.00	4.75	4.75	4.75
TOTAL	16.25	19.25	19.75	19.50	18.75
Putty/Light Body	AFFINIS Putty Soft/AFFINIS Light Body	Aquasil/Aquasil Ultra XLV	Flexitime	Genie Ultra	Virtual
TOTAL	33.25	38.00	39.00	38.75	38.25

Clinical Protocol

Twenty impressions were made by consultants using each of the impression materials listed in **Table 1**. The outlined characteristics of the putty and light body were rated on a scale of 1-5, and the values were averaged as shown in **Table 2**. Listed below are the final rankings of each viscosity.

Putty

- 1st **Virtual**
- 2nd **Genie Ultra**
- 3rd **Flexitime**
- 4th **Aquasil**
- 5th **AFFINIS Putty Soft**

Light Body

- 1st **Flexitime**
- 2nd **Genie Ultra**
- 3rd **Aquasil Ultra XLV**
- 4th **Virtual**
- 5th **AFFINIS Light Body**

Putty/Light Body Combination

- 1st **Flexitime**
- 2nd **Genie Ultra**
- 3rd **Virtual**
- 4th **Aquasil/Aquasil Ultra XLV**
- 5th **AFFINIS Putty Soft/AFFINIS Light Body**

Summary

The five impression materials were highly rated by THE DENTAL ADVISOR in individual clinical evaluations. While all are excellent materials, the objective of this evaluation was to select the "Best of the Best." Consultants found that **Virtual** regular-set putty was the easiest to mix, lacked stickiness and was least difficult to form in the tray and seat. The deep blue color is excellent for visual clarity of detail. **Flexitime** regular-set light body stacks well and flows evenly over the preparation, creating minimal voids or porosities. The bright green color allows for very good clarity of margin detail. As a putty and light body combination, consultants identified **Flexitime** as the "Best of the Best." Final impressions taken with **Flexitime** provide the most detail, least voids and best visualization of anatomy. ■

Honorable Mention



AFFINIS
(Coltène/Whaledent)



Aquasil
(DENTSPLY Caulk)



Genie Ultra
(Sultan Chemists)



THE DENTAL ADVISOR
IMPRESSION MATERIALS

CONCLUSION

All five impression materials were highly rated by THE DENTAL ADVISOR and are excellent materials.

Based on clinical criteria, **Flexitime** was awarded "Best of the Best" in the Light Body and Putty/Light Body Combination categories, and **Virtual** was awarded "Best of the Best" in the Putty category.



Flexitime

Heraeus Kulzer

Rated "Best of the Best" in Light Body and Putty/Light Body Combination categories



Virtual

Ivoclar Vivadent

Rated "Best of the Best" in Putty category

3M ESPE
800.634.2249 • 651.733.1110
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 supplied in capsules 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 posts. **RelyX Unicem** is not recommended for use with veneers. Working time is 2:00 minutes for the Aplicaps and 2:30 minutes for the larger Maxicaps. The Aplicaps have enough material to cement one restoration, whereas the Maxicaps have enough material for up to three restorations.

Bond Strength to Tooth Structure, MPa		
	Enamel	Dentin
Light-cured	15	28
Self-cured	18	23

- Suggested Retail Cost
- \$ 99.00/Aplicap trial kit (20 capsules + hardware)
 - \$225.00/Maxicap introductory kit (20 capsules + hardware)
 - \$216.30/Aplicap refill (50 capsules)
 - \$175.10/Maxicap refill (20 capsules)

Southern Dental Industries
800.228.5166 • 630.238.8300
www.sdi.com.au

Description
radii is a portable, rechargeable LED curing light, emitting light in the 440-480 nm range (camphorquinone). The unit features a single on/off button for light activation. The standard curing tip measures 7-mm in diameter, but the unit comes with a screw-on adaptor designed to accept standard light guides with a 14-mm diameter connection. **radii** comes with three disposable lens caps, a orange plastic light shield,



- Consultants' Comments
- ▶ "Portable and quiet."
 - ▶ "Light handle and sleek design."
 - ▶ "Poor tip angulation for posterior teeth."
 - ▶ "Significant heat is generated at the tip of the light probe."

65 seconds. **radii** is powered by a lithium ion battery and can be recharged using a charger base. On the base, an indicator light changes from red (charging) to green (unit fully charged).

and five orange rubber tip rings that may be attached to the end of the unit. During operation, an audible beep occurs after the first 15 seconds of curing and every 10 seconds thereafter. The unit can operate continuously for up to

Microleakage
Of the restorations recalled, approximately 5% had evidence of microleakage. Less than 1% of these restorations required replacement. Microleakage often exhibited by graying at the margins of all-ceramic and/or laboratory composite restorations is unfortunately a reality in some esthetic cases. Microleakage can result from improper isolation or improper pre-treatment of the tooth or the corresponding restoration. The microleakage rate of restorations cemented by **RelyX Unicem** is comparable to restorations cemented with a 5th-generation bonding agent and corresponding light- or dual-cured resin cement.

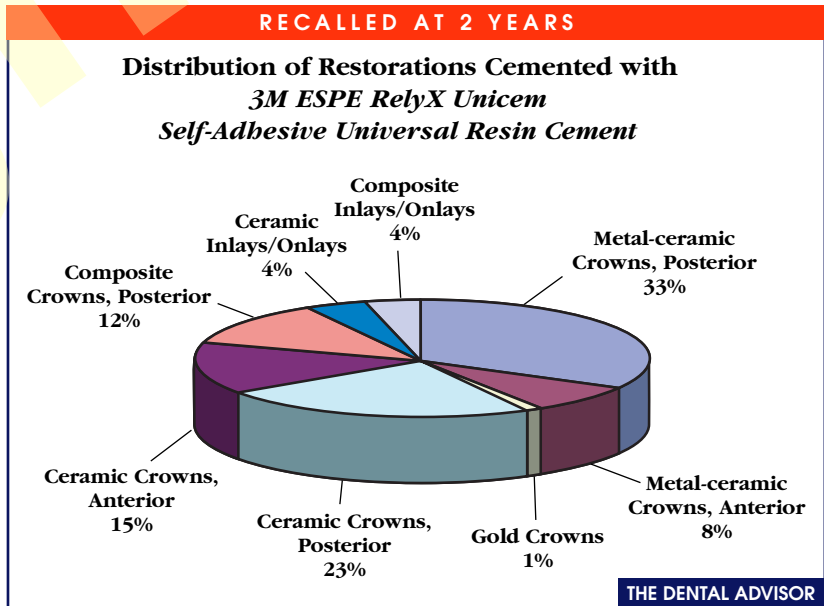
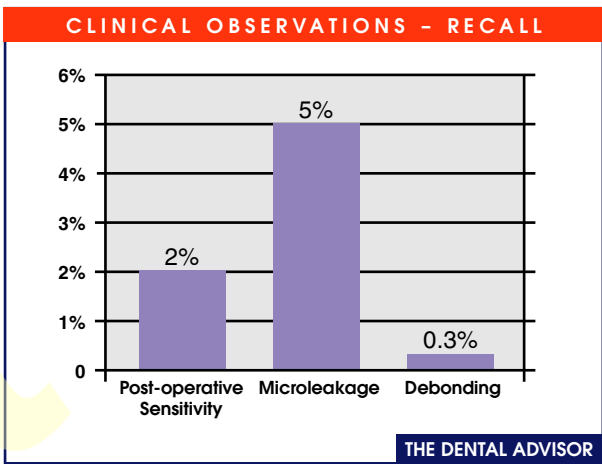
Retention
A low debonding rate was documented over the two-year period. Of the over 2,000 restorations cemented with the **RelyX Unicem**, only 10 were re-cemented. These included five laboratory composite crowns, two ceramic onlays, and three ceramic crowns. In two of the debonding cases, a portion of the tooth actually fractured. ■

A built-in radiometer in the charging base measures low to high intensity. Seven consultants used and evaluated **radii** over a three-month period for light-curing of restorations.

Suggested Retail Cost

- \$695.00

Equipment Features
radii received very good to excellent ratings for manufacturer's instructions, light-weight design, ease of charger disinfection, ease of unit activation and quality of composite curing. The stability of the light on the charger was not found to be a problem.

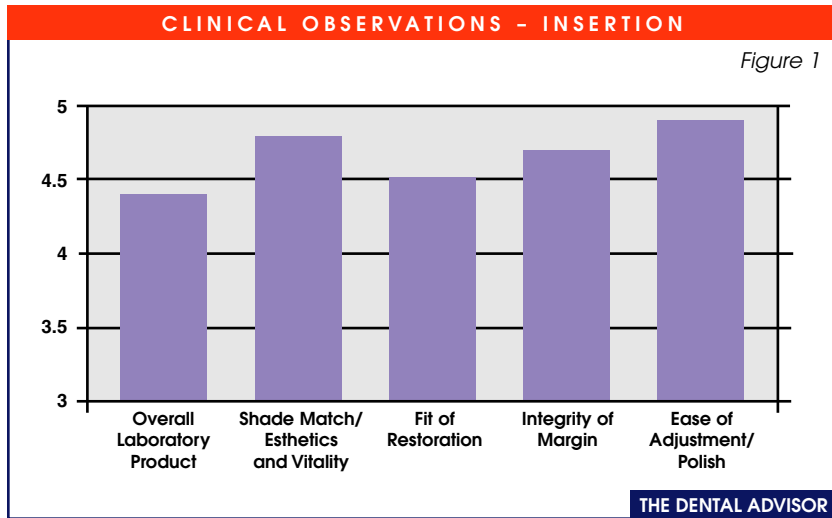


- CLINICAL CONSULTANTS
- A. Abate, MI
M. Aksu, MI
A. Alexander, PA
J. Allen, MI
J. Amara, CT
R.M. Arnett, MI
R. Averbach, CO
A. Azrak, NY
M. Bannan, MI
D. Barnes, MD
F. Berman, PA
M. Beyramian, MI
L. Bishop, MI
J. Bostic, OH
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E. Bowser, PA
H. Bowser-Sletten, PA
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M. Danner, IL

Pentron® Laboratory Technologies, LLC
800.243.3969 • 203.265.7397
www.pentron.com

Description

Sculpture Plus is an indirect laboratory composite indicated for inlays, onlays and crowns. The composite is an improved version of the original **Sculpture** material. **Sculpture Plus** contains the newest generation of polycarbonate dimethacrylate (PCDMA) resin with nano-particulate filler. The composite is light cured under pressure to minimize voids and flaws. Shades available include all 16 classic shades corresponding to Vita shades plus A0, B0 and translucent incisals. Restorations should be bonded with resin cement.



1-YEAR CLINICAL PERFORMANCE

Consultants' Comments

- ▶ "Vitality is better than original Sculpture."
- ▶ "Easy to adjust and polish."
- ▶ "Restorations required a lot of adjustment."
- ▶ "Cemented inlays become invisible."

Clinical Evaluation Protocol

- Restorations were fabricated by Pinnacle Cosmetic Dentistry, Wallingford, CT.
- Seventy-two restorations were placed in 50 patients and were evaluated at insertion and at one year.
- Restorations included 46 crowns and 26 inlays/onlays on posterior teeth (Figure 1).
- Restorations were evaluated on a 1-5 rating scale: 1 = poor, 2 = fair, 3 = good, 4 = very good, 5 = excellent

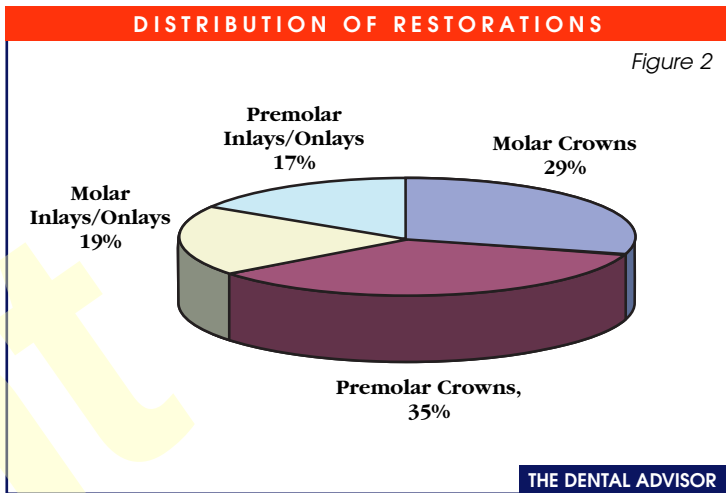
Clinical Observations - Insertion

Overall Laboratory Product
Restorations received from the laboratory were good and fit the dies well. The margin finish was not always acceptable; several restorations exhibited excessive flash causing overextended margins. Some restorations had tight interproximal contacts or high occlusion requiring adjustment before seating. In general, it was felt that the overall laboratory product could have been more consistent.

Shade Match/Esthetics and Vitality
Sculpture Plus produced restorations that were highly esthetic, possessing the proper balance of translucency and opacity. Restorations matched the shades requested and blended well with the teeth. Eighty-two percent rated excellent for esthetics and the remainder rated very good.

Fit of Restoration/Integrity of Margin
Upon try-in of **Sculpture Plus** restorations, 58% were rated excellent for fit. Forty-two percent required adjustment of one or more areas to correct various issues. Ten percent were noted to have bulky or overextended margins that required recontouring. Seventeen percent required slight to moderate occlusal adjustment and 6% required internal adjustment. Two crowns fractured during cementation when occlusal pressure was applied and had to be remade.

Ease of Adjustment/Polish
Standard rotary composite finishing and polishing instruments were ideal for adjusting and polishing **Sculpture Plus**. Most consultants used fine diamond burs on areas requiring adjustment. Final polishing was accomplished with a variety of rubber, silicone or diamond-impregnated instruments at low speed.



Clinical Observations - Recall

During the first year after placement, restorations have maintained the original shade and esthetics. Most of the restorations were rated very good to excellent for esthetics. Restorations appeared glossy and blended well with the surrounding teeth. No chipping or fractures were reported and no wear was visible. None of the patients reported experiencing any sensitivity or discomfort. Overall, patients were pleased with their **Sculpture Plus** restorations. ■

BisBlock + + + +

Bisco
800.247.3368 • 847.534.6000
www.bisco.com

Description

BisBlock is an oxalate-based desensitizer for reducing and preventing dentin sensitivity. The desensitization is designed to be long lasting, with immediate results. It can be used under crowns before cementation, under restorations and for cervical root exposure. The kit contains one 6-ml bottle of **BisBlock**, one 6-ml bottle of **One-Step Plus** (5th-generation bonding agent), a syringe of **Uni-Etch** and accessories. The sequence of desensitizing differs from other materials. With **BisBlock**, the tooth is first etched and rinsed, followed by application of **BisBlock**, thorough rinsing, and finally an

application of **One-Step Plus**, and light curing to seal the surface. The material may be used with resin composite restorations and the manufacturer reports that the bond strength is not affected. **BisBlock** was evaluated by 22 consultants in 225 dental procedures over a three-month evaluation period.

- Suggested Retail Cost**
- \$120.00/kit

Product Features

The instructions were rated good, although the procedure required many steps and was more time consuming than the desensitizing procedures than most consultants were currently using. The viscosities of the etchant and

One-Step Plus are appropriate. **BisBlock** is more viscous than most desensitizers and is difficult to dispense from the squeeze bottle. The product works well for desensitizing cervical lesions, usually with immediate relief. Since etching, rinsing and air-drying are required, many patients experience sensitivity during the procedures. Several consultants indicated better results when a rubber dam or good isolation was used. The material adheres to the tooth well when used properly. No bond failures were reported during the evaluation period. Seventy



Consultants' Comments

- ▶ "Provides immediate results for sensitive cervical lesions."
- ▶ "This is what I use when other desensitizers have failed."
- ▶ "Reduce the number of steps."

percent found **BisBlock** to be equivalent to or better than their current desensitizing agent and 66% would recommend **BisBlock** to a colleague. ■

- J. Dingman, WI
J. DiPonziano, NJ
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R. Dost, VA
J. Doueck, NY
M. Dwoskin, MI
M. Eannaccone, NY
R. Engle, IL
K. Fairbanks, MI
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R. Fay, TX
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D. Haas, Canada
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S. Harden, GA
B. Herrmann, CA
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M. Hewko, OH
S. Hoekman, MI
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S. Lever, MD
I. Levine, NY
R. Lezell, MI

GrandiO Flow + + + + ½

VOCO GmbH
888.658.2584
www.voco.com/usa

Description

GrandiO Flow is a light-cured, radiopaque, flowable composite. It is recommended for use as a cavity liner, to block out undercuts and for filling small cavities or fissures. The **GrandiO Flow** kit includes two, 1.8-g syringes of composite and 20 applicator tips. It is available in ten Vita shades (A1, A2, A3, A3.5, A4, B1, B2, Bleach, Opaque A2 and Opaque White). **GrandiO Flow** is cured with a halogen or LED light curing unit. The curing time is a minimum of

Exclusive Review

EDITORS' EVALUATION

Editors' Comments

- ▶ *"The radiopacity feature is important."*
- ▶ *"Excellent shade match – the restoration disappears."*
- ▶ *"The opacity of OA2 could be greater to provide better masking effect."*
- ▶ *"Slightly increasing the viscosity would provide more control of flow."*
- ▶ *"The thin layer provided by GrandiO Flow is wonderful to overlay a standard composite or place at the cervical to blend the restoration."*

20 seconds per layer. Nineteen editors used **GrandiO Flow** in over 150 applications during a six-week period.

Suggested Retail Cost
• \$58.95/Introductory kit

StatusBlue + + + +

Zenith Dental Products/DMG
800.662.6383 • 201.894.5500
www.zenithdmg.com

Description

StatusBlue is an addition silicone designed to be an alginate substitute. It is available in two automix options: 50-ml automix cartridges or 390-ml bagless cartridges for the **MixStar** machine. The automix cartridge system was evaluated. The material flows under pressure and sets in 1:45 minutes. Pouring of stone models must be delayed by at least 30 minutes. The material is dust free and dimensionally stable, which allows the practitioner to delay pouring and re-pour the models (up to two weeks) if needed. The economy pack includes eight, 50-ml cartridges with 16 mixing tips. The system requires a 4:1/10:1 automix gun. Twenty-seven consultants evaluated **StatusBlue** in over 220 uses.

Suggested Retail Cost
• \$111.60/economy pack (one free cartridge of material)



Product Features

StatusBlue automix cartridge system delivers a homogeneous mix and is easy to use and clean up. Overall, consultants rated the ease of use, cleanliness and the ability to delay pouring as the most desirable features. The quality of the poured models and the neutral taste were also highly rated. Several consultants felt that the material was too viscous and did not flow well into cervical areas or undercuts. Sixty percent of consultants found **StatusBlue** to be equivalent to or better than their current product. Twenty-six percent of consultants reported that they would switch to **StatusBlue** and 41% would recommend it. Several consultants felt that while **StatusBlue** may not replace alginate, it had certain applications that offices should consider.

Clinical Tips

- Do not use in a perforated metal tray – it is difficult to remove impression material.
- Material is stiff when set – section tray to remove models with single teeth. ■

Consultants' Comments

- ▶ *"I would switch to StatusBlue because it is great for certain cases."*
- ▶ *"Ideal choice for impressions that will have multiple pours."*
- ▶ *"Cartridge contains enough material for two full-arch impressions."*
- ▶ *"No clean-up, no dust, easy to use and models can be poured up later."*
- ▶ *"Need a larger diameter mixing tip; material is difficult to extrude."*
- ▶ *"Does not capture detail in undercuts as well as alginate."*

Editors' Observations

Manufacturer's Instructions
The detailed instructions for use are thorough. The addition of a brief clinical procedure guide would be valuable.

Ease of Use
The narrow applicator tip and syringe delivery system allow for extrusion of the material with minimal pressure. As with most flowable composites, it is necessary to slightly retract the syringe plunger after extrusion to prevent seeping of material from the tip.

Viscosity – Stackability/Wettability
The material flows well, evenly coating surfaces to allow excellent coverage for lining and block-out. An increase in viscosity might prevent slumping and provide more control during placement.

Calciject™ + + + +

Centrix, Inc.
800.235.5862 • 203.929.5582
www.centrixdental.com

Description

Calciject is a fine-grain pure calcium hydroxide paste for use in temporary and intermediate root canal therapy. The paste has a high pH and is bacteriostatic. It is designed to aid in dentin bridge formation, periapical healing and for apexification. **Calciject** is opaque white in color, radiopaque and comes packaged in single-dose, needle-tube syringe tips. Individual syringe tips are sealed in foil packages. The material does not require any mixing and can be injected directly into the tooth using a **Centrix C-R® syringe** or a standard composite syringe. Twenty-seven consultants evaluated **Calciject** in over 180 cases.

Suggested Retail Cost
• \$54.95/box of 24, pre-filled 0.2-g syringe tips

Product Features

The packaging of the material was highly rated and the pre-loaded tips were easy to place into a **Centrix** syringe. Many consultants reported that dispensing the material was convenient because of the long metal, bendable tips. The most-liked features of **Calciject** were the ease of use and placement, as well as the flow of the



Consultants' Comments

- ▶ *"Very easy to use and place."*
- ▶ *"Nice single-dose dispensing."*
- ▶ *"Foil package maintains moisture keeping the material hydrated."*
- ▶ *"Material remains soft in the canal."*
- ▶ *"Make the syringe tip diameter smaller."*

Shade Accuracy
The shade selection was very good. Editors appreciated the inclusion of an opaque shade to block out stained dentin; however, they would prefer an increase in the opacity.

Blending of Composite with Tooth
Translucency, very good shade accuracy, and even flow of the material provided excellent esthetics.

Final Polish
The smooth surface achieved with **GrandiO Flow** often eliminated the need to finish or polish. When removal of excess was required, a smooth, high-luster restoration was readily achieved. ■

Editors' Note: An Opaque White shade has been recently added to meet the need for increased opacity.

material. Complete coating of root canals is aided by the low viscosity, but still requires files or paper points to assist in material dispersal. Although the material flowed well, many consultants felt that an increased viscosity would have helped to control placement. Working time is very good, and the amount of material is sufficient for multi-rooted teeth. Though the biological effects of the material were not evaluated, no problems or unfavorable results were reported. Two out of three evaluators judged **Calciject** to be equivalent to or better than the current product they use for endodontic canal treatment. Thirty-three percent of consultants indicated that they would switch to **Calciject** and 63% would recommend it to a colleague.

Clinical Tips

- A file, lentulo or paper point can also be used to distribute material in canal.
- To avoid expressing material into the periapical space, don't force the needle into the canal. ■

CLINICAL CONSULTANTS

- R. Lieder, MI
- M. Livernois, FL
- J. Lockwood, MI
- M. Lodge, MI
- M. Man, NY
- B. Manne, FL
- N. Mansour, MI
- N. Markarian, CA
- D. Marsh, MI
- M. Mason, NY
- R. Mason, NY
- W. Mason, MI
- J. Mayer, OH
- J.R. Meagher, NY
- J. Mikesell, IL
- C. Miller, PA
- S. Miller, NV
- R. Mizrahi, NY
- L. Montes, NY
- D. Montgomery, CA
- P. Moratto, MD
- M. Morin, MI
- S. Munro, WI
- W. Nagy, TX
- J. Nash, MI
- A. Nazarian, MI
- J. Neme, MI
- L. Neuberger, ND
- C.J. Noe, MD
- E. Odenweller, OH
- R. Oshrain, NY
- J. Paris, TX
- D. Parris, GA
- D. Parsons, NY
- M. Patel, MI
- T. Paumier, OH
- L. Perratto, NY
- S. Picazio, NJ
- T. Pieper, WY
- D. Pietz, NC
- W. Piskorowski, MI
- D. Pitak, MI
- M. Pitzen, WA
- D. Powers, MI
- L. Pozarny, NY
- C. Price, TX
- D. Qualliotine, NC
- G. Raichelson, Canada
- S. Ratner, NY
- R. Reichl, NC
- G. Reskakis, NY
- C. Rice, MA
- J. Riggs, MI
- R. Ritter, FL
- J. Robison, MI
- M. Rogers, PA
- W. Roper, TX
- F. Ross, WI
- K. Ross, MI
- K. Rowan, MO
- R. Sambuchi, MI
- A. Sandak-Albright, NY
- P. Sandvick, WI
- D. Schimmel, PA
- G. Schultz, PA
- J. Sedlock, WI
- R. Shah, MI

ParaPost Fiber Lux + + + + +

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

Description

ParaPost Fiber Lux is made of translucent fiber/resin that reflects the natural hues of the tooth resulting in esthetic composite or ceramic restorations. It is made of 60% uni-directional glass fibers and 40% resin, giving it excellent strength. The translucency enhances light transmission and allows improved light curing of cements and core materials. The head of the post is round to minimize areas of stress concentration. **ParaPost Fiber Lux** comes in six sizes; each is color coded for easy identification and is compatible with the **ParaPost** drills. Each introductory kit contains six drills, 15 posts, and a hand driver. The **ParaPost Fiber Lux** was evaluated by 25 consultants and used in over 122 clinical cases requiring the use of posts.

Suggested Retail Cost
• \$229.00/introductory kit

Product Features

ParaPost Fiber Lux was very well received by an overwhelming majority of consultants. They assigned very favorable ratings to the packaging, the delivery system, and its



Consultants' Comments

- ▶ *"Simple to use, well organized, good selection of sizes."*
- ▶ *"Esthetically pleasing results."*
- ▶ *"Head design enhances core material retention."*
- ▶ *"Best post I have used in years."*
- ▶ *"Color coding is a plus."*
- ▶ *"Tapering the end of the post would improve seating."*
- ▶ *"Not always easy to open the box."*
- ▶ *"Make wells deeper in packaging to hold posts in place."*

ease of use. The available sizes are adequate both in length and diameter, and the head design provides good retention of a composite core material. The translucent nature of **ParaPost Fiber Lux** allows complete curing of cements and/or composite cores. The posts are easy to trim to length when needed and sit passively in the prepared space. Consultants commented favorably about the radiopacity of the posts. Seventy-two percent of consultants found **ParaPost Fiber Lux** was better than the post they were using, while 28% said it was equivalent. Ninety-two percent indicated that they would switch to the **ParaPost Fiber Lux** and recommend it to colleagues.

Clinical Tips

- Use reamers in sequential order to avoid a misdirected post space.
- Use under anterior composite build-up when the patient cannot afford a crown. ■

ELITE H-D+ Impression System + + + + ½

Zhermack, Inc.
877.819.6206 • 775.331.9005
www.zhermack.com

Description

ELITE H-D+ Impression System is an addition silicone impression material that includes a variety of viscosities and two setting times. It features particles with nanometric size and structure in all viscosities to obtain a silicone-nanoparticle combination. The presence of the nano-structure is reported to increase the fluidity of the material, particularly when pressure is applied. All viscosities exhibit a snap set that helps reduce inaccuracies that may occur from movement during setting of the impression. The light, super light, regular body, monophase and tray materials are available in 50-ml automix cartridges in a normal and/or fast set. Monophase and Tray material are also available for use with the Pentamix system. Putty is available in a normal and fast set in 250-ml and 900-ml tubs of base and catalyst. The Intro kit contains the dispensing gun, and mixing and intraoral tips. The working time for normal

set is two minutes and setting time is five minutes. The working time for fast set is 1:30 minutes and setting time is four minutes. Twenty-three consultants evaluated **ELITE H-D+ Impression System** in 373 clinical applications.

Suggested Retail Cost

- \$ 28.60 – Light, Super Light, Regular Body, Monophase and Tray material (2, 50-ml cartridges and mixing tips)
- \$ 36.00 – Putty soft (2 x 250-ml)
- \$115.00 – Putty soft (2 x 900-ml)
- \$138.40 – **ELITE MAXI** Monophase and Tray Material Starter Kit



Consultants' Comments

- ▶ *"I really like the color contrast – the margins were easy to read."*
- ▶ *"Assistants found the putty easier to mix than other brands."*
- ▶ *"Small tips make intraoral extrusion difficult."*
- ▶ *"The light-bodied consistency stays in place but registers margins well."*
- ▶ *"Impressions separate easily from their models."*
- ▶ *"The light-bodied consistency has excellent detail and appears to have good tear strength."*

Product Features

Dispensing all viscosities of **ELITE H-D+ Impression System** from the automix cartridges is consistent and does not require excessive pressure. The light-bodied consistency was rated very good and exhibited good flow around the prepared teeth without slumping. Both the normal set and the fast set have sufficient working times, while the setting

Hydrogum Soft + + + +

Zhermack, Inc.
877.819.6206 • 775.331.9005
www.zhermack.com

Description

Hydrogum Soft is a light blue, mint-flavored alginate. The dust-free material is recommended for dentures, study models and opposing models. The fast-setting impression material sets in the mouth in one minute and has a total setting time from mixing of 2:10. **Hydrogum Soft** is available in a 453-g single bag or in a kit that includes two, 453-g bags in a re-sealable plastic tub with a measuring scoop and cup. Single dose (18 g) packages are also available. Pouring of gypsum models can be deferred for 48 hours if the impression is disinfected and stored in a sealed bag at room temperature. Thirty-four consultants used **Hydrogum Soft** in over 500 impressions.

Suggested Retail Cost

- \$23.50/kit
- \$ 9.50/453-g bag

Product Features

Hydrogum Soft powder incorporates easily with the water, producing a smooth mix. The working



Consultants' Comments

- ▶ *"The blue color makes it easy to visualize details in the impression."*
- ▶ *"Pleasant scent and color."*
- ▶ *"Not as much dust as some products."*
- ▶ *"Sets firm, not so flexible with undercuts."*
- ▶ *"Can be difficult to clean off the trays."*

time is adequate, while some found the setting time is longer than expected for a fast-set material. The alginate sets to a rather stiff consistency, often becoming trapped in open gingival embrasures upon removal from the mouth. The mint flavor was rated very good by patients. Impressions have good detail, as do their resulting models. Because of strong adhesion, the material is difficult to remove from impression trays. Fifty percent of consultants would recommend **Hydrogum Soft** to a colleague.

Clinical Tips

- Follow the powder-to-water ratio precisely as instructed for the best results.
- Use disposable trays – the material sticks to metal. ■

times vary from four minutes for the fast set to 5:30 for the normal set. When an impression of multiple preparations is needed, the normal set is a good option. Any combination of the viscosities is easily removed from the mouth and all show good tear resistance even in thin sections. Visualizing margin detail is simplified by the excellent color contrast of the different viscosities. The fit of the resultant restorations was judged to be very good. Eighty-seven percent of the consultants rated **ELITE H-D+ Impression System** equivalent to or better than the material they were currently using and 78% would recommend it.

Clinical Tips

- The putty requires mixing with washed hands or using non-latex gloves.
- If the provisional restoration is fabricated before making the impression, completely remove all residue from the teeth. Any acrylic residue could inhibit the setting of the material. ■

CLINICAL CONSULTANTS

M. Shapiro, MI
J. Shea, MO
J. Sinkwits, MI
T. Slade, MI
R. Smith, NY
S. Smith, FL
M. Sonne, MI
J. Spingarn, FL
D. Stutman, NY
K. Swearingen, OH
M. Sylvester, CA
P. Symeonides, NY
J. Tabash, MO
H. Tetelman, OH
F. Tom, MA
R. Tonelli, WI
C. Trubschenck, CA
P. Tu, CA
S. Ura, NH
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H. Vann, MS
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W. Walcott, MI
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F. Wood, PA
H. Yeung, CA
D. Young, MI
S. Young, NY
M. Zahn, MI
P. Zanetti, MI
G. Zann, FL
S. Zimmer, MI

LABORATORY CONSULTANTS

Alpha Dental Studio, MI
Armstrong Laboratory, KY
D.H. Baker Dental Laboratory, MI
Davis Dental Laboratory, MI
Dental Prosthetic Services, IA
Dickerson Dental Studio, Inc., OH
Edmonds Dental Prosthetics, MO
Gnathodent Lab Corp., NY
Harmony Dental Laboratory, MD
Nellmar Laboratory, LLC, MI
New Image Dental Laboratory, GA
Noble Craft Prosthetics, Inc., NY
Oral Arts Dental Laboratory, GA
Ramsey Dental Ceramics, MI
Scullin Dental Laboratory, OH

“Best of 2004
Preferred Product”

Geristore Syringeable + + + + ½

Den-Mat Corp.
800.433.6628 • 805.922.8491
www.denmat.com

Description

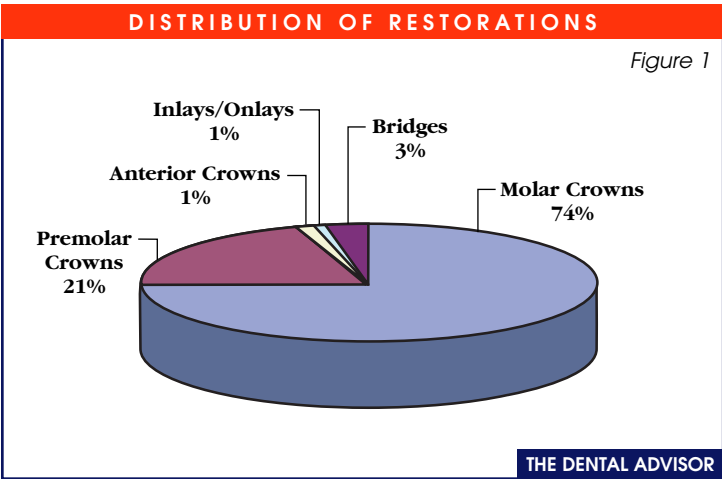
Geristore Syringeable is a dual-cured, multi-use, hybrid ionomer restorative material. Suggested applications for **Geristore Syringeable** include cervical restorations, interim fillings, base/liner, cementation of metal-based restorations, and luting of orthodontic brackets and bands. Other characteristics include biocompatibility, fluoride release, low coefficient of thermal expansion, and low polymerization shrinkage. The starter kit contains one dual-barrel syringe with 15 automix and intraoral tips.

Suggested Retail Cost

- \$119.00/**Geristore Syringeable Single Syringe Kit**
- \$299.00/**Geristore Syringeable Value Kit** (3-Syringe Kit)

Clinical Evaluation Protocol

- 100 restorations were cemented with **Geristore Syringeable**. Restorations included ceramic-metal and gold crowns, bridges and inlays/onlays (**Figure 1**).
- Sensitivity was rated at one week and six months after placement.
- Categories evaluated included:
 - Handling
 - Sensitivity at one week post-placement
 - Sensitivity at six months post-placement
 - Microleakage
 - Retention of restoration
- Categories were rated on a 1-5 scale: 1 = poor, 2 = fair, 3 = good, 4 = very good, 5 = excellent.



6-MONTH CLINICAL PERFORMANCE



Consultants' Comments

- ▶ “Cement is very versatile.”
- ▶ “The viscosity of Geristore Syringeable is low enough to allow restorations to seat easily.”
- ▶ “Little sensitivity during cementation.”
- ▶ “The fluoride makes it great for patients with high caries rate.”

Clinical Observations

Handling

Consultants found **Geristore Syringeable** very easy to use for luting indirect restorations. The dual-barrel syringe with mixing tip dispenses the material neatly and directly into the restoration or the tooth. The short tip provides adequate mixing of the base and catalyst without excessive waste. The medium viscosity of **Geristore Syringeable** allows seating of the restorations with light pressure. Excess cement is easily removed after a two-second “flash” cure at the margins.

Post-operative Sensitivity – at One Week

Little sensitivity was noted after cementation. Ninety-five percent of restorations were sensitivity-free. Five percent of restorations were noted to have mild, transient sensitivity. Only two patients reported sensitivity at one week. Both patients described this as slight sensitivity to cold. Post-operative sensitivity can arise from a variety of factors, some of which may include tooth preparation, condition of tooth prior to preparation, microleakage or irritation from the permanent cement.

Post-operative Sensitivity – at Six Months

Only one patient reported sensitivity when questioned at six months after cementation of the permanent restoration with **Geristore Syringeable**. One patient experienced a dull ache over a period of time, necessitating the removal of the crown. This was not necessarily a result of using the particular cement.

Microleakage

Microleakage was not observed in any of the restorations during the evaluation period.

Retention

One posterior ceramic-metal crown cemented with **Geristore Syringeable** debonded at six months. No other debonding occurred. ■

Editors' Note: The manufacturer recommends using **Tenure A/B** bonding agent to maximize retention and seal tubules on teeth under high stress or those that required aggressive preparation.

Cool Temp Natural + + + +

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

Description

Cool Temp Natural is a provisional restorative material packaged in automix cartridges and available in three Vita shades: A1, A2 and A3.5. Chemically it is a composite of dimethacrylate/aliphatic-methacrylate filled with silica and barium glass. It is appropriate for both chair-side and laboratory fabrications. Direct use requires that the material be placed within 30 seconds of mixing. After 65-80 seconds in the mouth, **Cool Temp Natural** will be flexible and must be removed at that time to avoid “locking-on.” When firm, excess material may be trimmed with rotary instruments. Definitive color of the material is achieved 15 minutes after curing. Most flowable composites can be added to **Cool Temp Natural** for modifications of color, shape or for repairs. Thirty-two consultants used **Cool Temp Natural** for over 400 cases.

Suggested Retail Cost

- \$132.68/refills
- \$241.00/introductory kit (includes A2 and A3.5 cartridges; **Synergy Flow** in shades A2 and A3.5; accessories)

Product Features

Consultants were pleased with the packaging, instructions and dispensing. Viscosity, setting time and lack of increased setting temperature were also highly rated. Evaluators stressed the importance of removing **Cool Temp Natural** from the mouth at the suggested time to avoid locking the material onto the



Consultants' Comments

- ▶ “A flowable Bis-GMA composite that works well for shade adjustments.”
- ▶ “A universal shade would be good.”
- ▶ “I would like more working time.”
- ▶ “Excessive air-inhibited layer.”

preparation and into embrasures. Viscosity is good, flowing well without being too runny; inclusion bubbles are not problematic. **Cool Temp Natural** is quite rigid after curing. The material is easy to trim and polish; thin margins, including bevels, and a high gloss can be readily achieved. Final shades are similar to the shade indicated, but somewhat opaque. Cementation is performed with commonly-used temporary cements. Retention of restorations received a 91% rating, but four of 32 consultants noted an increase in the numbers of re-cements. Fifty percent of consultants would recommend **Cool Temp Natural** to their peers and 46% would purchase it for their own offices.

Clinical Tips

- Wipe off the air-inhibited layer from all surfaces with an alcohol pad to improve handling and retention.
- Keep the dispensing tip in the **Cool Temp Natural** to eliminate the chance of air bubbles.
- Use a timer to judge when to remove from the mouth.
- Work quickly when doing multiple units.
- Works well with a polycarbonate crown – great margins. ■

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

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Den-Mat Corp.
800.445.0345 • 805.922.8491
www.denmat.com

Description

LUMINEERS BY CERINATE are leucite-reinforced, pressed ceramic veneers and anterior crowns fabricated from the patented **Cerinate** porcelain system. Den-Mat advocates minimal to no tooth reduction for **LUMINEERS BY CERINATE**; however, traditional tooth preparation is also acceptable. **Ultra-Bond Plus** and **Tenure Uni-Bond** are recommended for the cementation of **LUMINEERS BY CERINATE** and are backed by a five-year limited warranty.

Clinical Evaluation Protocol

- Ninety-five restorations were placed and evaluated at insertion in 25 patients. This included 23 anterior crowns and 72 veneers.
- Thirty-two of the 95 restorations were placed on teeth prepared using the minimal-reduction technique. The remainder utilized traditional preparation techniques.
- Restorations were fabricated by Nellmar Laboratory, Ann Arbor, MI.
- Restorations were cemented with **Ultra-Bond Plus** and **Tenure Uni-Bond**.
- All restorations were re-evaluated at one year.
- Restorations were evaluated on a 1-5 rating scale:
1 = poor, 2 = fair, 3 = good, 4 = very good, 5 = excellent

Clinical Observations – Insertion

Overall Laboratory Product

One hundred percent of restorations received from the laboratory were rated very good to excellent.

Shade Match/Esthetics and Vitality

All restorations fabricated exhibited excellent esthetics. Shade match was accurate to the shade requested.

All **LUMINEERS BY CERINATE** fabricated for minimal-reduction preparations required careful selection of cement shade due to translucency of the restorations. Proper selection of cement value was essential to maintaining shade match and vitality of these restorations.

Fit of Restoration/Integrity of Margin

All restorations exhibited ideal marginal integrity. Ten percent of restorations required minor incisal or interproximal adjustment. None of the restorations were returned to the laboratory for adjustment or re-fabrication.

Ease of Adjustment/Polish

Minor adjustments were easily accomplished and a glossy final polish achieved using **Dialite/Brasseler USA** rubber wheels, as recommended by the laboratory.

Clinical Observations – 1-year Recall

Resistance to Fracture/Chipping

One of the 95 restorations that had been in function for 9-12 months exhibited a small chip. None of the restorations required replacement due to chipping or fracture.

Shade Match/Esthetics and Vitality

The esthetics determined at placement remained consistent for 99% of the restorations. One veneer exhibited discoloration under the restoration, resulting in loss of ideal esthetics. To date, the results have been exceptional.

Lack of Marginal Discoloration

At recall during the first year, no marginal discoloration was detected in 99% of the restorations. Microleakage was identified under one veneer after six months in the mouth, as noted above.

Wear Resistance

All restorations maintained a glossy surface and no wear patterns were noted after a year of function. ■

1-YEAR CLINICAL PERFORMANCE



Consultants' Comments

- ▶ *"LUMINEERS BY CERINATE allow me to provide my patients with highly esthetic restorations with minimal tooth reduction."*
- ▶ *"The marginal integrity and esthetics are equivalent to that achieved with traditional porcelain restorations."*
- ▶ *"Initial esthetics is largely dependent on the laboratory fabricating the restoration."*
- ▶ *"Several patients mentioned receiving compliments regarding the esthetics of their teeth."*
- ▶ *"Microleakage found under one veneer appeared to be the result of improper cement seal as the restoration fit properly with ideal marginal integrity."*