

One Composite For All Situations: Excellent Universal Products

Gordon’s Clinical Observations: Resin-based composite materials have dominated both anterior and posterior restorations for the entire careers of most readers. The main change in product formulations has been to improve the filler particles, which has resulted in progressively better handling properties and clinical results. Have we arrived at a point now where a single composite product can serve well for any direct restoration, including strength for the posterior and esthetics for the anterior? The answer is **YES**. *CR scientists and clinicians have collaborated to identify several available resin composite brands which have the potential to be truly “universal.”*

- **The term “universal”** has become increasingly common among dental products recently, most notably with regard to bonding agents (*adhesives*). An increasing number of resin composites are being marketed as being “universal.”
- **A truly universal composite** should be capable of serving adequately for Class I–VI direct restorations of any reasonable size and location in the oral cavity, including veneer cases (*see photos*).

This article identifies and compares universal resin-based composites, includes information on excellent products, and provides clinical tips for restoration success.

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Example Case:



Before restoration



Eight years after restoration: Direct resin veneers placed with an excellent composite (*Venus Pearl by Heraeus*); other excellent brands available can produce similar results.

Surgical Gloves: Are They Worth the Price?

Gordon’s Clinical Observations: Most dentists and their team wear and throw away hundreds of exam gloves per clinical day. These non-sterile, usually ambidextrous gloves provide some protection for both professional staff and patients. However, when should they be used – for all procedures or just for some procedures? *In this article, CR surgical staff and scientists compare the characteristics and potential use of exam gloves vs. surgical gloves and make suggestions about the use of each.*

Since the late 1800s, gloves have been recognized for their role in infection control. Since the 1987 CDC’s Universal Precautions regarding pathogens, they have become ubiquitous in the form of low-cost, low-quality, non-sterile latex exam gloves. However, higher quality, sterile, surgical gloves are available and should be considered for crucial situations.

- Today, over 150 varieties of medical gloves are available
- 17% of healthcare workers have become allergic to latex
- Various glove compositions are available: latex, nitrile, neoprene, vinyl, polyurethane, etc.

This article provides information on sterile surgical glove characteristics compared to exam gloves, allowing you to choose wisely for the safety of yourself, staff, and patients.

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The Secret to Increasing Your Patient Service and Productivity

Gordon’s Clinical Observations: In this time of the still lingering recession, one of the most significant ways to increase service to your patients and to increase productivity is to increase the clinical tasks that educated staff accomplish. Every practitioner has their own opinions about what to delegate and state laws differ. CR clinical staff members are experts in this important area. *After observing an in-depth CR random subscriber survey and considering the ease and relative service potential of delegating the popular tasks, this article summarizes their findings. Incorporating some of these delegated procedures into your practice will greatly increase your service and productivity.*

Expanding the clinical tasks of staff members has long been controversial. However, most dentists delegate at least a few tasks. Deciding what to delegate requires some study, and consideration of your desired practice characteristics. A logical procedure follows:

1. Determine which procedures or steps are potentials for delegation to staff.
2. Check the legality of delegation with your state board.
3. Consider the financial implication of each delegated procedure.
4. Finalize which procedures you want to delegate.
5. Discuss the potential procedures with your staff and assign interested staff members.
6. Have staff members complete necessary education.
7. **Integrate the expanded functions into your practice and see your practice grow!**

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Products Rated Highly by Evaluators in CR Clinical Trials

The following four products were rated excellent or good by CR Evaluator use and science evaluations.

Interdental Brushes: variety of sizes with easy-grip handles

G-CEM LinkForce: lower cost adhesive resin cement

Z-Twist Weave Braided Cord: retraction cord

XDURA: stainless steel scalers and curettes

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Eight Excellent Composites for Universal Use: Power Profiles

The following eight resin-based composites were identified by CR scientists and clinicians as having excellent potential for universal use for direct restorations, both in the anterior and posterior. **Materials and methods:** Twenty-one total products tested, each given an overall score based on the following criteria (*in descending order of assigned importance*): ease of clinical placement (*handling and marginal adaptation*); polish retention (*following extended abrasion by standard brush and paste*); cost; ease of polish (*initial polishability*); flexural strength; depth of light cure (*using high-intensity light for manufacturer-recommended times, under idealized test conditions in extracted tooth**); radiopacity; and translucency for esthetics (*compared to enamel*).

Harmonize, Kerr

Cost/mL	\$53	Score: 97%
Total available shades	30	
Dispensing options	Compule/Syringe	
Ease of placement	Excellent	
Ease of polish	Excellent	
Polish retention	Excellent	
Flexural strength	Excellent (112 MPa)	
Depth of light cure	4.9 mm*	
Radiopacity	256 %Al equivalency (very opaque)	
Translucency for esthetics	Excellent	

CR Notes:

- Favorable initial clinical results (see *Clinicians Report September 2017*)
- Long-term clinical success is being established

TPH Spectra ST, Dentsply Sirona

Cost/mL	\$59	Score: 96%
Total available shades	6 (<i>full VITA range</i>)	
Dispensing options	Compule/Syringe	
Ease of placement	Excellent	
Ease of polish	Excellent-Good	
Polish retention	Excellent	
Flexural strength	Excellent (102 MPa)	
Depth of light cure	5.5 mm*	
Radiopacity	327 %Al equivalency (very opaque)	
Translucency for esthetics	Excellent	

CR Notes:

- Brand-new product (*long-term clinical success is being established*)
- Available in low-viscosity (LV) or high-viscosity (HV) version, based on clinician preference

Filtek Supreme Ultra, 3M

Cost/mL	\$65	Score: 95%
Total available shades	36	
Dispensing options	Compule/Syringe	
Ease of placement	Excellent	
Ease of polish	Excellent	
Polish retention	Excellent	
Flexural strength	Excellent (125 MPa)	
Depth of light cure	5.0 mm*	
Radiopacity	261 %Al equivalency (very opaque)	
Translucency for esthetics	Excellent	

CR Notes:

- Proven long-term clinical success (see *TRAC Research in Clinicians Report April 2014*)
- Overwhelmingly popular among general dentists, according to recent CR survey results

Estelite Sigma Quick, Tokuyama Dental

Cost/mL	\$45	Score: 94%
Total available shades	20	
Dispensing options	Compule/Syringe	
Ease of placement	Excellent	
Ease of polish	Excellent	
Polish retention	Excellent	
Flexural strength	Excellent-Good (75 MPa)	
Depth of light cure	3.7 mm*	
Radiopacity	189 %Al equivalency (opaque)	
Translucency for esthetics	Excellent	

CR Notes:

- Proven long-term clinical success (see *CR Buying Guide 2016*)
- Similarly-named product Estelite Omega has different clinical indications

Beautiful II LS, Shofu

Cost/mL	\$34	Score: 93%
Total available shades	14	
Dispensing options	Compule/Syringe	
Ease of placement	Excellent-Good	
Ease of polish	Excellent	
Polish retention	Excellent	
Flexural strength	Excellent (105 MPa)	
Depth of light cure	6.0 mm*	
Radiopacity	230 %Al equivalency (very opaque)	
Translucency for esthetics	Excellent-Good	

CR Notes:

- Brand-new product (*long-term clinical success is being established*)
- Updated version from previous Beautiful II product, now with less shrinkage

Clearfil Majesty ES-2, Kuraray

Cost/mL	\$43	Score: 91%
Total available shades	18	
Dispensing options	Compule/Syringe	
Ease of placement	Excellent	
Ease of polish	Excellent	
Polish retention	Excellent-Good	
Flexural strength	Excellent-Good (85 MPa)	
Depth of light cure	4.7 mm*	
Radiopacity	151 %Al equivalency (semi-opaque)	
Translucency for esthetics	Excellent	

CR Notes:

- Favorable initial clinical results (see *CR Buying Guide 2013*)
- Available in both Classic and Premium versions

Venus Pearl, Heraeus

Cost/mL	\$65	Score: 89%
Total available shades	27	
Dispensing options	Compule/Syringe	
Ease of placement	Excellent	
Ease of polish	Excellent-Good	
Polish retention	Excellent	
Flexural strength	Excellent (155 MPa)	
Depth of light cure	4.4 mm*	
Radiopacity	276 %Al equivalency (very opaque)	
Translucency for esthetics	Excellent	

CR Notes:

- Proven long-term clinical success (see *CR Buying Guide 2016*)
- Similarly-named product Venus Diamond has different clinical indications

Mosaic, Ultradent

Cost/mL	\$53	Score: 87%
Total available shades	20	
Dispensing options	Compule/Syringe	
Ease of placement	Good	
Ease of polish	Excellent	
Polish retention	Excellent	
Flexural strength	Excellent (150 MPa)	
Depth of light cure	5.3 mm*	
Radiopacity	263 %Al equivalency (very opaque)	
Translucency for esthetics	Excellent	

CR Notes:

- Favorable initial clinical results (see *Clinicians Report September 2017*)
- Long-term clinical success is being established

Additional products evaluated (*in order of descending overall score*):

- G-aenial Sculpt (GC America)
- Brilliant EverGlow (Coltene)
- Simile (Pentron)
- Evanesce (Clinicians Choice)
- Nuance (DenMat)
- Esthet-X HD (Dentsply Sirona)
- Aura (SDI)
- Tetric EvoCeram (Ivoclar Vivadent)
- Exquisite Restoration (Apex Dental)
- Herculite Ultra (Kerr)
- Renamel Nano Plus (Cosmedent)
- GrandioSO (Voco)
- N'Durance (Septodont)

Additional Complimentary Information

www.CliniciansReport.org
complete tabulation of test results for all twenty-one evaluated products

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CR Survey Results and Comments

Respondents: 1024 total; 96% General Dentist; Average 31 years in practice

- **35% of respondents are using the universal concept** (one single product for all direct restorations)
- **Popular composites** (using the universal concept)
 - 54% Filtek Supreme Ultra (3M)
 - 7% Herculite Ultra (Kerr)
 - 7% TPH Spectra ST (Dentsply Sirona)
 - 5% Tetric EvoCeram (Ivoclar Vivadent)
 - 4% Estelite Sigma Quick (Tokuyama)
 - 3% GrandioSO (Voco)
 - 2% Esthet-X HD (Dentsply Sirona)
 - 2% Venus Pearl (Heraeus)
 - 2% Clearfil Majesty ES-2 (Kuraray)
 - 26 additional brands with ≤ 1% use
- **Most common failure modes** of direct restorations (in order of most common): chipping, recurrent caries, marginal leakage, surface wear, full fracture, debonding, staining or color instability. See *Clinical Tips* below for suggestions on how to address these issues.

Tips to Minimize Clinical Failures

CHIPPING

- **Make conservative restorations.** Large direct restorations (especially Class II) which have shorter longevity can be mostly avoided with early detection of caries.
- **Where restoration size becomes an issue, consider an onlay/partial crown.**
- **Use composites with high flexural strength** which offer greater resistance to chipping and fractures.

SURFACE WEAR/STAINING

- **After finishing and initial polishing at placement, apply polishing paste** which has been shown to decrease surface wear and increase esthetic longevity with time.
- **Consider replacing direct restorations in patients with malocclusion (or other symptoms) related to worn-down older-generation composites.** Newer-generation composites have filler materials with much smaller particle size, proven to decrease surface wear.

POST-OP SENSITIVITY

- **FOR EVERY TOOTH PREP, apply two one-minute applications of glutaraldehyde solutions** prior to placing adhesive, followed by the restoration (examples: Gluma by Heraeus, MicroPrime G by Zest Dental Solutions). See TRAC Research in *Clinicians Report* November 2009.
- **In deep preps, place glass ionomer or RMGI liner prior to composite placement** (examples: Vitrebond Plus by 3M, TheraCal LC by Bisco). See *Clinicians Report* July 2017.

RECURRENT CARIES

- **Check curing light output often** and ensure adequate cure of direct restorations (see *Clinicians Report* January 2016).
- **If using bulk filling concept, place increments 4mm or less** to avoid inadequately cured resin. Traditional 2mm-incremental placement remains the gold standard.
- **For caries-prone patients,** consider a glass ionomer or RMGI restorative for cariostatic activity (examples: GC Equia Forte by GC, Ketac Nano by 3M).
- **Encourage good oral hygiene habits to patients** to limit plaque buildup and regulate acidity of the oral cavity.
- **Research on the important topic of recurrent caries with resin-based composites is ongoing**

MARGINAL LEAKAGE/DEBONDING

- **Use a proven bonding agent** to obtain a better seal (see *Clinicians Report* September 2013).
- **Consider mechanical retention with grooves in the proximal box** (using a ¼" round bur) to augment dentin bonding which can be unpredictable at times.
- **Choose composite with excellent ease of placement** to maximize marginal adaptation.
- **Ensure a dry field upon placement** to prevent prep contamination. THIS IS CRUCIAL. Rubber dams (latex or non-latex versions) are best for most situations, while various products by Isolate Systems are also a popular alternative (see *Clinicians Report* May 2015).

CR CONCLUSIONS:

- Multiple composites currently available can be used for universal use (direct Class I–VI anterior and posterior). While Filtek Supreme Ultra by 3M continues to be most popular clinically, several additional brands can produce similar excellent results; some of these include: Harmonize by Kerr, TPH Spectra ST by Dentsply Sirona, Estelite Sigma Quick by Tokuyama Dental, Beautiful II LS by Shofu, Clearfil Majesty ES-2 by Kuraray, Venus Pearl by Heraeus, and Mosaic by Ultradent.
- Proper clinical technique is vital to ensure that resin-based composite products have their optimum service potential (see *Clinical Tips* above).